IBM Tivoli Access Manager for e-business
Version 3.9
Cookbook

Windows, AIX and Solaris

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Version 1.1 – 30 September, 2002

Preface

This is not a formal document, so please notify the authors of any errors, omissions or suggested changes.

Acknowledgements

Very few of the ideas here are original. In particular, thanks to the following people for their input: David Lin, Tony Lai and George Dever from IBM Austin, Sean McDonald from the US Tivoli Security Pre-Sales team, Sanjiev Chattopadhya from the PKI Solutions Team, Gaithersburg, Jorge Ferrari from the WW Security Competency Center, Julie Peet Szafranski from the IBM Design Center for e-Transaction Processing in Poughkeepsie, Gary Linker from the Level 2 team in Austin, Chris Hockings from IBM Australia and Shali Goradia.

In addition, special thanks to Avery Salmon and Jon Harry from the PIC at IBM Hursley and their team of Oleg Bascurov, Gianluca Gargaro and Jeff Miller for their work on the 3.9 Beta Workshop Hands-On Lab Guide.

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Part I - Introduction

1. Introduction

This document should be read in conjunction with the formal product documentation. It is not an overview or description of Access Manager, but its scope is strictly limited to being a hands on guide designed to assist those installing IBM Tivoli Access Manager. The aim is to share lessons learned from installation adventures with a wider audience.

It should be noted that this document is not comprehensive, and certainly does not cover all possible permutations - but it is hoped that it will be better than nothing...

Note: Before going any further, it is worth reviewing the latest README and the formal product documentation - see the **Publications** section at the end of this document for guidance on the location of these documents.

Further note: Please do feed back any comments on this document to the authors.

General note regarding LDAP and Access Manager

It is worth noting that (unlike in previous releases) Access Manager will not start without LDAP running.

Part II - Windows Environment

Note: the Access Manager installation process has been simplified considerably by the provision of a set of Easy Installation procedures. In this section we have documented here both the Easy Installation procedures and the Native installation procedures, as there may be occasions where the easy install may fail and you may need to revert to part of the Native process.

2. Windows System preparation (operating system, etc)

*Throughout this document the term **Windows** is used to refer to both **Windows NT** and **Windows 2000**. Note also that **Windows 2000 Advanced Server** is required – **Windows 2000 Professional** is **not** supported.*

- Ensure that the date and time are set correctly across the environment you are using, this is a sensible step and may avoid problems later on.
- Ensure that Microsoft NT **Server** 4.0 is installed, with Service Pack 6a or higher, or else Windows 2000 **Advanced Server** with Service Pack 2.
- Ensure that you have IP connectivity (for example, attempt to 'ping' another machine).
- It is **much** easier to install Access Manager if you can start with a 'clean' machine with a fresh Windows install on it. Otherwise, if there are files left over from previous installs you are likely to hit more obstacles along the way. (Some of the ways of avoiding these problems have been documented – but there are sure to be more which are not documented.)

Loopback Adapter

If a stand-alone demonstration system is being set up, you may want to consider using the MS Loopback Adapter rather than a genuine LAN adapter. To install this, insert a Windows NT Server 4.0 CD-ROM in the CD-ROM drive; use Start -> Settings -> Network, click on '**Adapters**', click on '**Add...**', select '**MS Loopback Adapter**', click on '**OK**', click on '**OK**', click on '**Close**'. You will then need to specify an IP address for this adapter. You will probably also need to add an entry in `C:\Winnt\system32\drivers\etc\hosts` mapping IP address to fully qualified hostname in order to get reverse DNS to work.

3. Easy Install

Version 3.9 of Access Manager now provides a quick installation path using batch files for Windows environments such as Windows 2000 Server and Windows NT Server. These scripts make it easy to install Access Manager by automatically installing required software and prerequisites. They let you see what components are currently installed and prompt you for configuration information. Below is documented a basic install using these batch files.

Note: These Easy Install scripts work very well on a 'clean' machine with a fresh Windows install on it (no web server, no DB2, no LDAP etc). However if you run into problems (particularly as a result of there being parts of other products remaining on the system) it may well be beneficial to stop using the Easy Install processes and instead go through the individual Native installation processes.

3.1 Easy Install of the IBM SecureWay Directory

First we will use the **ezinstall_ldap_server** batch file. This sets up a workstation with the following packages; IBM DB2 v7.1.5, GSKit, IBM HTTP Server, IBM SecureWayDirectory Client and Server v3.2.2.

Note: The LDAP Easy Install process works only on **Windows NT file systems (NTFS)** only.

a. Uninstall any previous versions of the IBM SecureWay Directory, DB2 and IBM HTTP Server.

b. If it exists, delete the **\ldapdb2** folder**.** (There appears to be a problem with installing the directory where there is already a database/instance present.)

c. Ensure that the **db2admin** and **ldapdb2** userids do not exist. (Use Start -> Programs -> Administrative Tools (Common) -> User Manager for Domains to check and, if necessary, remove them.) (As part of the LDAP install there is a silent install of DB2 – however if the **db2admin** user id already exists then there appears to be no mechanism for supplying the **db2admin** password, and a DB2 installation error will result.)

d. If it exists, delete `C:\Program Files\IBM HTTP Server\conf\httpd.conf`.

e. Insert the **IBM Tivoli Access Manager Base for Windows Version 3.9** CD.

f. Using 'My Computer ' or 'Windows Explorer' open the root directory of the CD and launch the **ezinstall_ldap_server.bat** file by double-clicking on it.

g. Easy install starts in a command window:

```
IBM SecureWay Directory Server
Installation and Configuration
_____________________________________________________________

Product                                        Status
IBM DB2 ....................................... Not Installed
IBM HTTP Server ............................... Not Installed
IBM Global Security Toolkit ................... Not Installed
IBM SecureWay Directory Client ................ Not Installed
IBM SecureWay Directory Server ................ Not Installed
```

```
Press ENTER to continue...
```

h. This shows the current status of the components required for IBM SecureWay Directory. Press '**Enter**'. The IBM DB2 Configuration Options are displayed.

```
IBM DB2 Configuration Options
-----------------------------------------------------

Option                                      Value
 1. Administration ID ........................ db2admin
 2. Administration Password ..................
 3. Installation Directory ................... C:\Program Files\SQLLIB




Enter the Administration Password:
```

i. Enter the password for the **db2admin** Windows user that will be created (twice). (We used **Secure99,** if left as the default this would be **db2admin**).

```
IBM DB2 Configuration Options
-----------------------------------------------------

Option                                      Value
 1. Administration ID ........................ db2admin
 2. Administration Password ..................
 3. Installation Directory ................... C:\Program Files\SQLLIB




Enter the Administration Password:  ********

Re-enter the password for confirmation:  ********
```

j. The configuration is updated:

```
IBM DB2 Configuration Options
-----------------------------------------------------

Option                                      Value
 1. Administration ID ........................ db2admin
 2. Administration Password .................. ********
 3. Installation Directory ................... C:\Program Files\SQLLIB


Enter the number of the option to modify or Y to continue:
```

k. Enter **'y'** to confirm the displayed settings. The HTTP Server Configuration Options are displayed:

```
IBM HTTP Server Configuration Options
-----------------------------------------------------
Option                                      Value
 1. Administration ID ........................ Administrator
 2. Administration Password ..................
 3. HTTP Port ................................ 80
 4. Installation Directory ................... C:\Program Files\IBM HTTP Server




Enter the Administration Password:
```

l. Enter the Windows Administrator password, this is what the HTTP Server will use to start as a Windows service. If a Windows administrator user with the user name of **'Administrator'** does not exist then select option (1) and change the Administration ID. The options are then re-displayed.

Note: if you are going to user a user name other than Administrator, make sure that this user name really does have all the Administrator privileges.

```
IBM HTTP Server Configuration Options
-----------------------------------------------------
Option                                      Value
 1. Administration ID ......................... administrator
 2. Administration Password ................... ********
 3. HTTP Port ................................. 80
 4. Installation Directory .................... C:\Program Files\IBM HTTP Server


Enter the number of the option to modify or Y to continue:
```

m. This is a good time to change the HTTP listening port from 80 in order to avoid port conflicts with WebSEAL later on, which by default listens on port 80. Select option **'3'** and configure another port, we used 81.

n. Press **'y'** and '**Enter**' to continue. The IBM GSKIT Configuration Options are displayed:

```
IBM Global Security Toolkit
-----------------------------------------------------
Option                                      Value
1. Installation Directory .................. C:\Program Files\IBM\GSK


Enter the number of the option to modify or Y to continue:
```

o. Press **'y'** and **'Enter'** to accept the default installation directory for IBM GSKIT. The LDAP Client Configuration Options are displayed:

```
IBM SecureWay Directory Client
-----------------------------------------------------
Option                                      Value
1. Installation Directory .................. C:\Program Files\IBM\LDAP


Enter the number of the option to modify or Y to continue:
```

p. Press **'y'** and **'Enter'** to accept the default installation directory for IBM LDAP Client. The LDAP Server Configuration Options are then displayed. Enter the password to be used for the LDAP Administrator user (cn=root). Type it again to confirm:

```
IBM SecureWay Directory Server Configuration Options
-----------------------------------------------------
Option                                      Value
 1. LDAP Administrator ID (DN) ............... cn=root
 2. LDAP Administrator Password ..............
 3. LDAP Server Hostname ..................... secure2
 4. Suffix ...................................
 5. LDAP Server Port ......................... 389
 6. LDAP SSL Keyfile ......................... D:\common\pd_ldapkey.kdb
 7. LDAP SSL Key File Password ............... *******
 8. SSL Client Certificate Label ............. PDLDAP
 9. Installation Directory ................... C:\Program Files\IBM\LDAP




Enter the LDAP Administrator Password:  ********

Re-enter the password for confirmation:  ********
```

q. You are prompted to enter the Suffix:

```
IBM SecureWay Directory Server Configuration Options
-----------------------------------------------------
Option                                      Value
 1. LDAP Administrator ID (DN) ............... cn=root
 2. LDAP Administrator Password .............. ********
 3. LDAP Server Hostname ..................... secure2
 4. Suffix ...................................
 5. LDAP Server Port ......................... 389
```

```
  6. LDAP SSL Keyfile ......................... D:\common\pd_ldapkey.kdb
  7. LDAP SSL Key File Password ............... *******
  8. SSL Client Certificate Label ............. PDLDAP
  9. Installation Directory ................... C:\Program Files\IBM\LDAP




 Enter the Suffix:
```

r. Enter the suffix you want to be created for storage of Access Manager users and groups (we used **ou=emea,o=ibm,c=gb**):

```
 IBM SecureWay Directory Server Configuration Options
 ----------------------------------------------------
 Option                                        Value
  1. LDAP Administrator ID (DN) ............... cn=root
  2. LDAP Administrator Password .............. ********
  3. LDAP Server Hostname ..................... secure2
  4. Suffix ................................... ou=emea,o=ibm,c=gb
  5. LDAP Server Port ......................... 389
  6. LDAP SSL Keyfile ......................... D:\common\pd_ldapkey.kdb
  7. LDAP SSL Key File Password ............... *******
  8. SSL Client Certificate Label ............. PDLDAP
  9. Installation Directory ................... C:\Program Files\IBM\LDAP


 Enter the number of the option to modify or Y to continue:
```

s. ***** CHECK *****Note**: Do not attempt to change the installation directory from `C:\Program Files\IBM\LDAP` – there appears to be a bug in the Easy Install script which means that no matter where you tell EZINSTALL to put LDAP, it will look for `slapd32.conf` in `C:\Program Files\IBM\...\slapd32.conf`.

t. Enter **'y'** to confirm the displayed settings. You are warned that the LDAP keystore provided will be copied onto the hard drive and you will see this message:

```
  The SSL Client Keyfile: D:\common\pd_ldapkey.kdb will be copied to
  c:\keytabs\pd_ldapkey.kdb.
  Press ENTER to continue...
```

u. Press '**Enter**' to continue. The installation and configuration begins. This takes a few minutes (but don't go away because you need to be around to re-boot the machine).

```
 IBM SecureWay Directory Server
 Installation and Configuration
 ____________________________________________________________

 Product                                       Status
 IBM DB2 ..................................... Not Installed
 IBM HTTPD Server ............................ Not Installed
 IBM Global Security Toolkit 4 ............... Not Installed
 IBM SecureWay Directory Client .............. Not Installed
 IBM SecureWay Directory Server .............. Not Installed


 Installing DB2 ..


 To complete the installation/configuration, the system must be restarted
 Press ENTER to continue...
```

v. When the message shown above is displayed press '**Enter**' to re-boot the machine. Once the machine has finished re-booting sign in as Administrator. The easy install will automatically carry on where it left off with the installation of the HTTP Server:

```
IBM SecureWay Directory Server
Installation and Configuration
_____________________________________________________________

Product                                        Status
IBM DB2 ....................................... Configured [7.1.5]
IBM HTTPD Server .............................. Configured [1.3.19]
IBM Global Security Toolkit 4 ................ Configured [5.0.4.67]
IBM SecureWay Directory Client ............... Configured [3.2.2.0]
IBM SecureWay Directory Server ............... Not Installed


Installing IBM SecureWay Directory Server...



To complete the installation/configuration, the system must be restarted
Press ENTER to continue...
```

w. When the message shown above is displayed press '**ENTER**' to re-boot the machine. Once the machine has finished re-booting sign in as an administrator. The easy install will automatically carry on where it left off with the configuration of the IBM SecureWay Directory. You will see the progress in the command window as shown below:

```
IBM SecureWay Directory Server
Installation and Configuration
_____________________________________________________________

Product                                        Status
IBM DB2 ....................................... Configured [7.1.5]
IBM HTTP Server ............................... Configured [1.3.19]
IBM Global Security Toolkit ................... Configured [5.0.4.67]
IBM SecureWay Directory Client ............... Configured [3.2.2.0]
IBM SecureWay Directory Server ............... Installed [3.2.2.0]


Configuring IBM SecureWay Directory Server...
The IBM HTTP Server service is stopping...
The IBM HTTP Server service was stopped successfully.

The IBM HTTP Server service is starting.
The IBM HTTP Server service was started successfully.


*******************************************************************

  Starting IBM SecureWay Directory Configuration

   ***  DO NOT CANCEL THIS WINDOW  ***

   ***  This could take several minutes  ***

*******************************************************************

Cannot open message catalog file ldapadm.cat.
 Creating the directory DB2 default database.
 This operation may take a few minutes.

Configuring the database.
Adding user account: ldapdb2.
Adding user account, ldapdb2, to the Administrators group.
Adding account rights to account: ldapdb2.
Added account rights to account: ldapdb2.
Creating database instance: ldapdb2.
Created database instance: ldapdb2.
Logging on user: ldapdb2.
Logged on user: ldapdb2.
```

```
Impersonating user.
Impersonated user.
Logging on user: ldapdb2.
Logged on user: ldapdb2.
Impersonating user.
Impersonated user.
Cataloging node: ldapdb2.
Cataloged node: ldapdb2.
Starting database manager for instance: ldapdb2.
Started database manager for instance: ldapdb2.
Attaching to instance: ldapdb2.
Attached to instance: ldapdb2.
Creating database: ldapdb2.
Created database: ldapdb2.
Getting configuration for database: ldapdb2.
Got configuration for database: ldapdb2.
Updating configuration for database: ldapdb2.
Updated configuration for database: ldapdb2.
Completed configuration of the database.

IBM SecureWay Directory Configuration complete.

Starting slapd server.  This may take a few minutes...
The IBM SecureWay Directory V3.2 service is starting................
The IBM SecureWay Directory V3.2 service was started successfully.

Adding suffix ou=emea,o=ibm,c=gb ...
Adding suffix secAuthority=Default ...

Starting slapd server.  This may take a few minutes...
The IBM SecureWay Directory V3.2 service is stopping...
The IBM SecureWay Directory V3.2 service was stopped successfully.

The IBM SecureWay Directory V3.2 service is starting..
The IBM SecureWay Directory V3.2 service was started successfully.

Adding organization ou=emea,o=ibm,c=gb...
Adding new entry ou=emea,o=ibm,c=gb

Starting slapd server.  This may take a few minutes...
The IBM SecureWay Directory V3.2 service is stopping...
The IBM SecureWay Directory V3.2 service was stopped successfully.

The IBM SecureWay Directory V3.2 service is starting...
The IBM SecureWay Directory V3.2 service was started successfully.


IBM SecureWay Directory Server
Installation and Configuration
_____________________________________________________________

Product                                        Status
IBM DB2 ....................................... Configured [7.1.5]
IBM HTTPD Server .............................. Configured [1.3.19]
IBM Global Security Toolkit 4 ................ Configured [5.0.4.67]
IBM SecureWay Directory Client ............... Configured [3.2.2.0]
IBM SecureWay Directory Server ............... Configured [3.2.2.0]



Ezinstall completed successfully.


Press ENTER to continue...
```

x. When the screen above is displayed it means that the IBM Directory has been successfully installed and configured. In addition, IBM HTTP Server has been installed and configured for access to the LDAP Web console. Press **'ENTER'** to exit easy install.

3.2 Easy Install of Access Manager Management Server

Use the **ezinstall_pdmgr** batch file to install the AM Runtime and AM Policy Server components. This sets up a workstation with the following packages; GSKit, IBM Directory Client v3.2.2, AM Runtime and AM Policy Server. We performed the steps documented here on the same machine as the previous install of the Directory.

a. Insert the **IBM Tivoli Access Manager Base for Windows Version 3.9** CD.

b. Use Windows Explorer to open the drive where the CD image is located. In the root directory of this drive launch the **ezinstall_pdmgr.bat** file by double-clicking on it.

c. Easy install starts in a command window:

```
A response file was created for this process previously.
Do you want to use C:\TEMP\EZINSTALL.RSP as the response file? [Y | N]:
```

d. Easy Install finds the response file that it generated when installing the IBM SecureWay Directory. This file contains information that can be reused to save your typing. Enter **'y'** to use this file. The IBM Tivoli Access Manager Runtime Configuration Options are displayed and you are invited to enter the LDAP Server Hostname:

```
IBM Tivoli Access Manager Runtime Configuration Options
---------------------------------------------------
Option                                      Value
 1. Configure Using This Registry Type ....... ldap
 2. LDAP Server Hostname ......................
 3. LDAP Server Port ......................... 389
 4. Suffix ....................................
 5. Enable SSL with LDAP Server ..............
 6. LDAP SSL Keyfile .........................
 7. LDAP SSL Keyfile DN ......................
 8. LDAP SSL Key File Password ...............
 9. LDAP Server SSL Port ..................... 636
10. Installation Directory .................. C:\Program Files\Tivoli\Policy Director



Enter the LDAP Server Hostname:
```

e. Enter the LDAP Server Hostname. Since LDAP is installed locally this should be the DNS name of the local host (**secure2.pic.uk.ibm.com** in our case). You will be invited to enter a suffix:

```
IBM Tivoli Access Manager Runtime Configuration Options
---------------------------------------------------
Option                                      Value
 1. Configure Using This Registry Type ....... ldap
 2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
 3. LDAP Server Port ......................... 389
 4. Suffix ....................................
 5. Enable SSL with LDAP Server ..............
 6. LDAP SSL Keyfile .........................
 7. LDAP SSL Keyfile DN ......................
 8. LDAP SSL Key File Password ...............
 9. LDAP Server SSL Port ..................... 636
10. Installation Directory .................. C:\Program Files\Tivoli\Policy Director



Enter the Suffix:
```

f. Enter the suffix where you want the GSO database to be created. To make life easy for yourself give the same suffix here as you did when configuring LDAP (we used **ou=emea,o=ibm,c=gb**). If you want to use a different suffix you need to make sure that the object already exists in LDAP.

```
IBM Tivoli Access Manager Runtime Configuration Options
---------------------------------------------------
Option                                      Value
```

```
  1. Configure Using This Registry Type ....... ldap
  2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
  3. LDAP Server Port ......................... 389
  4. Suffix ................................... ou=emea,o=ibm,c=gb
  5. Enable SSL with LDAP Server .............
  6. LDAP SSL Keyfile ........................
  7. LDAP SSL Keyfile DN ......................
  8. LDAP SSL Key File Password ..............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory .................. C:\Program Files\Tivoli\Policy Director



 Enable SSL with LDAP Server? [Y|N]:
```

g. At this point you must decide if you will use SSL for communication with the LDAP Server. For this basic install we'll keep things simple by NOT using SSL: enter **'n'**. The Access Manager Management Server Configuration Options screen is re-displayed:

```
 IBM Tivoli Access Manager Policy Server Configuration Options

 ------------------------------------------------------------
 Option                                        Value
  1. LDAP Administrator ID (DN) ............... cn=root
  2. LDAP Administrator Password ..............
  3. Security Master Password .................
  4. SSL Server Port .......................... 7135
  5. PDMGR SSL Certificate Lifetime ........... 365
  6. Enable Download of Certificates ..........



 Enter the LDAP Administrator Password:
```

h. Enter the LDAP Administrator password. This is the password that you set for **cn=root** during LDAP configuration.

i. You are then asked to enter the password that will be used for the Access Manager master user, **sec_master**. Enter the password you want and the re-enter for confirmation:

```
 IBM Tivoli Access Manager Policy Server Configuration Options

 ------------------------------------------------------------
 Option                                        Value
  1. LDAP Administrator ID (DN) ............... cn=root
  2. LDAP Administrator Password .............. ********
  3. Security Master Password .................
  4. SSL Server Port .......................... 7135
  5. PDMGR SSL Certificate Lifetime ........... 365
  6. Enable Download of Certificates ..........



 Enter the Security Master Password:  ********

 Re-enter the password for confirmation:  ********
```

j. You must now decide if other Access Manager machines will be able to download the Access Manager internal CA certificate from the management server. This saves a manual step when configuring remote Access Manager machines but removes the security of having a manual CA Certificate transfer. We chose **'y'** for this install to keep things simple, for a demonstration type environment.

```
 IBM Tivoli Access Manager Policy Server Configuration Options

 ------------------------------------------------------------
 Option                                        Value
  1. LDAP Administrator ID (DN) ............... cn=root
  2. LDAP Administrator Password .............. ********
  3. Security Master Password ................. ********
  4. SSL Server Port .......................... 7135
```

```
  5. PDMGR SSL Certificate Lifetime ........... 365
  6. Enable Download of Certificates ..........



 Allow other PD Client machines to download the certificate file? [ Y | N ]:  y
```

k. The installation and configuration begins. IBM GSKIT and the IBM SecureWay Directory client are already installed (because the LDAP Server is on the local machine, i.e. all components are on the same machine here) so easy install starts with the installation of the AM Runtime. If LDAP were installed on a different machine the easy install would have installed IBM GSKIT and the LDAP Client at this point.

```
 IBM Tivoli Access Manager Policy Server
 Installation and Configuration
 ____________________________________________________________

 Product                                        Status
 IBM Global Security Toolkit ................... Configured [5.0.4.67]
 IBM SecureWay Directory Client ............... Configured [3.2.2.0]
 Access Manager Runtime......................... Not Installed
 Access Manager Policy Server ................. Not Installed


 Installing Tivoli SecureWay Policy Director Runtime.
```

l. The installation will proceed until a re-boot is required:

```
 IBM Tivoli Access Manager Policy Server
 Installation and Configuration
 ____________________________________________________________

 Product                                        Status
 IBM Global Security Toolkit  ................. Configured [5.0.4.67]
 IBM SecureWay Directory Client ............... Configured [3.2.2.0]
 Access Manager Runtime......................... Installed [3.9]
 Access Manager Policy Server ................. Not Installed


 Installing IBM Tivoli Access Manger Policy Server....

 To complete the installation/configuration, the system must be restarted
 Press ENTER to continue...
```

m. Press **'Enter'** to re-boot the machine. Once the machine has finished re-booting log into Windows using the same user id as before. The easy install will automatically carry on where it left off with the configuration of Access Manager Runtime. You should see the installation progress as shown below:

```
 IBM Tivoli Access Manager Policy Server
 Installation and Configuration
 ____________________________________________________________

 Product                                        Status
 IBM Global Security Toolkit  ................. Configured [5.0.4.67]
 IBM SecureWay Directory Client ............... Configured [3.2.2.0]
 Access Manager Runtime......................... Installed [3.9]
 Access Manager Policy Server ................. Installed [3.9]


 Configuring IBM Tivoli Access Manager Runtime...

 The IBM SecureWay Directory V3.2 service is starting...
 The IBM SecureWay Directory V3.2 service was started successfully.
```

```
 IBM Tivoli Access Manager Policy Server
 Installation and Configuration
 ____________________________________________________________

 Product                                        Status
```

```
IBM Global Security Toolkit  ................. Configured [5.0.4.67]
IBM SecureWay Directory Client ............... Configured [3.2.2.0]
Access Manager Runtime........................ Configured [3.9]
Access Manager Policy Server ................. Installed [3.9]


Configuring IBM Tivoli Access Manager Policy Server...

═══════════════════════════════════════════════════════════════════════════

IBM Tivoli Access Manager Policy Server
Installation and Configuration
_____________________________________________________________

Product                                       Status
IBM Global Security Toolkit  ................. Configured [5.0.4.67]
IBM SecureWay Directory Client ............... Configured [3.2.2.0]
Access Manager Runtime........................ Configured [3.9]
Access Manager Policy Server ................. Configured [3.9]



Ezinstall completed successfully.


Press ENTER to continue...
```

n. When the screen above is displayed it means that the Access Manager Policy Server has been successfully installed and configured. Access Manager Runtime is also installed which means that you can use PDADMIN for command-line administration. Press '**ENTER**' to exit easy install.

3.3 Easy Install of Access Manager WebSEAL

Use the **ezinstall_pdweb** batch file to install WebSEAL.This sets up a workstation with the following packages; GSKit, IBM Directory client v3.2.2, AMRTE and WebSEAL. Again we installed this on the same machine as the directory and AM Policy Server.

a. Insert the **IBM Tivoli Access Manager Web Security for Windows Version 3.9** CD.

b. Ensure that the IBM SecureWay Directory V3.2.2 and the Access Manager Policy Server services are started.

c. Use Windows Explorer to open the drive where the CD image is located. In the root directory of this drive launch the **ezinstall_pdweb.bat** file by double-clicking on it. Easy install starts in a command window:

```
A response file was created for this process previously.
Do you want to use C:\TEMP\EZINSTALL.RSP as the response file? [Y | N]:
```

d. Easy install finds the response file that it previously generated. This file contains information that can be reused to save your typing. Enter **'y'** to use this file. The WebSEAL configuration options are displayed:

```
Access Manager WebSEAL Server (PDWEB) Options
-----------------------------------------------------
Option                                        Value
 1. Security Master Password ................. ******



Enter the Security Master Password:
```

e. Enter the password you configured for **`sec_master`** during the PD Management Server installation. The installation and configuration begins:

```
Tivoli Policy Director WebSEAL Server (PDWEB)
Installation and Configuration
_____________________________________________________________

Product                                        Status
IBM Global Security Toolkit .................. Configured [5.0.4.67]
IBM SecureWay Directory Client ............... Configured [3.2.2.0]
Access Manager Runtime ....................... Configured [3.9]
IBM Tivoli AM WebSEAL Server ................. Not Installed


Installing Policy Director WebSEAL Server...
=============================================================

IBM Tivoli Access Manager WebSEAL Server (PDWEB)
Installation and Configuration
_____________________________________________________________

Product                                        Status
IBM Global Security Toolkit .................. Configured [5.0.4.67]
IBM SecureWay Directory Client ............... Configured [3.2.2.0]
Access Manager Runtime ....................... Configured [3.9]
IBM Tivoli AM WebSEAL Server ................. Installed [3.9]


Configuring Access Manager WebSEAL...



IBM Tivoli Access Manager WebSEAL Server (PDWEB)
```

```
Installation and Configuration
_____________________________________________________________

Product                                          Status
IBM Global Security Toolkit .................... Configured [5.0.4.67]
IBM SecureWay Directory Client ................ Configured [3.2.2.0]
Access Manager Runtime ........................ Configured [3.9]
IBM Tivoli AM WebSEAL Server ................. Configured [3.9]




ezinstall completed successfully.


Press ENTER to continue...
```

f. When the screen above is displayed it means that WebSEAL has been successfully installed and configured. Press '**ENTER**' to exit easy install.

The WebSEAL Server is now running on the machine and should respond to HTTP and HTTPS requests. It has been configured to use the default HTTP and HTTPS ports (80 and 443 respectively). You can now check that Access Manager is working by following the steps described in Section 22 - Initial Access Manager Validation on Page 170 below.

4. Easy Install process to set up Access Manager components on a remote machine

This section describes using the scripts to install WebSEAL and then WPM and their prerequisites on separate systems.

4.1 Easy Install of Access Manager WebSEAL

Use the **ezinstall_pdweb** batch file to install WebSEAL.This sets up a workstation with the following packages; GSKit, IBM Directory client v3.2.2, AM Runtime and WebSEAL.

a. Insert the **IBM Tivoli Access Manager Web Security for Windows Version 3.9** CD.

b. Using 'My Computer ' or 'Windows Explorer' open the root directory of the CD and launch the **ezinstall_pdweb.bat** file by double-clicking on it. Easy Install starts in a command window:

```
IBM Tivoli Access Manager WebSEAL Server (PDWEB)
Installation and Configuration
_____________________________________________________________

Product                                          Status
IBM Global Security Toolkit .................. Not Installed
IBM SecureWay Directory Client ............... Not Installed
Access Manager Runtime ....................... Not Installed
IBM Tivoli AM WebSEAL Server ................. Not Installed



Press ENTER to continue...
```

c. This shows the current status of the components required for WebSEAL. Press **'ENTER'**. The IBM GSKIT Configuration Options are displayed - enter **'y'** to accept the default installation directory for IBM GSKIT:

```
IBM Global Security Toolkit
---------------------------------------------------
Option                                          Value
1. Installation Directory .................. C:\Program Files\IBM\GSK


Enter the number of the option to modify or Y to continue: y
```

d. The LDAP Client Configuration Options are then displayed. Enter **'y'** to accept the default installation directory for IBM LDAP Client:

```
IBM SecureWay Directory Client
---------------------------------------------------
Option                                          Value
1. Installation Directory .................. C:\Program Files\IBM\LDAP


Enter the number of the option to modify or Y to continue: y
```

e. The Access Manager Runtime Configuration Options are then displayed:

```
IBM Tivoli Access Manager Runtime Configuration Options
---------------------------------------------------
Option                                          Value
 1. Configure Using This Registry Type ....... ldap
```

```
  2. LDAP Server Hostname ....................
  3. LDAP Server Port ......................... 389
  4. Suffix ..................................
  5. Enable SSL with LDAP Server .............
  6. LDAP SSL Keyfile ........................
  7. LDAP SSL Keyfile DN .....................
  8. LDAP SSL Key File Password ..............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
 11. Access Manager Policy Server Hostname.....
 12. SSL Server Port for AM Policy Server...... 7135
 13. Policy Server CA Certificate Filename ....



 Enter the LDAP Server Hostname:
```

f. Enter the LDAP Server Hostname. This is the full DNS name of the machine where you installed the LDAP server (we used **secure2.pic.uk.ibm.com**):

```
 IBM Tivoli Access Manager Runtime Configuration Options
 ---------------------------------------------------
 Option                                        Value
  1. Configure Using This Registry Type ....... ldap
  2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
  3. LDAP Server Port ......................... 389
  4. Suffix ..................................
  5. Enable SSL with LDAP Server .............
  6. LDAP SSL Keyfile ........................
  7. LDAP SSL Keyfile DN .....................
  8. LDAP SSL Key File Password ..............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
 11. Access Manager Policy Server Hostname.....
 12. SSL Server Port for AM Policy Server...... 7135
 13. Policy Server CA Certificate Filename ....



 Enter the Suffix:
```

g. Enter the suffix where you specified the GSO database should be created when setting up the Access Manager Management Server (we choose to use **`o=ibm,c=gb`**):

```
 IBM Tivoli Access Manager Runtime Configuration Options
 ---------------------------------------------------
 Option                                        Value
  1. Configure Using This Registry Type ....... ldap
  2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
  3. LDAP Server Port ......................... 389
  4. Suffix ................................... ou=emea,o=ibm,c=gb
  5. Enable SSL with LDAP Server .............
  6. LDAP SSL Keyfile ........................
  7. LDAP SSL Keyfile DN .....................
  8. LDAP SSL Key File Password ..............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
 11. Access Manager Policy Server Hostname.....
 12. SSL Server Port for AM Policy Server...... 7135
 13. Policy Server CA Certificate Filename ....



 Enable SSL with LDAP Server? [Y|N]:
```

h. At this point you must decide if you will use SSL for communication with the LDAP Server. For this install we'll keep things simple by NOT using SSL, so enter **'n'**.

```
 IBM Tivoli Access Manager Runtime Configuration Options
 ---------------------------------------------------
 Option                                        Value
  1. Configure Using This Registry Type ....... ldap
  2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
```

```
  3. LDAP Server Port ......................... 389
  4. Suffix ................................... ou=emea,o=ibm,c=gb
  5. Enable SSL with LDAP Server .............. n
  6. LDAP SSL Keyfile ......................
  7. LDAP SSL Keyfile DN ......................
  8. LDAP SSL Key File Password ...............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
 11. Access Manager Policy Server Hostname.....
 12. SSL Server Port for AM Policy Server...... 7135
 13. Policy Server CA Certificate Filename ....



 Enter the host name of the Policy Director Management Server:
```

i. The Access Manager Runtime needs to know where to contact the Policy Server. Enter the full DNS name of the machine where the Access Manager policy server is installed (**secure2.pic.uk.ibm.com** in our case):

```
 IBM Tivoli Access Manager Runtime Configuration Options
 ---------------------------------------------------
 Option                                        Value
  1. Configure Using This Registry Type ....... ldap
  2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
  3. LDAP Server Port ......................... 389
  4. Suffix ................................... ou=emea,o=ibm,c=gb
  5. Enable SSL with LDAP Server .............. n
  6. LDAP SSL Keyfile ......................
  7. LDAP SSL Keyfile DN ......................
  8. LDAP SSL Key File Password ...............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
 11. Access Manager Policy Server Hostname..... secure2.pic.uk.ibm.com
 12. SSL Server Port for AM Policy Server...... 7135
 13. Policy Server CA Certificate Filename ....



 If you have enabled Policy Server to allow the download of the certificate files,
 leave this option blank.  Otherwise, specify the pdcacert.b64 file
 created by the Policy Server configuration.
 Enter the path to the Access Manager for e-business Certificate File:
```

j. In order for the Access Manager Runtime to authenticate the other Access Manager servers it connects to it must have a copy of the AM CA Certificate that was generated by the Policy Server when it was configured. This can either be manually copied to the local machine or downloaded as part of the configuration of AM Runtime. If when you configured the Policy Server you said we would allow the AM CA Certificate to be downloaded then you can simply press **ENTER** here to continue:

```
 IBM Tivoli Access Manager Runtime Configuration Options
 ---------------------------------------------------
 Option                                        Value
  1. Configure Using This Registry Type ....... ldap
  2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
  3. LDAP Server Port ......................... 389
  4. Suffix ................................... ou=emea,o=ibm,c=gb
  5. Enable SSL with LDAP Server .............. n
  6. LDAP SSL Keyfile ......................
  7. LDAP SSL Keyfile DN ......................
  8. LDAP SSL Key File Password ...............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
 11. Access Manager Policy Server Hostname..... secure2.pic.uk.ibm.com
 12. SSL Server Port for AM Policy Server...... 7135
 13. Policy Server CA Certificate Filename .... c:\pdcacert.b64



 Enter the number of the option to modify or Y to continue:
```

k. Enter **'y'** to confirm the displayed settings. Next the WebSEAL configuration options are required.

```
Access Manager WebSEAL Server (PDWEB) Options
---------------------------------------------------
Option                                      Value
 1. Security Master Password ................ ******



Enter the Security Master Password:
```

l. Enter the Password you configured for **sec_master** during the AM Policy Server installation.

```
Access Manager WebSEAL Server (PDWEB) Options
---------------------------------------------------
Option                                      Value
 1. Security Master Password ................ ******

Enter the number of the option to modify or Y to continue:
```

m. Enter **'y'** to confirm the displayed settings. The installation and configuration proceeds. (This takes a little time and requires the machine to be rebooted once.)

```
IBM Tivoli Access Manager WebSEAL Server (PDWEB)
Installation and Configuration
_____________________________________________________________

Product                                      Status
IBM Global Security Toolkit ................. Not Installed
IBM SecureWay Directory Client .............. Not Installed
Access Manager Runtime ...................... Not Installed
IBM Tivoli AM WebSEAL Server ................ Not Installed


Installing IBM Global Security Toolkit...
=============================================================

IBM Tivoli Access Manager WebSEAL Server (PDWEB)
Installation and Configuration
_____________________________________________________________

Product                                      Status
IBM Global Security Toolkit ................. Configured [5.0.4.67]
IBM SecureWay Directory Client .............. Not Installed
Access Manager Runtime ...................... Not Installed
IBM Tivoli AM WebSEAL Server ................ Not Installed


Installing IBM SecureWay Directory Client.
...............
=============================================================


IBM Tivoli Access Manager WebSEAL Server (PDWEB)
Installation and Configuration
_____________________________________________________________

Product                                      Status
IBM Global Security Toolkit ................. Configured [5.0.4.67]
IBM SecureWay Directory Client .............. Configured [3.2.2.0]
Access Manager Runtime ...................... Installed [3.9]
IBM Tivoli AM WebSEAL Server ................ Not Installed


Installing Access Manager WebSEAL. ............


To complete the installation/configuration, the system must be restarted
Press ENTER to continue...
```

n. When the message shown above is displayed press '**ENTER'** to re-boot the machine.

o. Once the machine has finished re-booting sign in as Administrator. The easy install will automatically restart.

```
Access Manager WebSEAL Server (PDWEB) Options
---------------------------------------------------
Option                                      Value
 1. Security Master Password ................ ******



Enter the Security Master Password:
```

p. When prompted enter the password for **sec_master**. You are asked for this password as it is required to complete the configuration and is not stored in the response file for security reasons. Easy install will carry on where it left off with the configuration of Access Manager Runtime:

```
IBM Tivoli Access Manager WebSEAL Server (PDWEB)
Installation and Configuration
_____________________________________________________________

Product                                     Status
IBM Global Security Toolkit ................. Configured [5.0.4.67]
IBM SecureWay Directory Client .............. Configured [3.2.2.0]
Access Manager Runtime ...................... Installed [3.9]
IBM Tivoli AM WebSEAL Server ................ Installed [3.9]

Configuring IBM Tivoli Access Manager Runtime...
```

```
IBM Tivoli Access Manager WebSEAL Server (PDWEB)
Installation and Configuration
_____________________________________________________________

Product                                     Status
IBM Global Security Toolkit ................. Configured [5.0.4.67]
IBM SecureWay Directory Client .............. Configured [3.2.2.0]
Access Manager Runtime ...................... Configured [3.9]
IBM Tivoli AM WebSEAL Server ................ Configured [3.9]



Ezinstall completed successfully.


Press ENTER to continue...
```

q. When the screen above is displayed it means that Access Manager WebSEAL has been successfully installed and configured. Press '**ENTER**' to exit easy install.

r. The WebSEAL Server is now running on the machine and should respond to HTTP and HTTPS requests. It has been configured to use the default HTTP and HTTPS ports (80 and 443 respectively).

s. Access Manager Runtime has also been installed on the machine so PDADMIN is available for command-line administration from this machine.

5. Easy Install - Web Portal Manager

5.1 Easy Install of Web Portal Manager (PDWPM)

For this section we will install the Web Portal Manager onto another machine (one that does NOT have the Management Server installed). One good reason for doing this is that WebSphere (required by the WPM) has high memory requirements. It is important to have at least 256MB of ram available on a machine just running the WPM and preferably 512MB. There are no technical problems with installing the WPM on the same machine as the Management server provided you have enough memory. The only difference will be that some screens will not be shown as some components will already be installed and configured.

a. If there is any possibility that a Web Portal Manager installation has been previously attempted on the machine in question, run **regedit**. If the following registry key entry exists: **HKEY_LOCAL_MACHINE\SOFTWARE\TivoliPolicy Director Web Portal Manager** delete it. (As stated in the Release Notes, the presence of this registry key will cause the WPM Easy Installation to fail.)

b. Insert the **IBM Tivoli Access Manager Web Portal Manager for Windows Version 3.9** CD.

c. Using 'My Computer ' or 'Windows Explorer' open the root directory of the CD and launch the **ezinstall_pdwpm.bat** file by double-clicking on it.

d. Easy install starts in a command window:

```
IBM Tivoli Access Manager Web Portal Manager
Installation and Configuration
_____________________________________________________________

Product                                          Status
IBM Global Security Toolkit ................... Not Installed
IBM HTTP Server ............................... Not Installed
IBM SecureWay Directory Client ................ Not Installed
Access Manager Runtime ........................ Not Installed
IBM WebSphere Application Server .............. Not Installed
Access Manager Web Portal Manager ............ Not Installed



Press ENTER to continue...
```

e. Press '**ENTER**' to continue. You will see the IBM Global Security Toolkit options displayed:

```
IBM Global Security Toolkit
---------------------------------------------------
Option                                          Value
1. Installation Directory ................... C:\Program Files\IBM\GSK


Enter the number of the option to modify or Y to continue:
```

f. Type **'y'** to continue. The IBM HTTP Server Configuration Options will be displayed:

```
IBM HTTP Server Configuration Options
 ---------------------------------------------------
 Option                                          Value
  1. Administration ID ........................ Administrator
  2. Administration Password ..................
  3. HTTP Port ................................ 80
  4. Installation Directory ................... C:\Program Files\IBM HTTP Server
```

```
Enter the Administration Password:
```

g. Enter the Windows Administrator password - this is what the HTTP Server will use to start as a Windows service. If a Windows administrator user with the user name of **Administrator** does not exist then select option (1) and change the Administration ID. The options are then re-displayed.
Note: if you are going to user a user name other than Administrator, make sure that this user name really does have all the Administrator privileges.

```
IBM HTTP Server Configuration Options
-----------------------------------------------------
Option                                      Value
 1. Administration ID ........................ Administrator
 2. Administration Password .................. ********
 3. HTTP Port ................................ 80
 4. Installation Directory ................... C:\Program Files\IBM HTTP Server


Enter the number of the option to modify or Y to continue:
```

h. Enter **'y'** to continue. The IBM SecureWay Directory Client options are displayed:

```
IBM SecureWay Directory Client
-----------------------------------------------------
Option                                      Value
1. Installation Directory ................... C:\Program Files\IBM\LDAP


Enter the number of the option to modify or Y to continue:
```

i. Enter **'y'** to continue. The Access Manager Runtime Configuration Options are displayed:

```
IBM Tivoli Access Manager Runtime Configuration Options
-----------------------------------------------------
Option                                      Value
 1. Configure Using This Registry Type ....... ldap
 2. LDAP Server Hostname ......................
 3. LDAP Server Port ......................... 389
 4. Suffix ....................................
 5. Enable SSL with LDAP Server ..............
 6. LDAP SSL Keyfile .........................
 7. LDAP SSL Keyfile DN ......................
 8. LDAP SSL Key File Password ...............
 9. LDAP Server SSL Port ..................... 636
10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
11. Access Manager Policy Server Hostname.....
12. SSL Server Port for AM Policy Server...... 7135
13. Policy Server CA Certificate Filename ....



Enter the LDAP Server Hostname:
```

j. Enter the LDAP Server Hostname. This is the full DNS name of the machine where you installed the LDAP server (**secure2.pic.uk.ibm.com** in our case):

```
IBM Tivoli Access Manager Runtime Configuration Options
-----------------------------------------------------
Option                                      Value
 1. Configure Using This Registry Type ....... ldap
 2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
 3. LDAP Server Port ......................... 389
 4. Suffix ....................................
 5. Enable SSL with LDAP Server ..............
 6. LDAP SSL Keyfile .........................
 7. LDAP SSL Keyfile DN ......................
 8. LDAP SSL Key File Password ...............
 9. LDAP Server SSL Port ..................... 636
10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
11. Access Manager Policy Server Hostname.....
12. SSL Server Port for AM Policy Server...... 7135
```

```
 13. Policy Server CA Certificate Filename ....



 Enter the Suffix:
```

k. Enter the suffix where you specified the GSO database should be created when setting up the Access Manager Management Server. (We choose to use **ou=emea,o=ibm,c=gb**.)

```
 IBM Tivoli Access Manager Runtime Configuration Options
 ---------------------------------------------------
 Option                                        Value
  1. Configure Using This Registry Type ....... ldap
  2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
  3. LDAP Server Port ......................... 389
  4. Suffix ................................... ou=emea,o=ibm,c=gb
  5. Enable SSL with LDAP Server .............
  6. LDAP SSL Keyfile .........................
  7. LDAP SSL Keyfile DN ......................
  8. LDAP SSL Key File Password ...............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
 11. Access Manager Policy Server Hostname.....
 12. SSL Server Port for AM Policy Server...... 7135
 13. Policy Server CA Certificate Filename ....



 Enable SSL with LDAP Server? [Y|N]:
```

l. At this point you must decide if you will use SSL for communication with the LDAP Server. For this install we'll keep things simple by NOT using SSL, so enter **'n'**:

```
 IBM Tivoli Access Manager Runtime Configuration Options
 ---------------------------------------------------
 Option                                        Value
  1. Configure Using This Registry Type ....... ldap
  2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
  3. LDAP Server Port ......................... 389
  4. Suffix ................................... ou=emea,o=ibm,c=gb
  5. Enable SSL with LDAP Server ............. n
  6. LDAP SSL Keyfile .........................
  7. LDAP SSL Keyfile DN ......................
  8. LDAP SSL Key File Password ...............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
 11. Access Manager Policy Server Hostname.....
 12. SSL Server Port for AM Policy Server...... 7135
 13. Policy Server CA Certificate Filename ....



 Enter the host name of the Policy Director Management Server:
```

m. PD Runtime needs to know where to contact the Management Server. Enter the full DNS name of the machine where the Access Manager Policy Server is installed (**secure2.pic.uk.ibm.com** in our case):

```
 IBM Tivoli Access Manager Runtime Configuration Options
 ---------------------------------------------------
 Option                                        Value
  1. Configure Using This Registry Type ....... ldap
  2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
  3. LDAP Server Port ......................... 389
  4. Suffix ................................... ou=emea,o=ibm,c=gb
  5. Enable SSL with LDAP Server ............. n
  6. LDAP SSL Keyfile .........................
  7. LDAP SSL Keyfile DN ......................
  8. LDAP SSL Key File Password ...............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
 11. Access Manager Policy Server Hostname..... secure2.pic.uk.ibm.com
 12. SSL Server Port for AM Policy Server...... 7135
```

```
 13. Policy Server CA Certificate Filename ....



 If you have enabled Policy Server to allow the download of the certificate files,
 leave this option blank.  Otherwise, specify the pdcacert.b64 file
 created by the Policy Server configuration.
 Enter the path to the Access Manager for e-business Certificate File:
```

n. In order for AM Runtime to authenticate the other Access Manager servers it connects to it must have a copy of the AM CA Certificate that was generated by the Policy Server when it was configured. This can either be manually copied to the local machine or downloaded as part of the configuration of AM Runtime. This will depend on the choice we made when we were configuring the Policy Server.

```
 IBM Tivoli Access Manager Runtime Configuration Options
 ---------------------------------------------------
 Option                                        Value
  1. Configure Using This Registry Type ....... ldap
  2. LDAP Server Hostname ..................... secure2.pic.uk.ibm.com
  3. LDAP Server Port ......................... 389
  4. Suffix ................................... ou=emea,o=ibm,c=gb
  5. Enable SSL with LDAP Server .............. n
  6. LDAP SSL Keyfile .........................
  7. LDAP SSL Keyfile DN ......................
  8. LDAP SSL Key File Password ...............
  9. LDAP Server SSL Port ..................... 636
 10. Installation Directory ................... C:\Program Files\Tivoli\Policy Director
 11. Access Manager Policy Server Hostname..... secure2.pic.uk.ibm.com
 12. SSL Server Port for AM Policy Server...... 7135
 13. Policy Server CA Certificate Filename ....

 Enter the number of the option to modify or Y to continue:
```

o. Enter **'y'** to continue. The IBM WebSphere Configuration Options are displayed. Enter the Windows Administrator password. This is what WebSphere will use to start as an Windows service:

```
 IBM WebSphere Configuration Options
 ---------------------------------------------------
 Option                                        Value
  1. Administration ID ........................ Administrator
  2. Administration Password ..................
  3. Installation Directory ................... C:\WebSphere\AppServer



 Enter the Administration Password:  ********
```

p. A summary of entries is shown:

```
IBM WebSphere Configuration Options
---------------------------------------------------
Option                                        Value
 1. Administration ID ........................ Administrator
 2. Administration Password .................. ********
 3. Installation Directory ................... C:\WebSphere\AppServer


Enter the number of the option to modify or Y to continue:
```

q. If a Windows administrator user with the user name of **Administrator** does not exist then select option (1) and change the Administration ID. The options are then re-displayed. **Note**: if you are going to user a user name other than Administrator, make sure that this user name really does have all the Administrator privileges.

r. Press **'y'** to continue and the installation begins. The components are installed and configured one by one - this process takes a few minutes and will require a reboot.

```
 IBM Tivoli Access Manager Web Portal Manager
 Installation and Configuration
 ____________________________________________________________
```

```
 Product                                          Status
 IBM Global Security Toolkit .................... Not Installed
 IBM HTTP Server ............................... Not Installed
 IBM SecureWay Directory Client ................ Not Installed
 Access Manager Runtime ........................ Not Installed
 IBM WebSphere Application Server ............. Not Installed
 Access Manager Web Portal Manager ............ Not Installed


 Installing IBM Global Security Toolkit. ..........
```

```
 IBM Tivoli Access Manager Web Portal Manager
 Installation and Configuration
 ____________________________________________________________

 Product                                          Status
 IBM Global Security Toolkit .................... Configured [5.0.4.67]
 IBM HTTP Server ............................... Configured [1.3.19]
 IBM SecureWay Directory Client ................ Configured [3.2.2.0]
 Access Manager Runtime ........................ Configured [3.9]
 IBM WebSphere Application Server ............. Not Installed
 Access Manager Web Portal Manager ............ Not Installed


 Installing IBM WebSphere Application Server 4.0.
 ...............................................................................
```

```
IBM Tivoli Access Manager Web Portal Manager
Installation and Configuration
_____________________________________________________________

Product                                          Status
IBM Global Security Toolkit .................... Configured [5.0.4.67]
IBM HTTP Server ............................... Configured [1.3.19]
IBM SecureWay Directory Client ................ Configured [3.2.2.0]
Access Manager Runtime ........................ Installed [3.9]
IBM WebSphere Application Server ............. Configured [4.0]
Access Manager Web Portal Manager ............ Not Installed


Installing IBM Tivoli Access Manager Web Portal Manager. ........


To complete the installation/configuration, the system must be restarted
Press ENTER to continue...
```

s. Press '**Enter**' to restart the system. The installation will then continue once you log in. The runtime environment is configured:

```
 IBM Tivoli Access Manager Web Portal Manager
 Installation and Configuration
 ____________________________________________________________

 Product                                          Status
 IBM Global Security Toolkit .................... Configured [5.0.4.67]
 IBM HTTP Server ............................... Configured [1.3.19]
 IBM SecureWay Directory Client ................ Configured [3.2.2.0]
 Access Manager Runtime ........................ Installed [3.9]
 IBM WebSphere Application Server ............. Configured [4.0]
 Access Manager Web Portal Manager ............ Installed [3.9]


 Configuring IBM Tivoli Access Manager Runtime...
```

```
Starting configuration for PD Web Portal Manager..
Opening registry to update configuration value.
Setting the configuration value to working.
Update Registry succeeded
Start to run WAS command line
Running the command line: …

IBM Tivoli Access Manager Web Portal Manager
Installation and Configuration
_____________________________________________________________

Product                                        Status
IBM Global Security Toolkit ................... Configured [5.0.4.67]
IBM HTTP Server ............................... Configured [1.3.19]
IBM SecureWay Directory Client ................ Configured [3.2.2.0]
Access Manager Runtime ........................ Configured [3.9]
IBM WebSphere Application Server .............. Configured [4.0]
Access Manager Web Portal Manager ............ Configured [3.9]



Ezinstall completed successfully.


Press ENTER to continue...
```

t. When you see the message above the Web Portal Manager is installed and configured. If you have installed the WPM on its own machine as suggested you should be able to test the WPM by point your browser at: **https://hostname:port/pdadmin** . (This would be https://secure2.pic.uk.ibm.com/pdadmin in our case.)

u. If you have other PD components like WebSEAL or other web servers on the same machine you may need to change the default port being used by WebSphere and the HTTP server for the WPM. This process is described in Section 6.14 - Changing Web Portal Manager port numbers (Windows) on Page 88 below.

v. You can verify Web Portal Manager operation as described in Section 6.15 -

Verify Web Portal Manager operation on Page 94 below.

Note: If the Web Portal Manager configuration fails with an error message which says to check if the admin server is started, use Start -> Settings -> Control Panel -> Services (NT), or Start -> Programs -> Administrator Tools -> Services (2000), to ensure that the IBM WS AdminServer is running. If it is not already running, then starting it and then re-running **ezinstall_pdwpm.bat** may help.

6. Native installation process

This section describes the techniques for installing Access Manager and its components without the easy install scripts.

6.1 GSKit installation (Windows)

GSKit (Global Security Kit) is IBM's SSL support library. GSKit needs to be installed on any box which also includes WebSEAL, IBM SecureWay Directory, the Access Manager Servers or Web Portal Manager. If you currently have a version of GSKit installed on your system, verify the version is at **5.0.4.67 or above**. To determine the version you currently have installed, issue the **gskver** command from **C:\Program Files\IBM\gsk5\bin** and check the Product Version that is displayed.

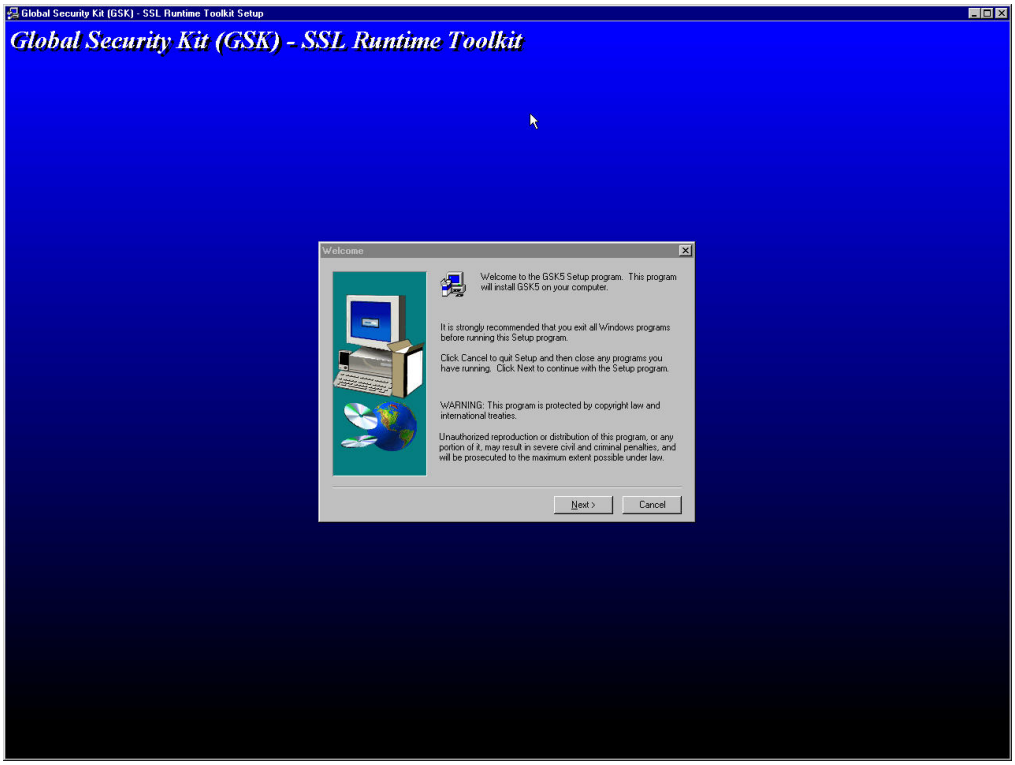
a. Log in to Windows as a user with administrator privileges.

b. Insert the **IBM Tivoli Access Manager Base for Windows Version 3.9** CD.

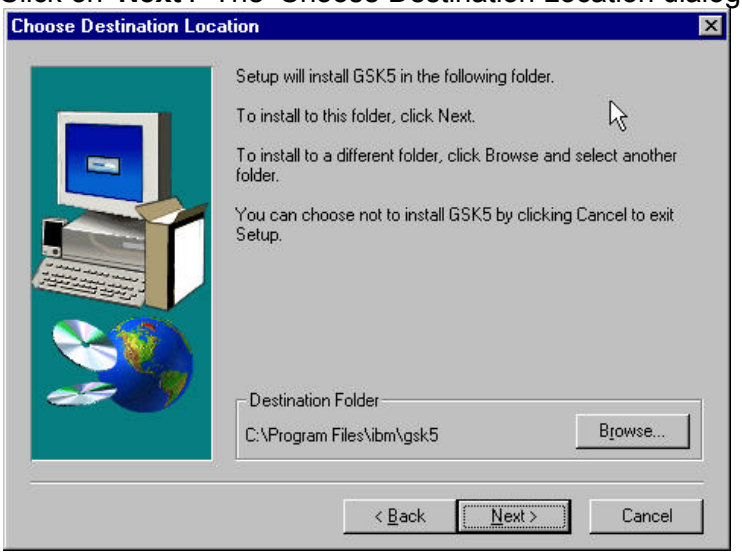
c. Start a command prompt.

d. From the command prompt, change to the `windows\gskit` directory on the drive where the CD is located and enter the following command:
`setup.exe PolicyDirector`

e. The GSKit welcome screen is displayed:



f. Click on '**Next**'. The 'Choose Destination Location dialog box appears:



g. Click on '**Next**'. Files are copied across. Then the 'Setup Complete' dialogue box is displayed:

h. Click on '**Finish**'.

6.2 LDAP Server installation (Windows)

General notes

- In Policy Director Version 3.6 and before, it was necessary to install DB2 with the appropriate fixpacks and a web server separately. This is no longer the case with PD 3.7 and above - they are installed as part of the IBM SecureWay Directory install.
- Note that installation of LDAP Server does not work on a Windows Backup Domain Controller (BDC). The only way we have found to work around this problem is to step down the Primary Domain Controller (PDC) and promote the BDC to a PDC. It is then possible to install the LDAP Server on the new DC.
- You can find additional information on configuring the IBM Directory in the *IBM SecureWay Directory for Windows NT Installation and Configuration guide* – this is on the **IBM Tivoli Access Manager Base for Windows Version 3.9** CD at **\doc\Directory**

a. Uninstall any previous versions of the IBM SecureWay Directory, DB2 and IBM HTTP Server.

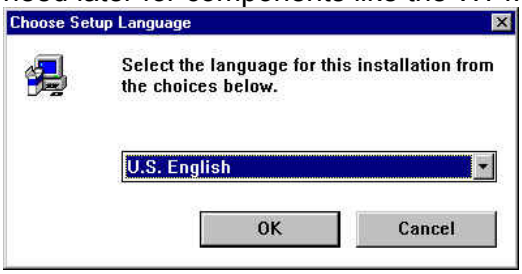
b. If it exists, delete the **\ldapdb2** folder. (There appears to be a problem with installing the SecureWay Directory where there is already a database/instance present.)

c. Ensure that the **db2admin** and **ldapdb2** userids do not exist. (Use Start -> Programs -> Administrative Tools (Common) -> User Manager for Domains to check and, if necessary, remove them.) (As part of the LDAP install there is a silent install of DB2 – however if the **db2admin** userid already exists then there appears to be no mechanism for supplying the **db2admin** password, and a DB2 installation error will result.)

d. If it exists, delete `C:\Program Files\IBM HTTP Server\conf\httpd.conf`.

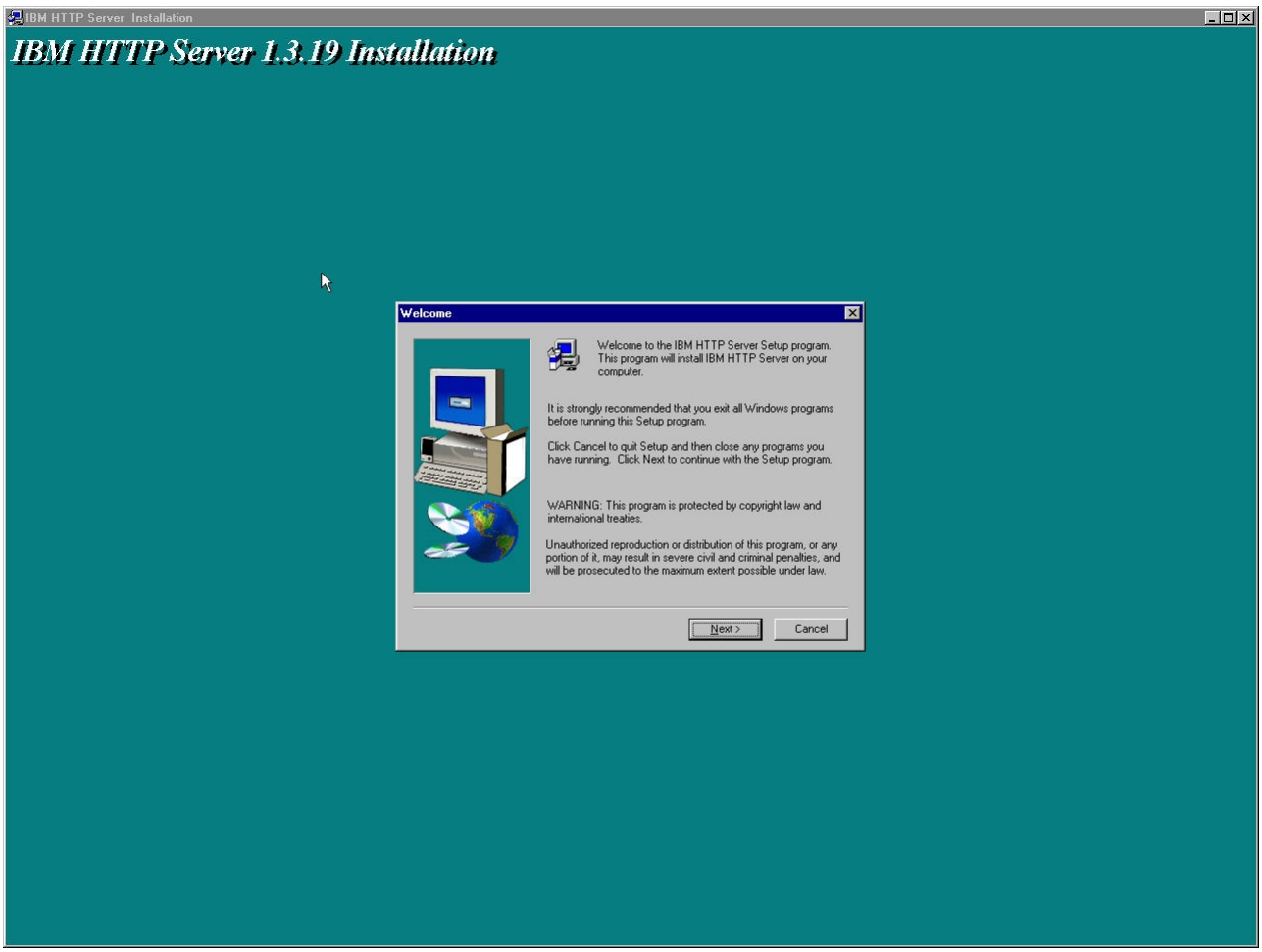
e. Insert the **IBM Tivoli Access Manager Base for Windows Version 3.9** CD.

f. Using 'My Computer' or Windows Explorer find the **\windows\Directory\ldap32_us\ibmhttp** directory on the CD, and double click on **setup.exe**. The 'Choose Setup Language' dialog box appears. (**Note:** we install the HTTP server this way even though you can do it from the Directory install; this is so that you get a complete install with all the SSL libraries that you may need later for components like the WPM.)

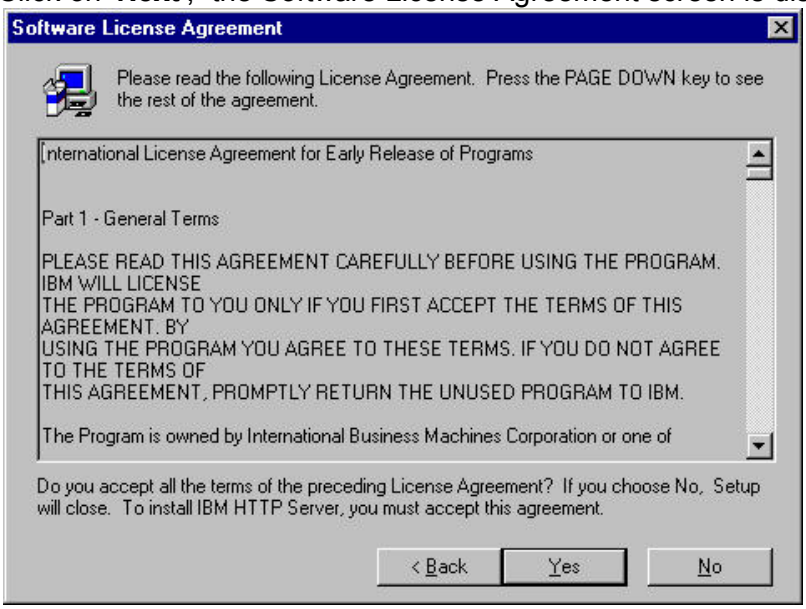


g. Select a language and click on '**OK**'.

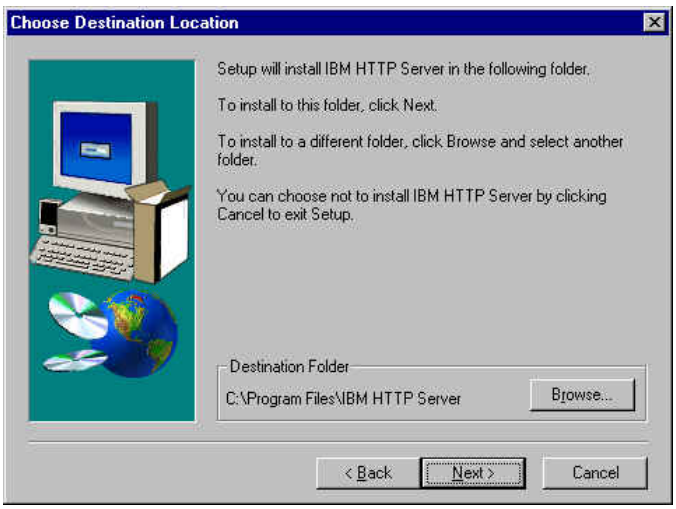
h. The InstallShield runs and the IBM HTTP Server 1.3.19 Welcome screen is displayed:



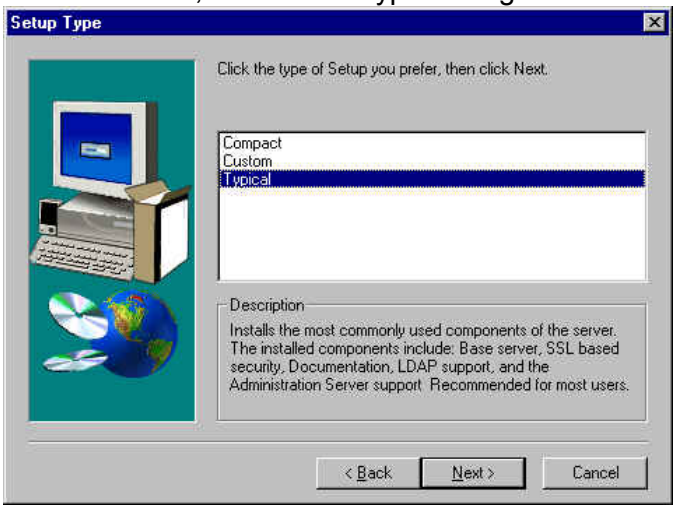
i. Click on '**Next**'; the Software License Agreement screen is displayed:



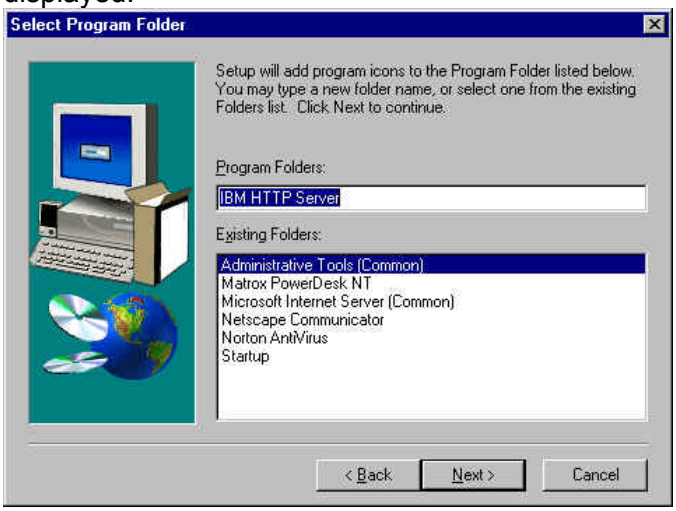
j. Click on '**Yes**'. The Choose Destination Location screen is displayed:



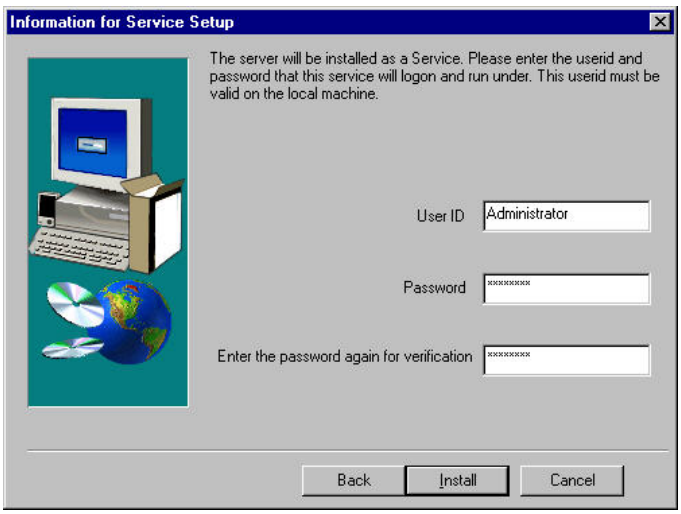
k. Click on '**Next**'; the 'Select Type' dialogue box is displayed:



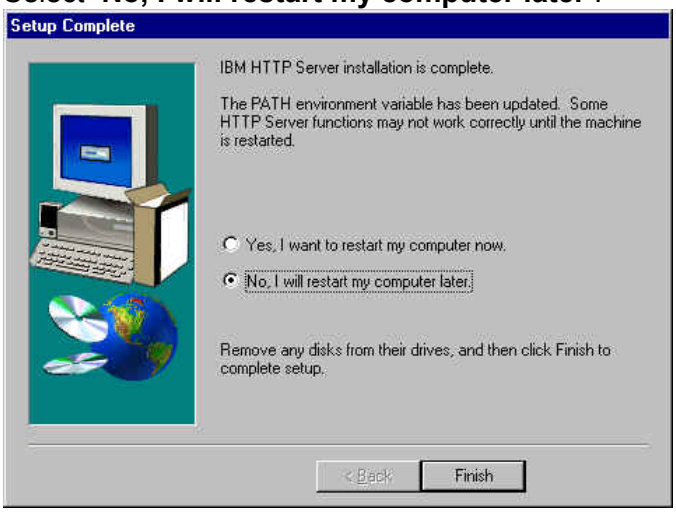
l. Leave 'Typical' selected and click on '**Next**'. The 'Select Program Folder' dialogue box is displayed:



m. Click on '**Next**'. The 'Information for Service Setup' dialogue box is displayed. Enter the Administrator user id and password under which IBM HTTP Server will run:



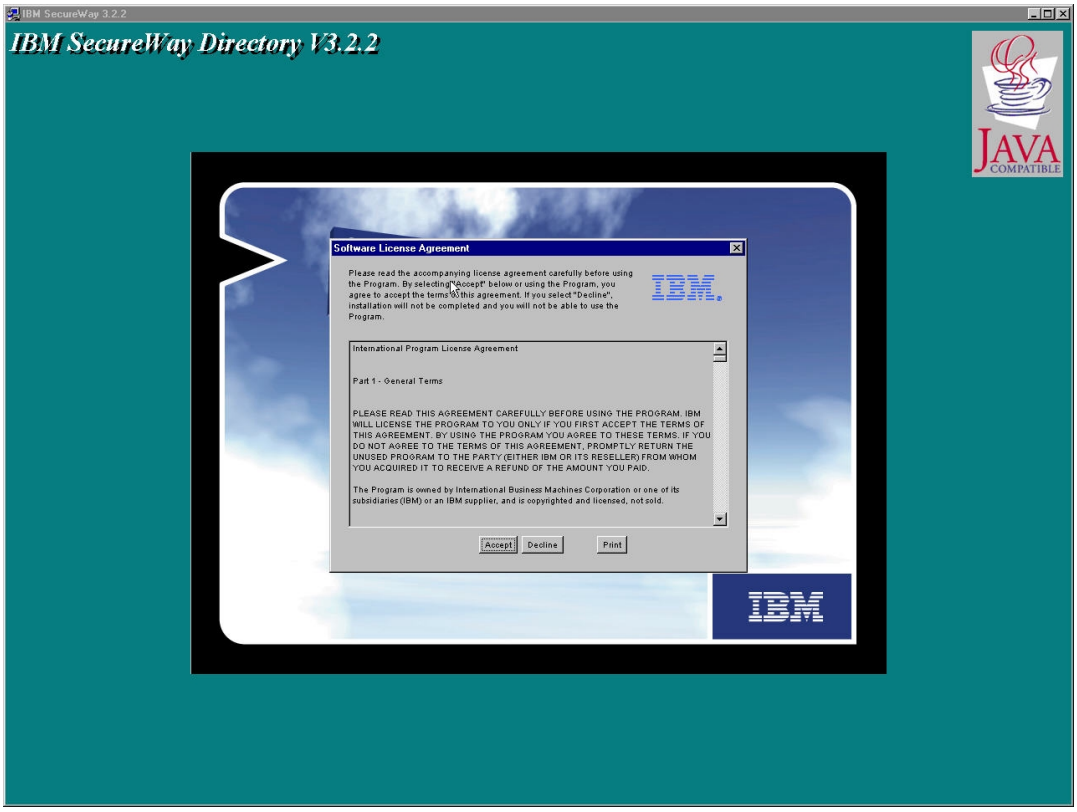
n. Click on '**Install**'. The files are copied across and the 'Setup Complete' panel is displayed. Select **'No, I will restart my computer later'**:



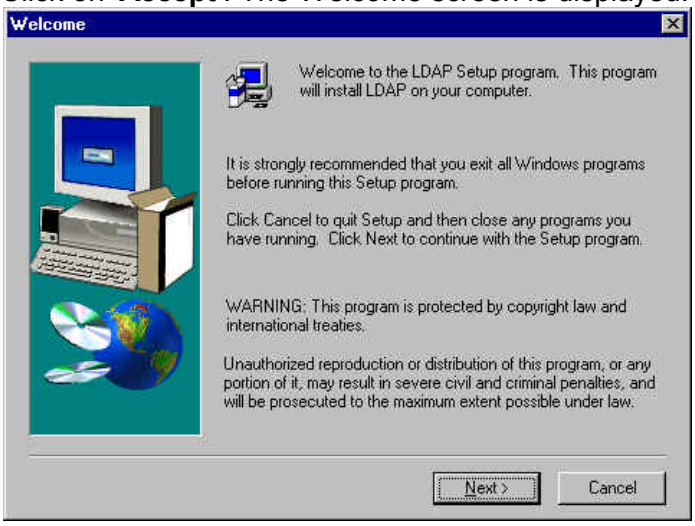
o. Click on '**Finish**'.

p. Using 'My Computer' or Windows Explorer find the **\Windows\Directory\ldap32_us** directory on the CD, and double click on **'setup.exe'**. The 'Choose Setup Language' dialog box appears:

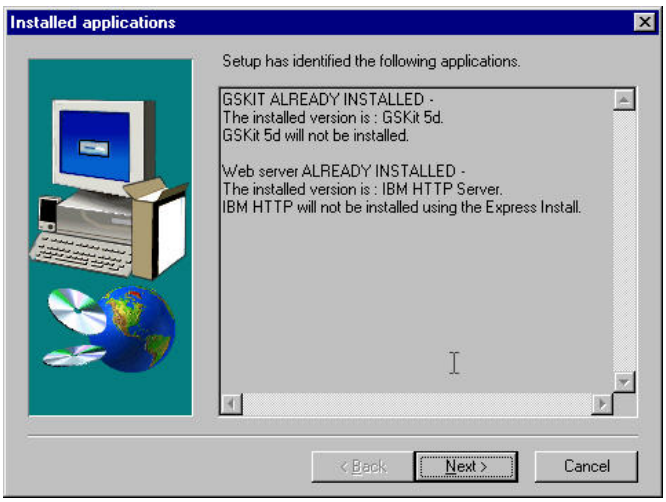
q. Select a language and click on '**OK**'. The InstallShield runs and the IBM Directory V3.2.2 Software License Agreement is displayed:



r. Click on '**Accept**'. The Welcome screen is displayed:

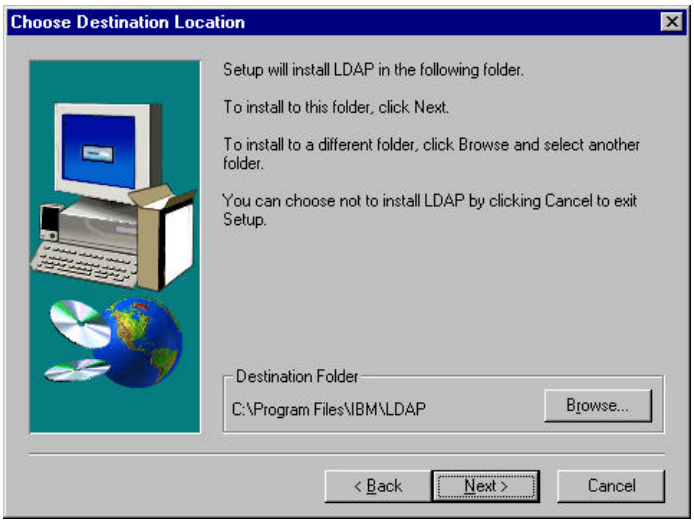


s. Click on '**Next**'. An 'Installed Applications' window will be displayed, warning you that GSKit and a web server are already installed:

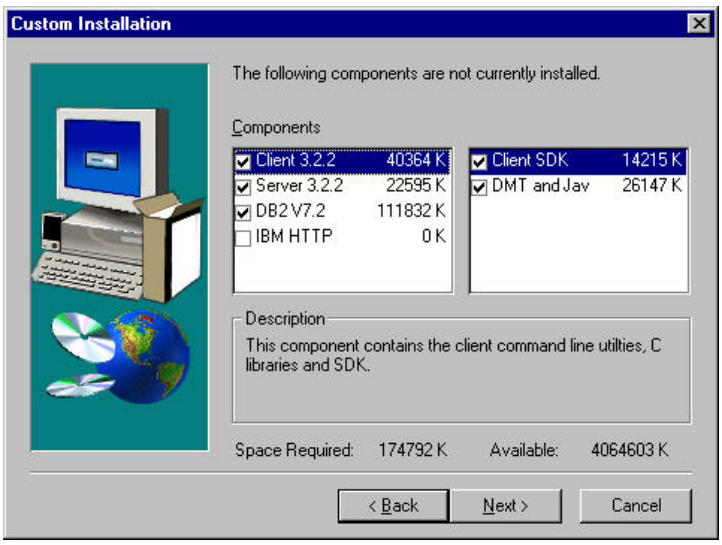


t. Click on '**Next**'. The Select Components panel will be displayed:

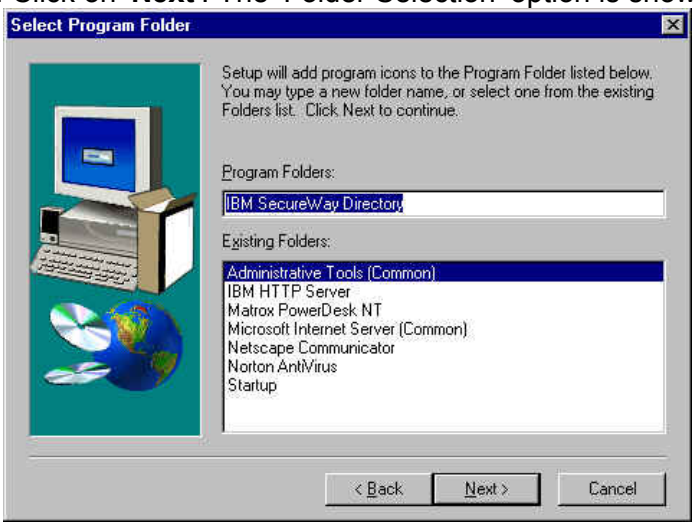
u. Click on '**Custom**'. The 'Choose Destination Location' panel is displayed:



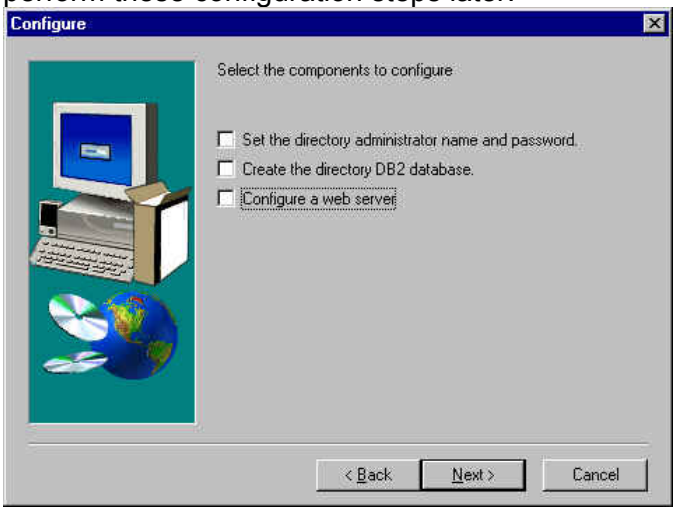
v. Click on '**Next**'. The **'Custom Installation'** panel is displayed. Ensure that the IBM HTTP option is deselected (as we have already installed it):



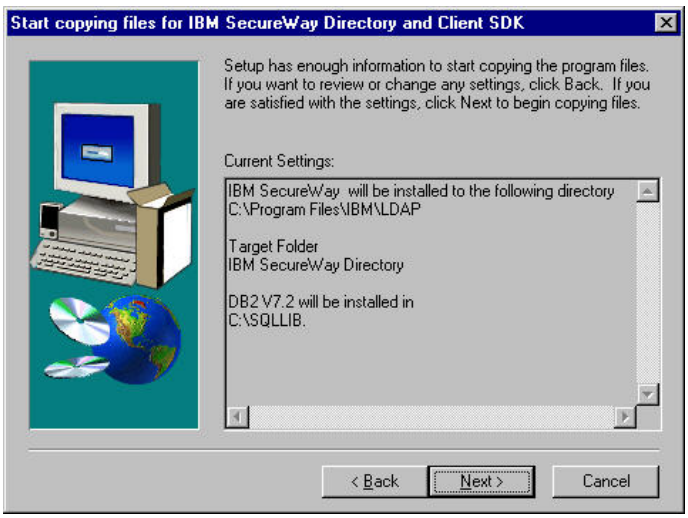
w. Click on '**Next**'. The 'Folder Selection' option is shown:



x. Click on '**Next**'. The 'Configure' dialogue box is displayed. Deselect all the options as we will perform these configuration steps later:



y. Click on '**Next**'. The summary screen is displayed:



z. Review the settings and click on '**Next**'. DB2 is installed and files are copied across. (In the event of a failure of the silent DB2 installation, it is worth referring to the installation log file `C:\DB2LOG\db2.log`.) The 'Readme' panel is displayed and you are invited to view the readme:

aa. Select 'Yes' or 'No' as you feel appropriate.

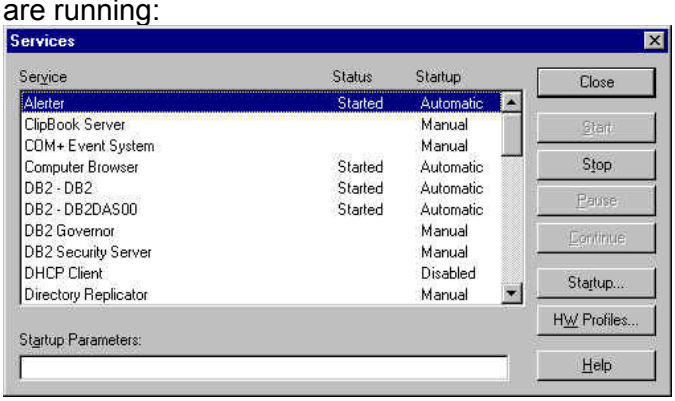
bb. The 'Setup Complete' panel is displayed. Select **'Yes, I want to restart my computer now'**:

cc. Click on '**Finish**'.

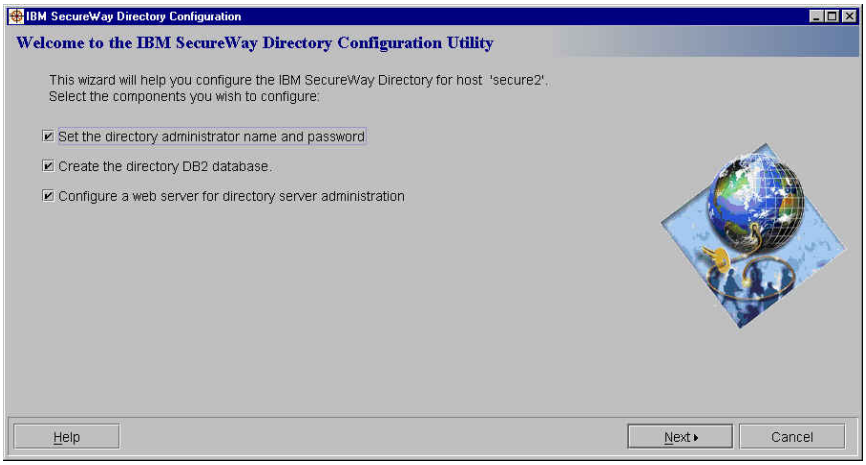
dd. When the system restarts, log in again as the administrator.

6.3 LDAP Server configuration (Windows)

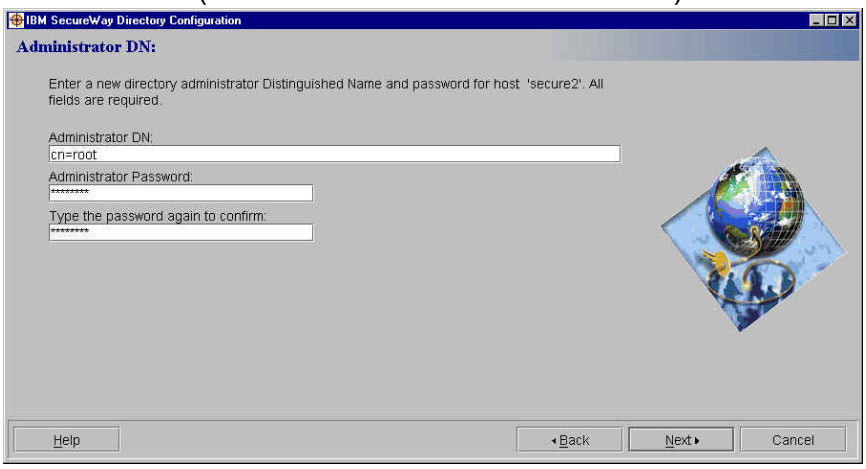
a. Use Start → Settings → Control Panel → Services (NT) or Start → Administrator Tools → Services (Windows 2000) to ensure that DB2 – DB2, DB2 – DB2DAS00 and IBM HTTP Server are running:



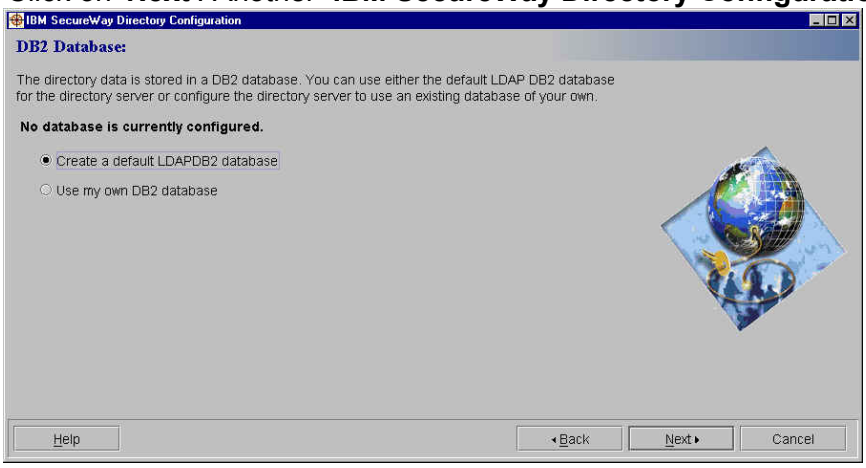
b. Use Start → Programs → IBM SecureWay Directory → Directory Configuration. The IBM SecureWay Directory Configuration Utility will be started. Ensure that all the operations are selected:



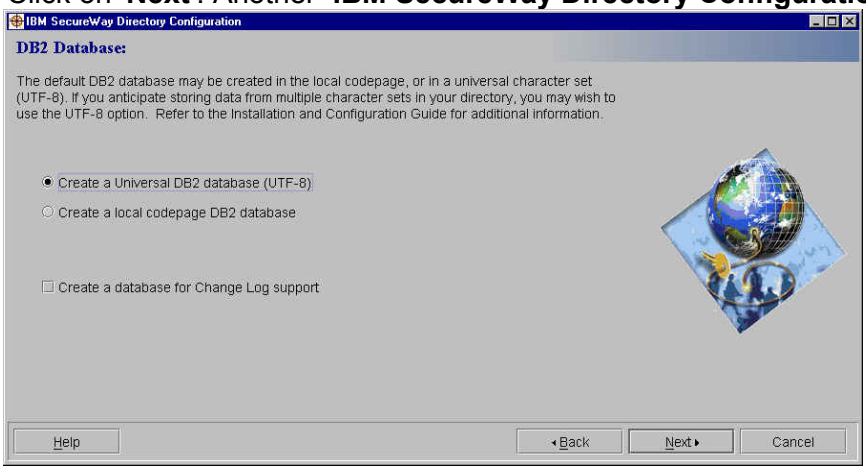
c. Click on '**Next**'. The Directory Configuration panel will be displayed. Enter the Administrator DN and Password (we used `cn=root` and `Secure99`):



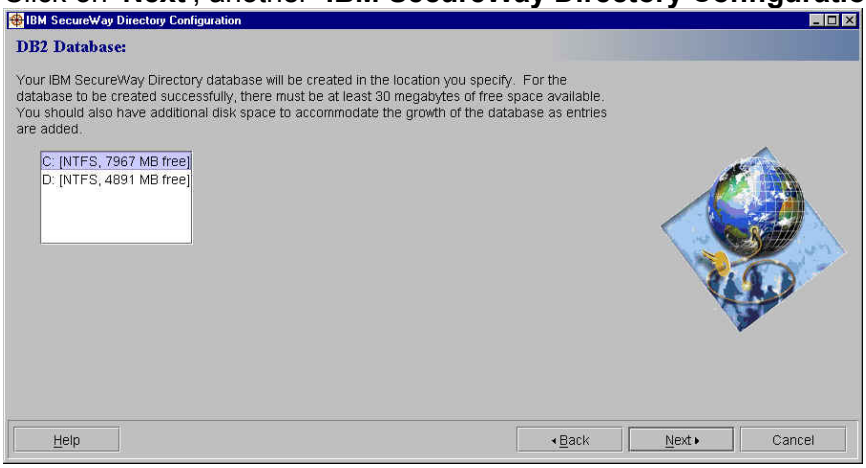
d. Click on '**Next**'. Another **'IBM SecureWay Directory Configuration'** panel will be displayed:



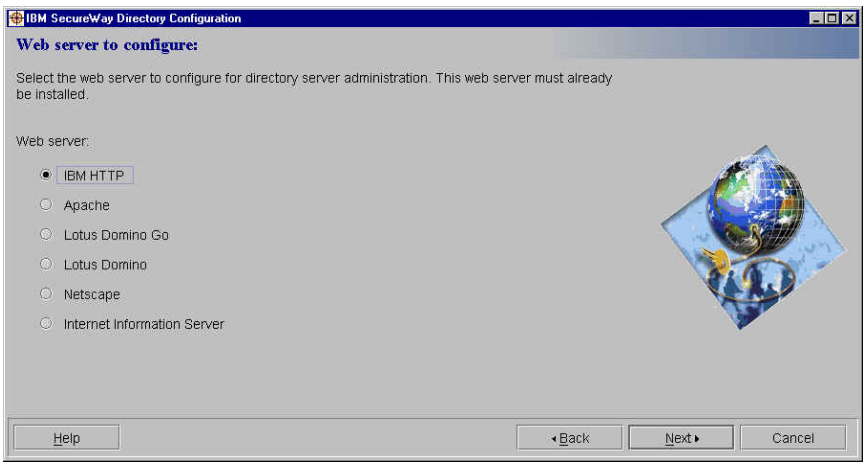
e. Click on '**Next**'. Another **'IBM SecureWay Directory Configuration'** panel will be displayed:



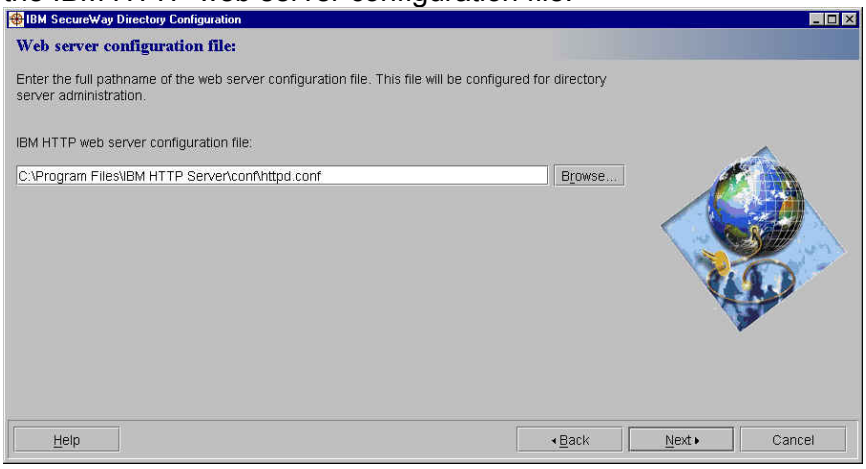
f. (Ensure that you do not enable Change Log support as this will cause a performance impact.) Click on '**Next**'; another **'IBM SecureWay Directory Configuration'** panel will be displayed:



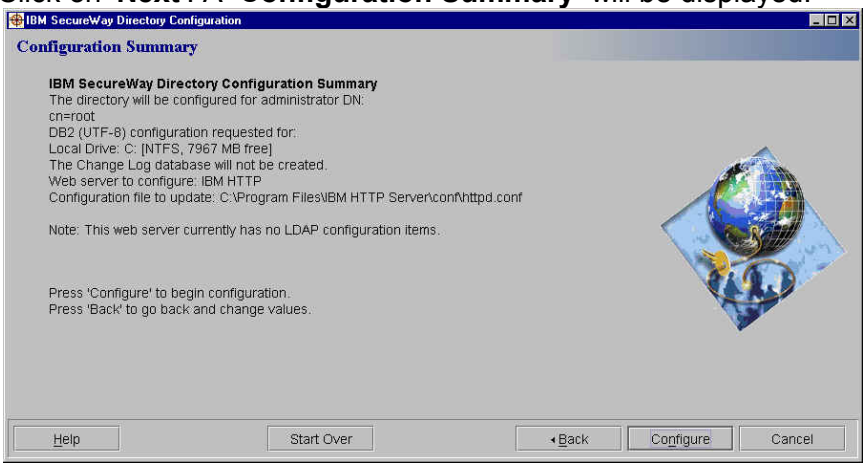
g. Click on '**Next**'. You will be asked which web server you want to configure for directory server administration.



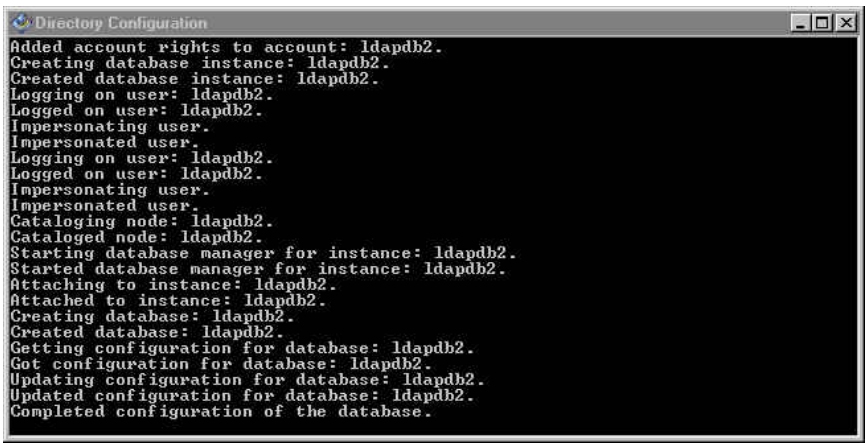
h. Ensure that **'IBM HTTP'** is selected. Click on '**Next**'. You will be prompted about the location of the IBM HTTP web server configuration file:



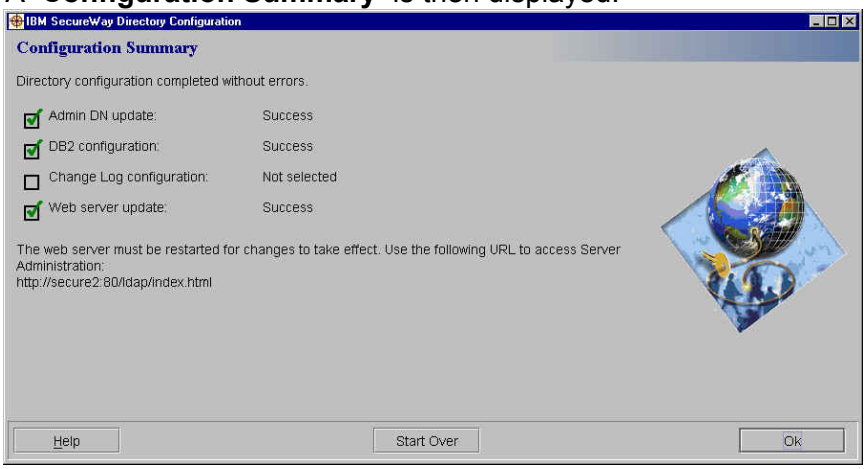
i. Click on '**Next**'. A **'Configuration Summary'** will be displayed:



j. Review the settings and click on **'Configure'**. The background window will start displaying messages regarding creating and configuring the ldapadb2 database:



k. A **'Configuration Summary'** is then displayed:



l. Click on '**OK**'.

m. By default the IBM HTTP Server listens to port 80, the same as WebSEAL. If you are going to install WebSEAL on the same machine, to avoid port conflicts edit the HTTP configuration file, **`httpd.conf`**, by default found in the **`C:\Program Files\IBM HTTP Server\conf`** directory. Locate the port value in the **`httpd.conf`** file and change it from **`Port 80`** to a different port number (we used **`Port 81`**).

n. Use Start -> Settings -> Control Panel -> Services (NT), or Start -> Programs -> Administrator Tools -> Services (2000), to stop and restart IBM HTTP Server for the changes made by the LDAP configuration and the port number change to take effect.

Note: If you have problems with the graphical interface, the LDAP configuration can be performed with the following manual commands:

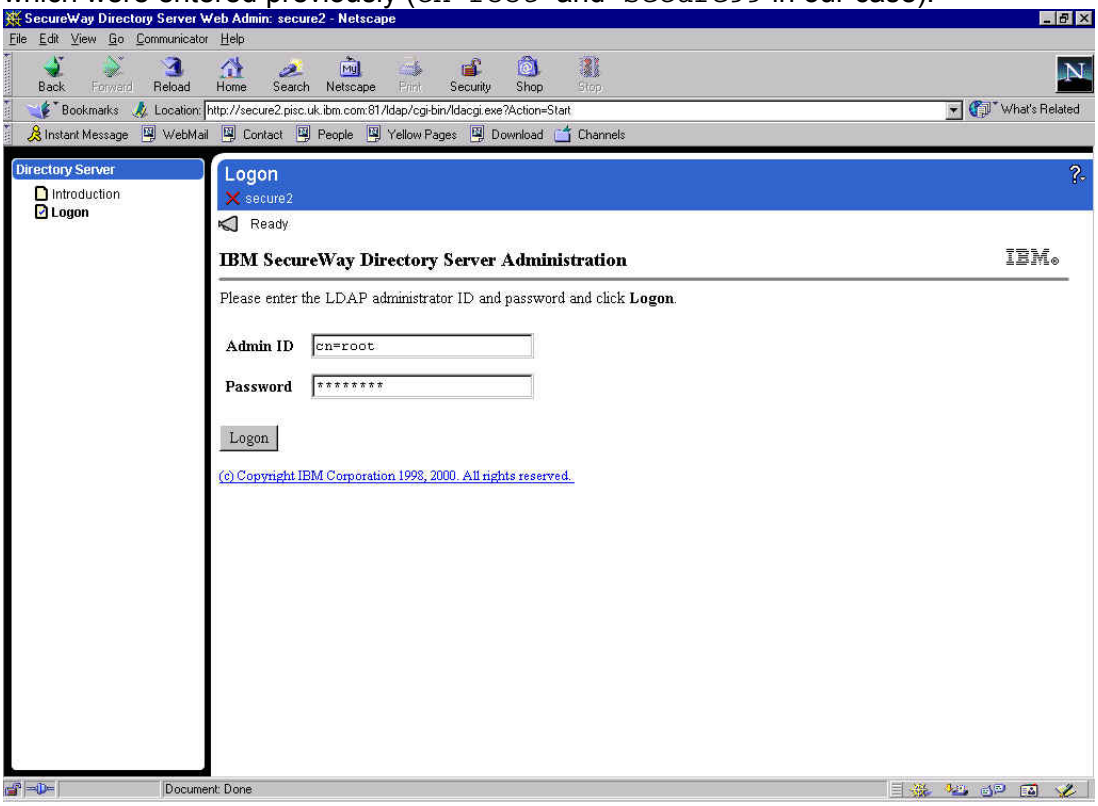
- To configure the LDAP administrator id and password:
  `"C:\Program Files\IBM\LDAP\bin\ldapcfg" -u "cn=root" -p Secure99`

- To configure the IBM HTTP Server for LDAP:
  `"C:\Program Files\IBM\LDAP\bin\ldapcfg" -s ibmhttp -f "C:\Program Files\IBM HTTP Server\conf\httpd.conf"`

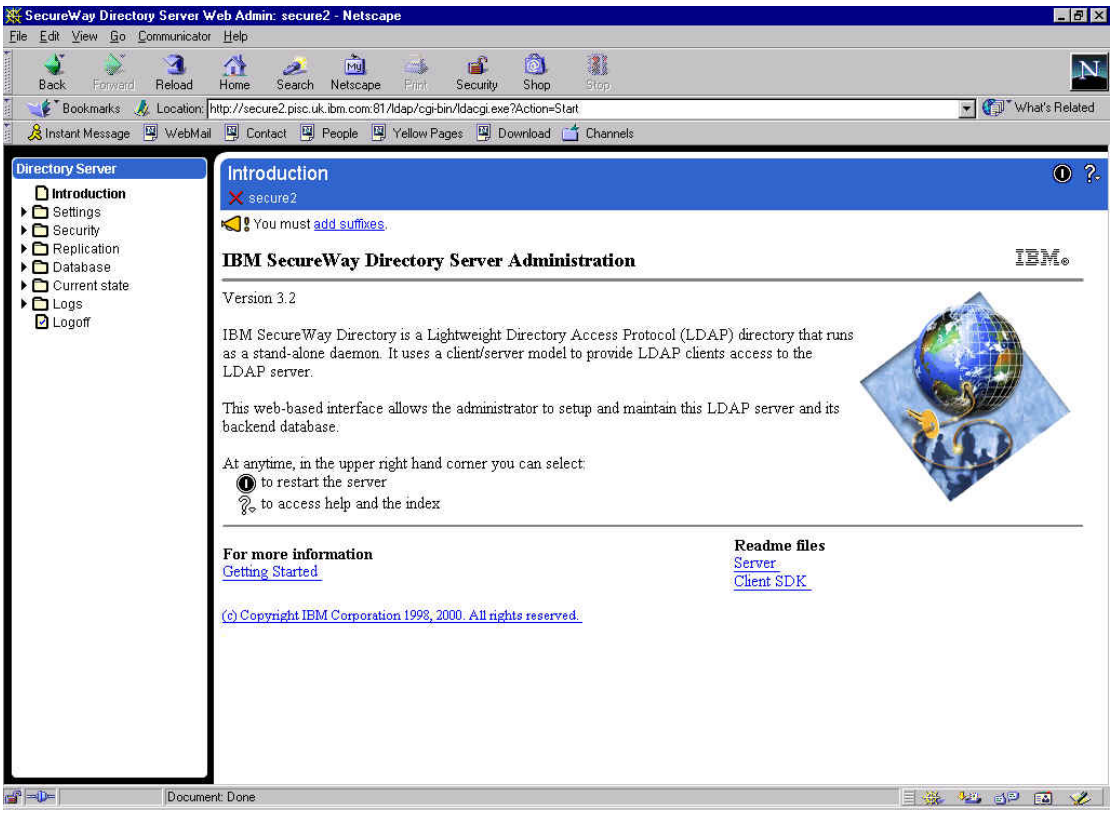
- To configure the default ldapdb2 instance and database:
  `"C:\Program Files\IBM\LDAP\bin\ldapcfg" -l C:`

(or specify any drive that has space for the database)

o. Next, in order to add the suffixes you need to LDAP, point a web browser at **http://*hostname*:*port number*/ldap/index.html** (the port number was `81` in our case). The Directory Server Logon panel is displayed. Enter the LDAP Administrator ID and password which were entered previously (`cn=root` and `Secure99` in our case):

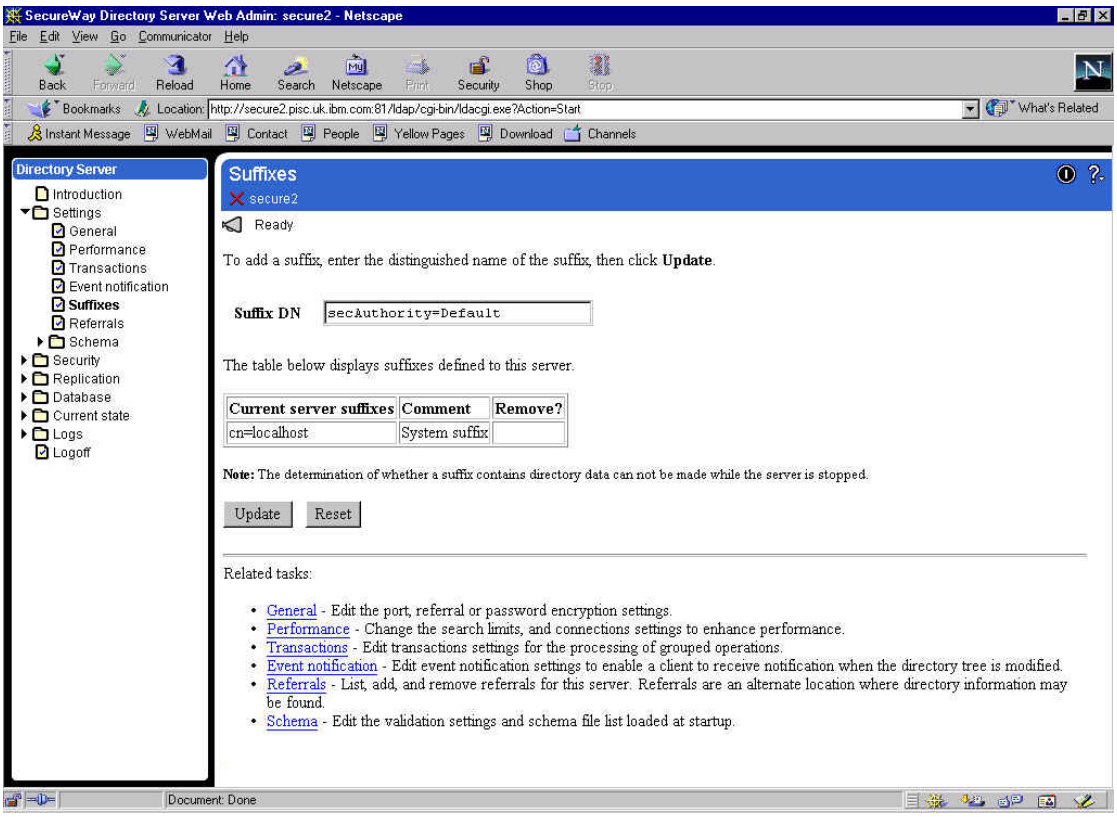


p. Click on '**Logon**'. The **'IBM SecureWay Directory Server Administration'** panel is displayed. It will indicate **'You must add suffixes'** at the top of the screen.



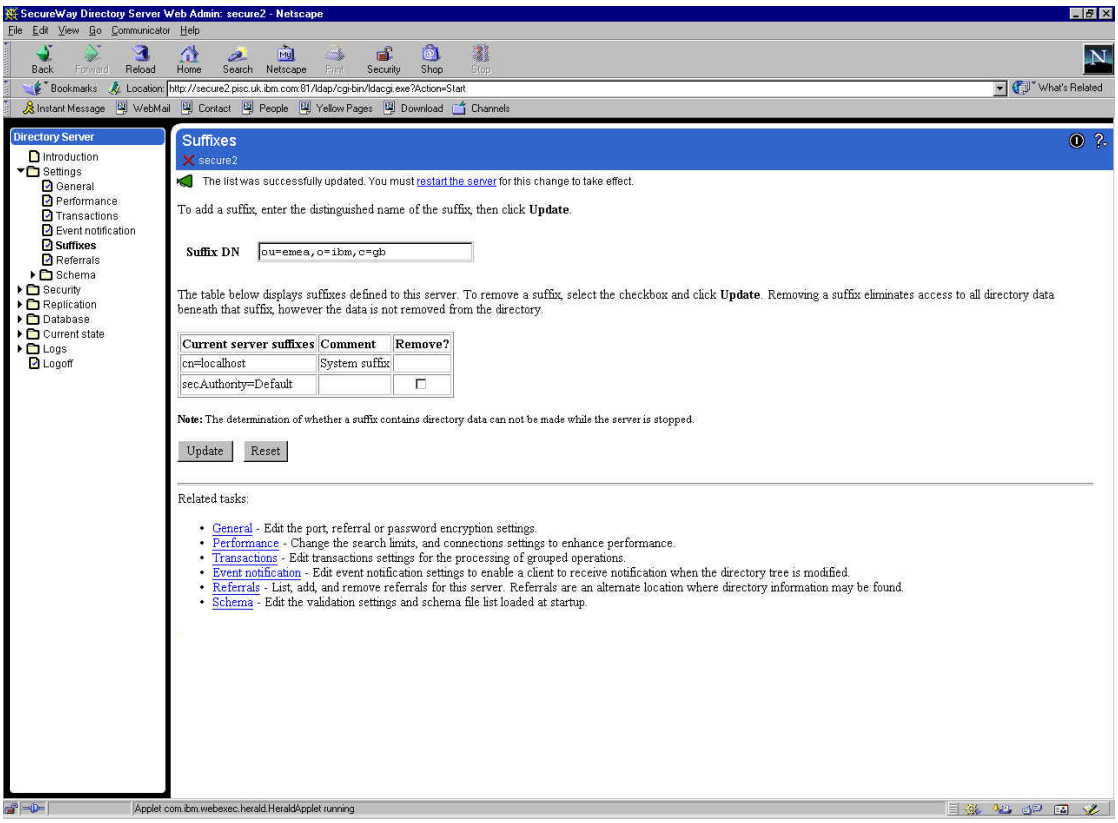
q. (If a message specifies 'You must configure the database' it may mean that one of the earlier installation steps failed. Ensure that the **\ldapdb2** directory was deleted before installing the Directory. Alternatively, try issuing Start → Programs → IBM SecureWay Directory → SecureWay Directory Configuration, and reconfigure the directory web server. This appears to happen sometimes when certain files are left over from a previous DB2/LDAP installation.)

r. Click on **'Add suffixes'**. Enter **secAuthority=Default** in the 'Suffix DN' box. Access Manager requires that you create this suffix which is used to maintain Access Manager metadata. You must add this suffix only once – when you first configure the LDAP server.

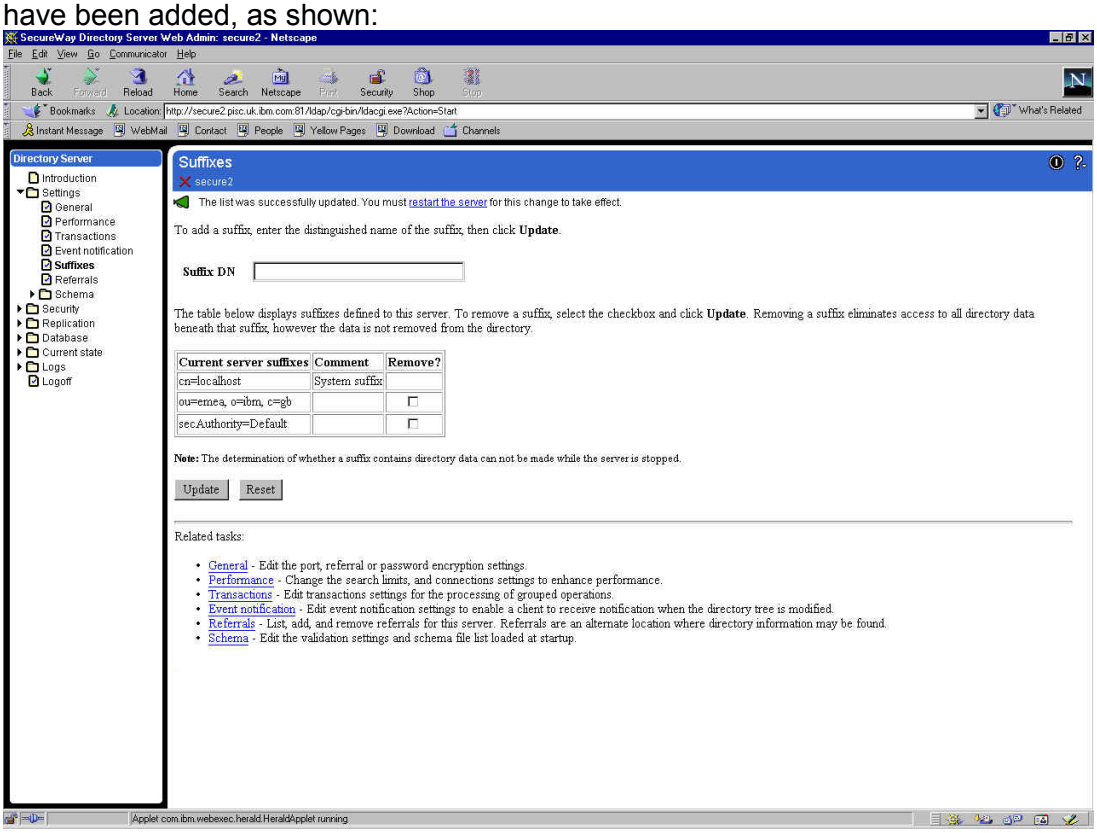


s. Click on '**Update**'. The suffix should be added to the list of 'Current server suffixes' and a message should be displayed stating **'The list was successfully added. You must restart the server for this change to take effect'**.

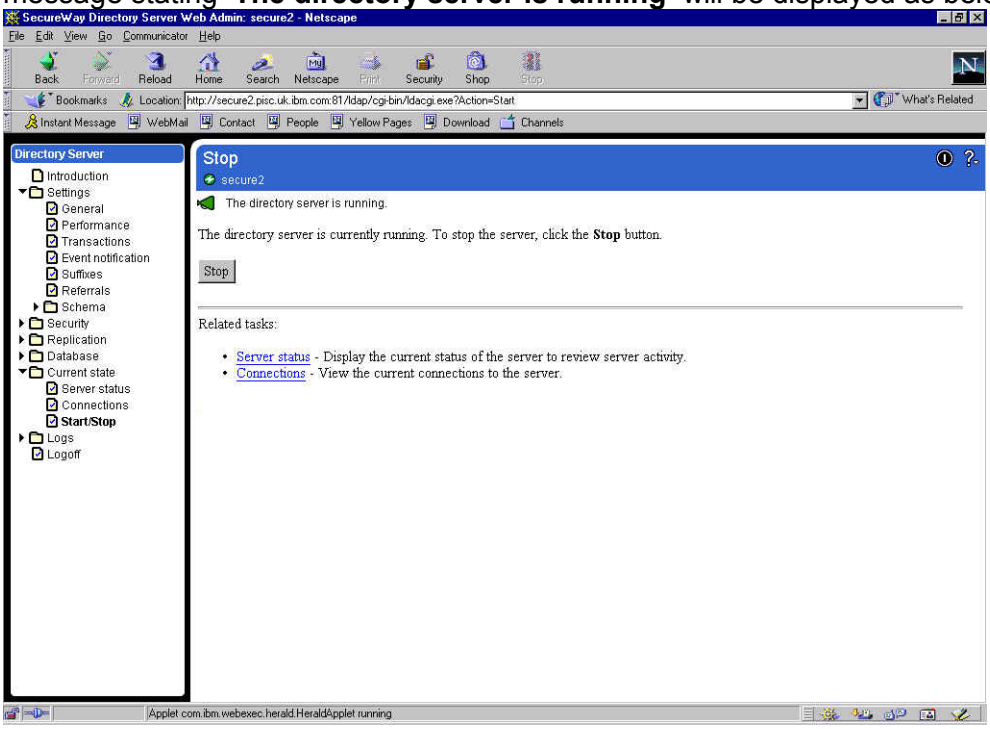
t. Enter a suffix for the Access Manager users and Global Sign-On (GSO) data (for example **ou=emea,o=ibm,c=gb** as shown below, or just **o=ibm,c=gb** as used elsewhere in this document). All the Access Manager resources subsequently defined must sit below the suffix defined here - thus if the country, organization and organizational unit are specified here, all AM resources will have to be held within that organizational unit, whereas if just the country is specified here, all AM resources will merely have to be held within that country. Alternatively it would be possible to specify just a country and organization. Clearly this decision will depend on the directory strategy of the organization in question.



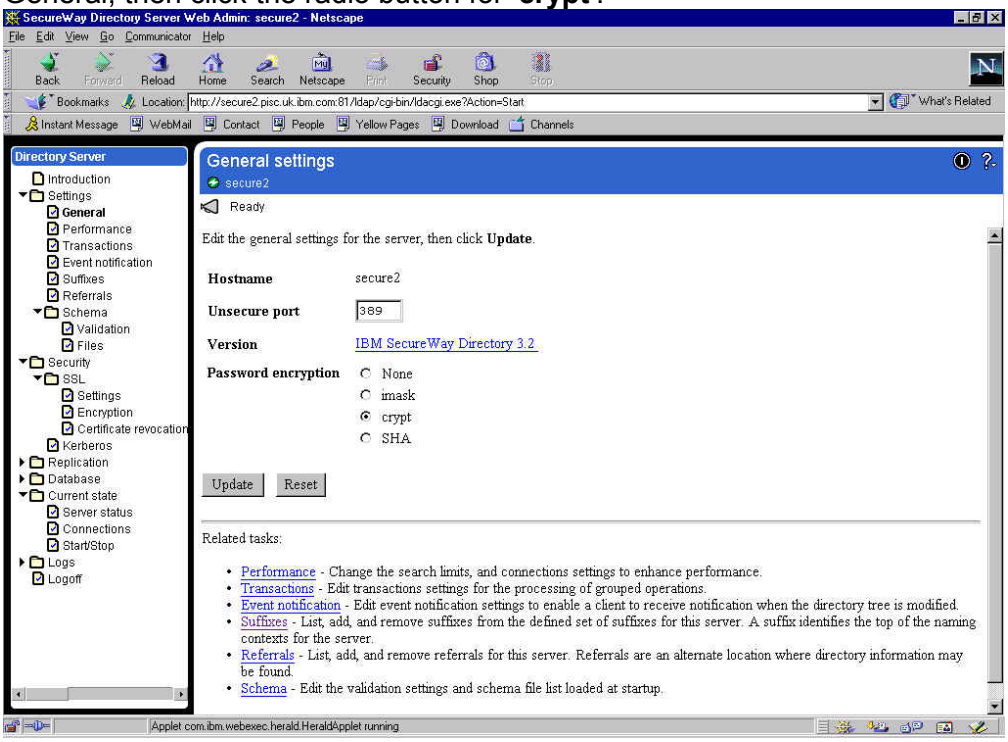
u. Click on '**Update**'. A message should be displayed stating **'The list was successfully updated. You must restart the server for this change to take effect'**, and listing all the suffixes that have been added, as shown:



v. Click on the 'restart the server' link at the top of the page. A message stating **'The directory server is starting'** is displayed. This restart process can take several minutes. Then a message stating **'The directory server is running'** will be displayed as below.



w. You may wish to specify one-way password encryption. To do this, click on Settings → General, then click the radio button for '**crypt**':



x. Then click on '**Update**'. It will display a message: **'The changes were successfully updated. You must restart the server for these changes to take effect'**. Click on 'restart the server' and wait for the server to restart.

y. The web browser is no longer required and may be closed.

If you are unable to run the LDAP Administrative web server…

There have been installations where (for various reasons) it has not been possible to run a web server to perform the LDAP administrative operations. In that case an alternative approach is to edit the configuration file manually. The file in question is:
`C:\Program Files\IBM\LDAP\etc\slapd32.conf`

You can add the suffixes we added above by adding the following lines to `slapd32.conf` Beneath the entry `ibm-slapdSuffix: cn=localhost`:

```
ibm-slapdSuffix: secAuthority=Default
ibm-slapdSuffix: o=ibm, c=gb
```

You can specify one-way password encryption by modifying the `ibm-slapdPwEncryption` line to:

```
ibm-slapdPwEncryption: crypt
```

If the LDAP Server won't start… make sure Active Directory isn't also listening on port 389

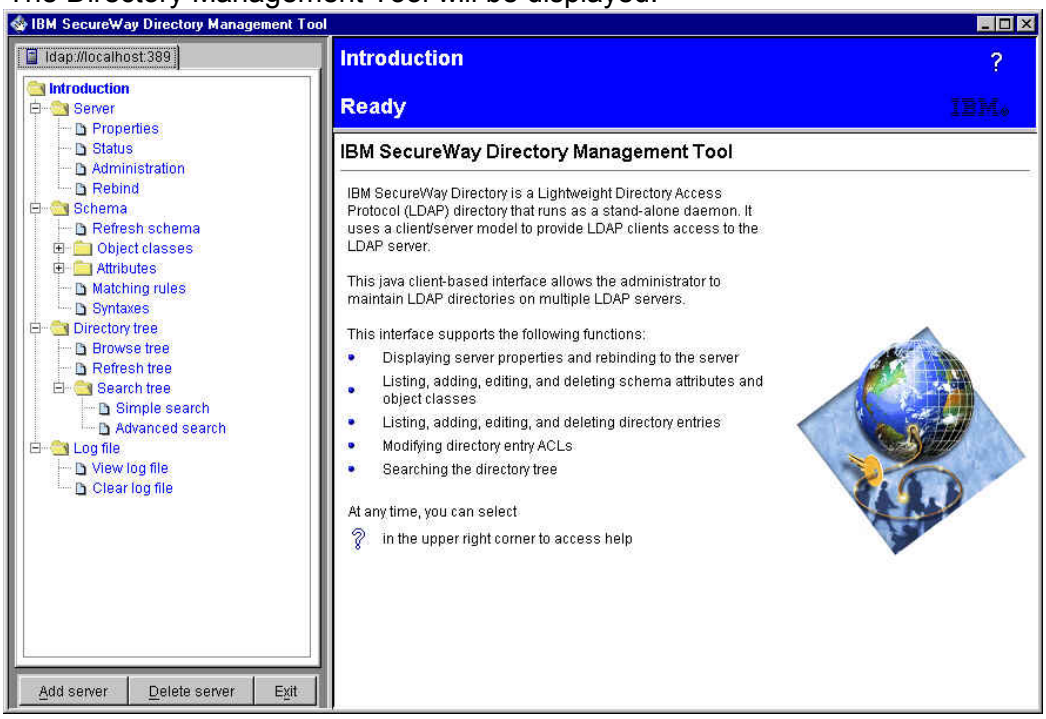
We have seen problems where the DB2 configuration has succeeded, but the LDAP server will not start. Running the LDAP facility indicates that a bind failed with an error code 2.

It turned out that Active Directory was listening on port 389 (the LDAP port), which caused the LDAP configuration to fail. The resolution was to configure LDAP to listen on a port other than 389 (either using the web interface or through editing `slapd32.conf`.)

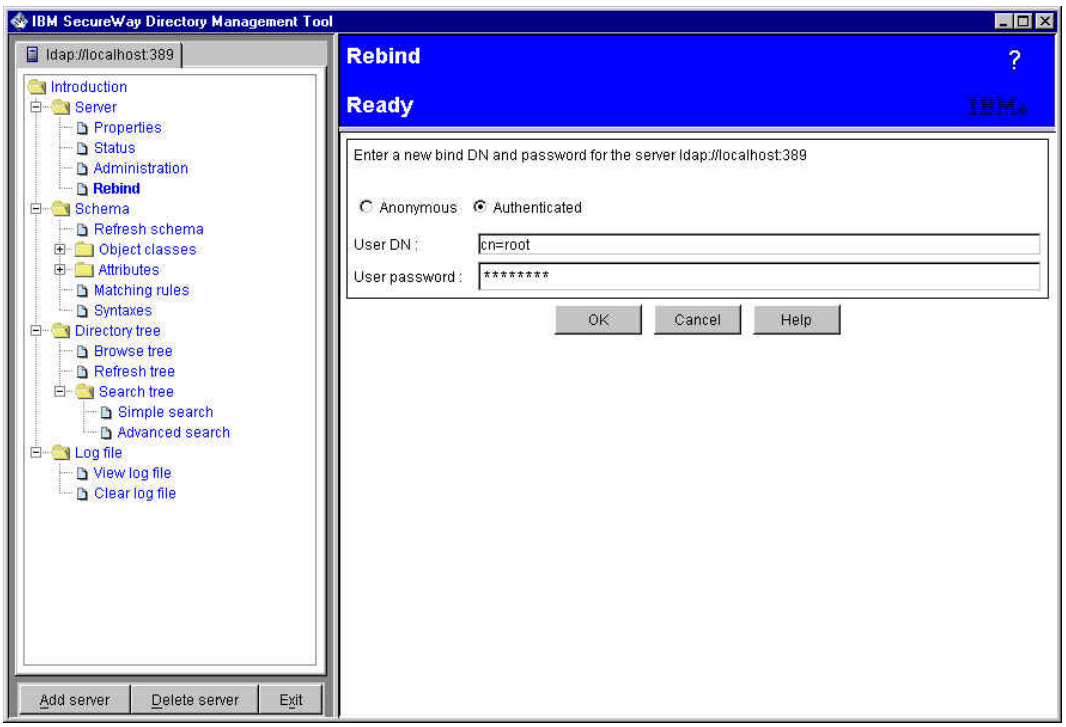
6.4 Directory Management Tool steps

a. Click on Start -> Programs -> IBM SecureWay Directory -> Directory Management Tool

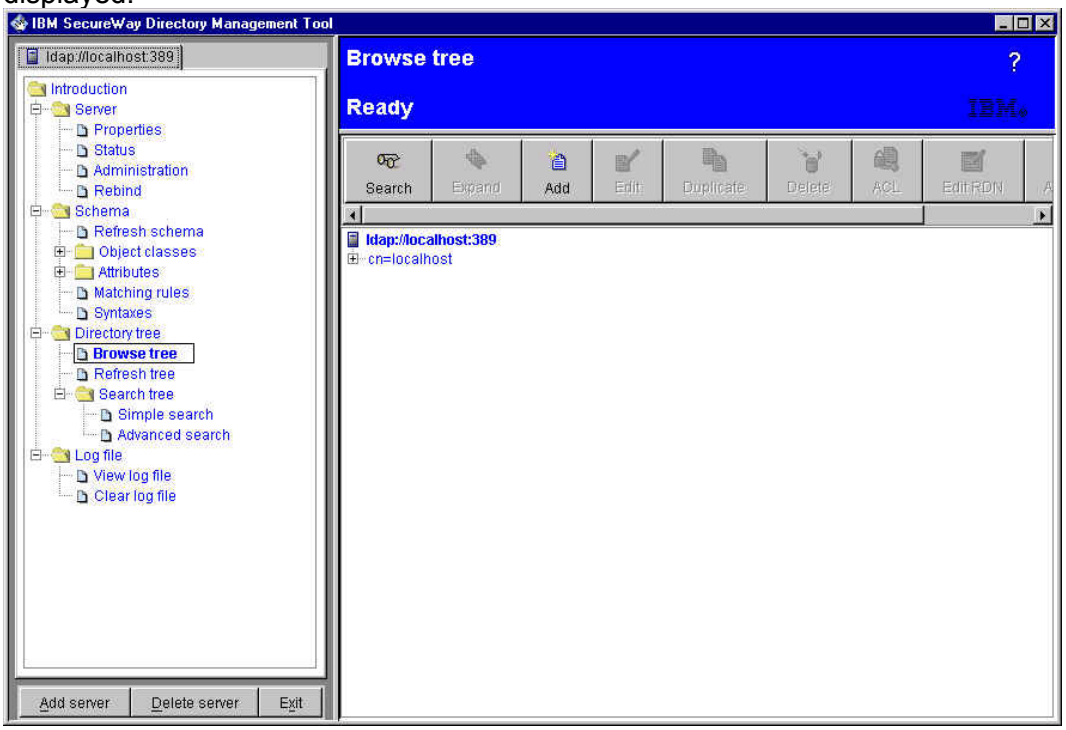
b. The Directory Management Tool will be displayed:



c. Click on **'Rebind'** (listed under 'Server'). A 'Rebind to server' dialogue panel is displayed. Click on **'Authenticated'**, and enter the LDAP Administrator ID and password which were entered previously (`cn=root` and `Secure99` in our case):



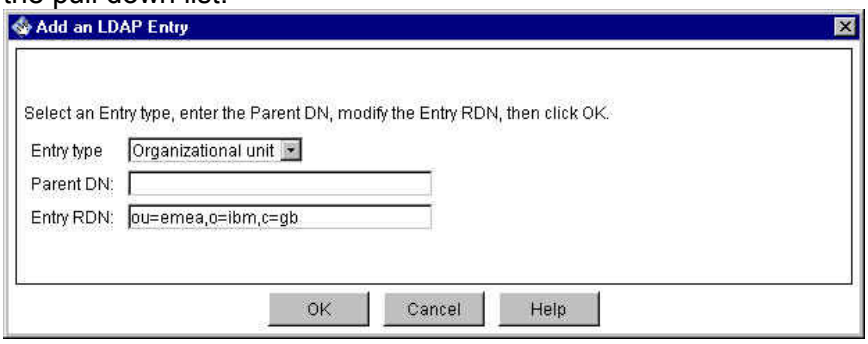
d. Click on **'OK'**. Message panels indicating that certain entries do not contain any data may be displayed. Click on **'OK'** to dismiss these dialogues. The 'Browse directory tree' panel will be displayed:



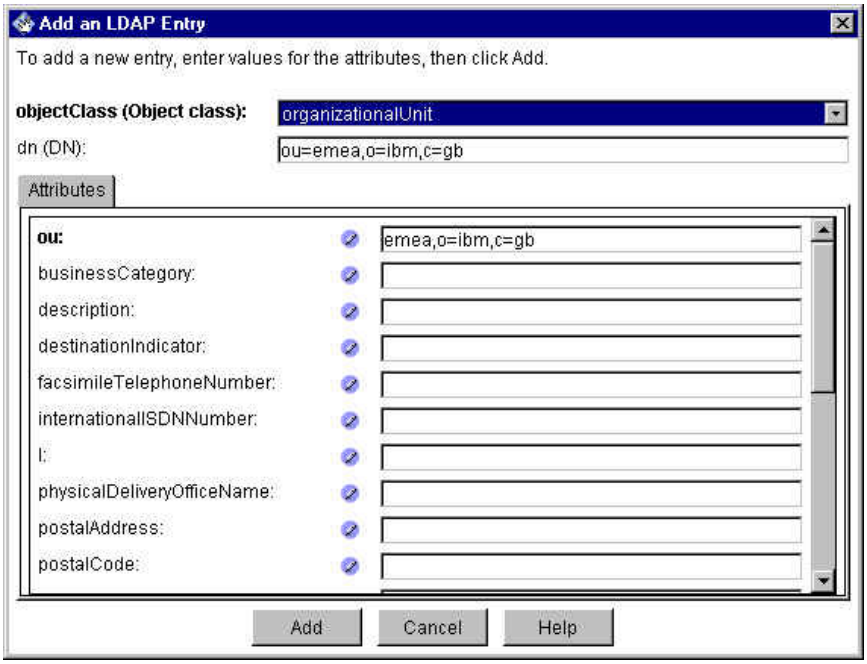
e. Click on '**Add**' in the upper right hand frame. An **'Add an LDAP Entry'** dialogue is displayed. Against **'Entry RDN'**, enter the suffix previously entered for the Access Manager users and Global Sign-On (GSO) data (`ou=emea,o=ibm,c=gb` in our case).

If you have specified an organizational unit (as in our case), select Select 'Organizational unit' as

the entry type in the pull down list.
If you have specified an Organization (such as **o=ibm,c=gb**), select Select 'Organization' as the entry type in the pull down list.
If you have specified just a Country (such as **c=gb**), select Select 'Country' as the entry type in the pull down list.



f. Click on **'OK'**:



g. Click on '**Add**'. A warning will be displayed indicating that "secAuthority=Default" does not contain any data – click on '**OK**' to dismiss this.

h. The entry which has just been added will be displayed:

i. The Directory Management Tool is no longer required and can be closed.

j. The LDAP Configuration is now complete.

6.5 Install IBM SecureWay Directory Version 3.2.2 e-fix 2

a. Download the Readme and code for the IBM SecureWay Directory Version 3.2.2 e-fix 2 from http://www.ibm.com/software/network/directory/support/fixes/

b. Review the contents of the Readme.

c. Issue an `ldapsearch` or use the Directory Management Tool to ensure that LDAP is operating correctly.

d. Use Start → Settings → Control Panel → Services (NT) or Start → Administrator Tools → Services (Windows 2000) to stop the **IBM SecureWay Directory V3.2.2** service.

e. You may like to back up the LDAP install directory – this is `C:\Program Files\IBM\LDAP` by default.

f. Unzip `3.2.2-SWD-002-WIN.zip` to a temporary directory – we used `C:\Temp\ldapfix2`

g. Copy the files from the temporary directory to the LDAP install directory - the output should look similar to the following:

```
C:\>cd "\Program Files\IBM\LDAP"

C:\Program Files\IBM\LDAP>xcopy c:\temp\ldapfix2\* /s
C:\temp\ldapfix2\WIN128-2.pdf
C:\temp\ldapfix2\WIN128-2.txt
C:\temp\ldapfix2\bin\bulkload.exe
C:\temp\ldapfix2\bin\db2ldif.exe
C:\temp\ldapfix2\bin\dmt.exe
C:\temp\ldapfix2\bin\dmtnt.dll
C:\temp\ldapfix2\bin\ldacfg.dll
C:\temp\ldapfix2\bin\ldamsg.exe
C:\temp\ldapfix2\bin\ldap.dll
C:\temp\ldapfix2\bin\ldapadd.exe
C:\temp\ldapfix2\bin\ldapdelete.exe
C:\temp\ldapfix2\bin\ldapmodify.exe
C:\temp\ldapfix2\bin\ldapmodrdn.exe
C:\temp\ldapfix2\bin\ldapsearch.exe
C:\temp\ldapfix2\bin\ldap_plugin_ibm_gsskrb.dll
C:\temp\ldapfix2\bin\ldif.exe
C:\temp\ldapfix2\bin\ldif2db.exe
C:\temp\ldapfix2\bin\libadmin.dll
C:\temp\ldapfix2\bin\libback-rdbm.dll
C:\temp\ldapfix2\bin\libcl.dll
C:\temp\ldapfix2\bin\libldapaudit.dll
C:\temp\ldapfix2\bin\libslapi.dll
C:\temp\ldapfix2\bin\libutils.dll
C:\temp\ldapfix2\bin\libutlsa.dll
C:\temp\ldapfix2\bin\ltou.exe
C:\temp\ldapfix2\bin\miglen.exe
C:\temp\ldapfix2\bin\runstats.exe
C:\temp\ldapfix2\bin\slapd.exe
C:\temp\ldapfix2\bin\task_dbback.exe
C:\temp\ldapfix2\bin\utol.exe
C:\temp\ldapfix2\config\LDAPCfg.jar
C:\temp\ldapfix2\include\ldapssl.h
C:\temp\ldapfix2\lib\ldap.lib
C:\temp\ldapfix2\lib\ldapstatic.lib
C:\temp\ldapfix2\lib\libldif.lib
C:\temp\ldapfix2\lib\libslapi.lib
C:\temp\ldapfix2\web\cgi-bin\ldacgi.exe
```

```
C:\temp\ldapfix2\web\cgi-bin\ldacgi3.exe
C:\temp\ldapfix2\web\readme\buildno.txt
39 File(s) copied

C:\Program Files\IBM\LDAP>
```

h. Verify that the new file sizes match those specified in the Readme.

i. Use Start → Settings → Control Panel → Services (NT) or Start → Administrator Tools → Services (Windows 2000) to start the **IBM SecureWay Directory V3.2.2** service.

j. Issue an `ldapsearch` or use the Directory Management Tool to ensure that LDAP is operating correctly.

6.6 Update the DB2 License key

a. Download the DB2 license key file from http://www-internal.tivoli.com/secure/support/downloads/secureway/policy_dir/am3.9/db2lic.html (internal) or http://www.tivoli.com/secure/support/downloads/secureway/policy_dir/am3.9/db2lic.html (external).

b. Start a command prompt.

c. Change to the DB2 bin directory – this is `C:\SQLLIB\bin` by default.

d. Issue the command **`db2licm`** ***`directory`*****`\db2udbpe.lic`** where ***`directory`*** indicates where the DB2 license key file has been placed.

e. The output should look similar to the following:

```
C:\>cd\sqllib\bin

C:\SQLLIB\bin>db2licm C:\temp\db2udbpe.lic
 DBI1402I License added successfully.

C:\SQLLIB\bin>
```

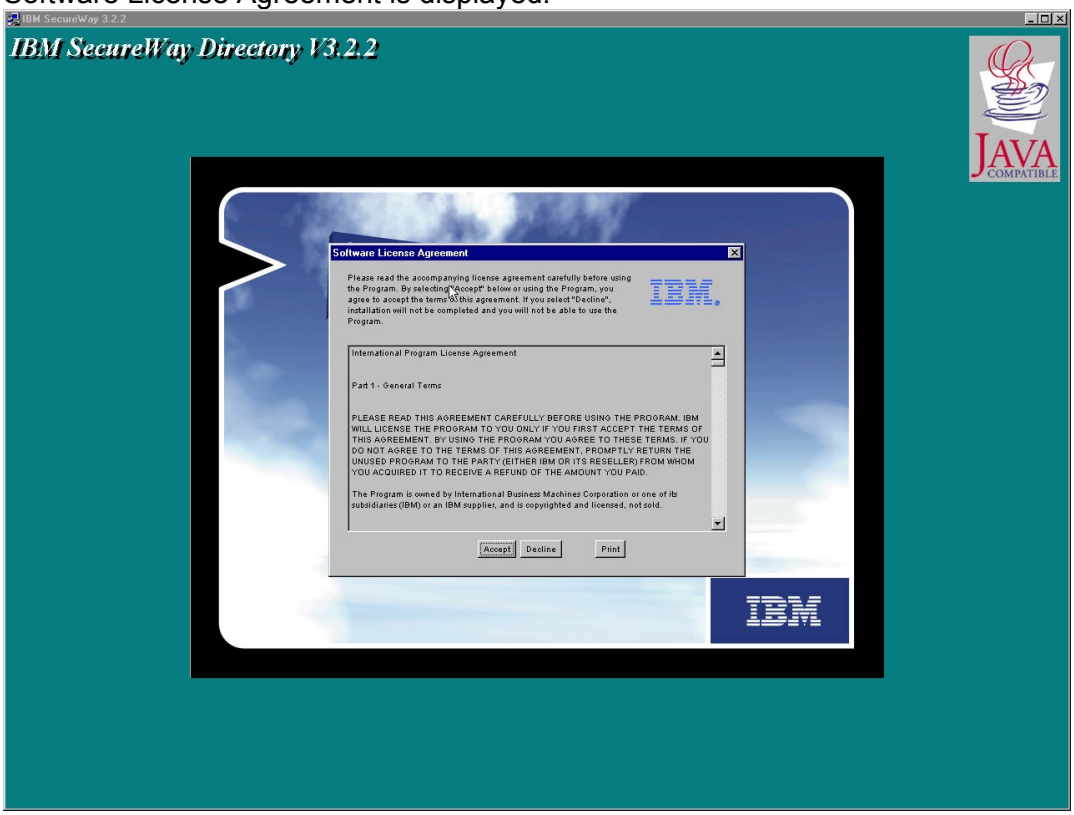
6.7 LDAP Client installation (Windows)

This sequence of steps should be followed on a box requiring connectivity to a LDAP Server but not running a LDAP Server. (The LDAP Client is a requisite of the PDRTE.)

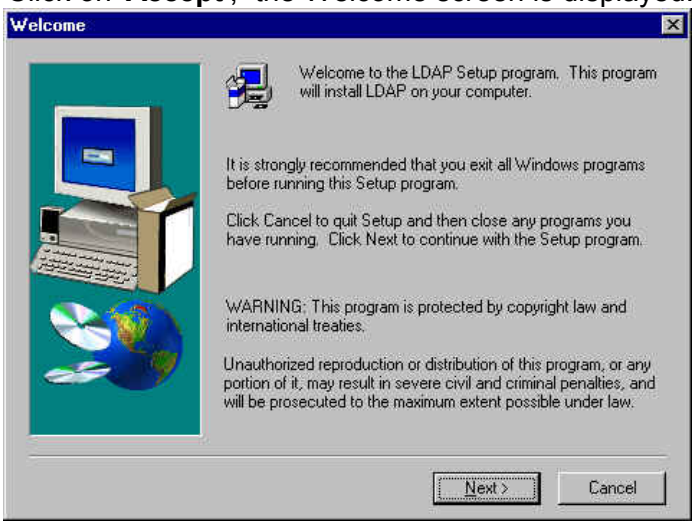
a. Insert the **IBM Tivoli Access Manager Base for Windows Version 3.9** CD.

b. Using 'My Computer' or Windows Explorer find the **\windows\Directory\ldap32_us** directory on the CD, and double click on **setup.exe**. The 'Choose Setup Language' dialog box appears:

c. Select a language and click on '**OK**'. The InstallShield runs and the IBM Directory V3.2.2 Software License Agreement is displayed:

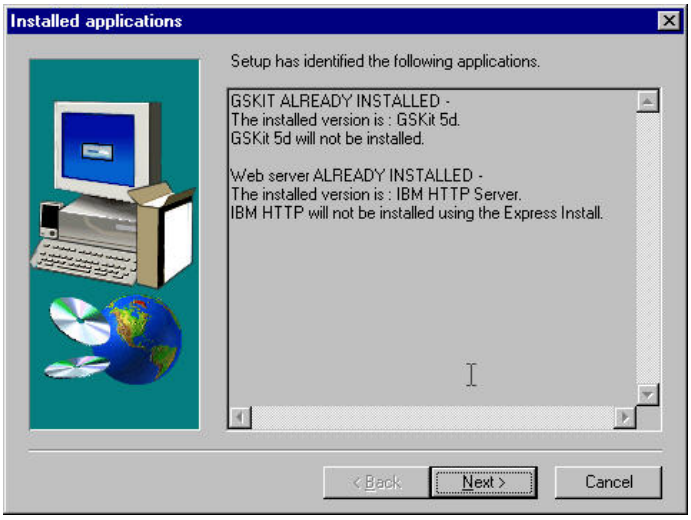


d. Click on '**Accept**'; the Welcome screen is displayed:



e. Click on '**Next**'. An 'Installed Applications' window will be displayed, warning you that a more

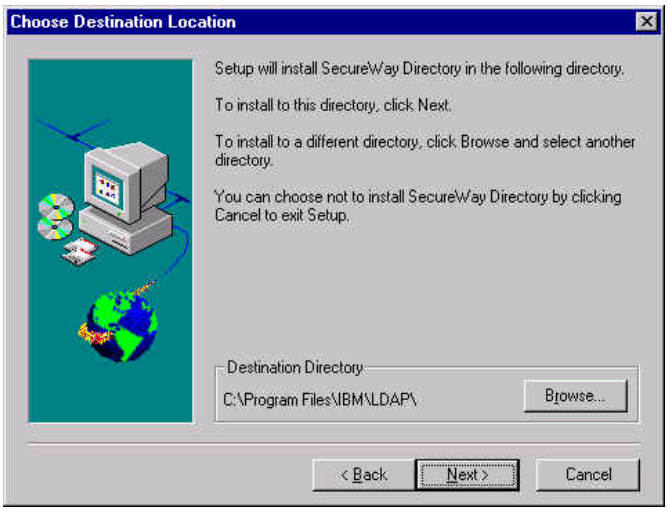
recent version of GSKit is installed:



[what you see here will depend on exactly what you already have installed]

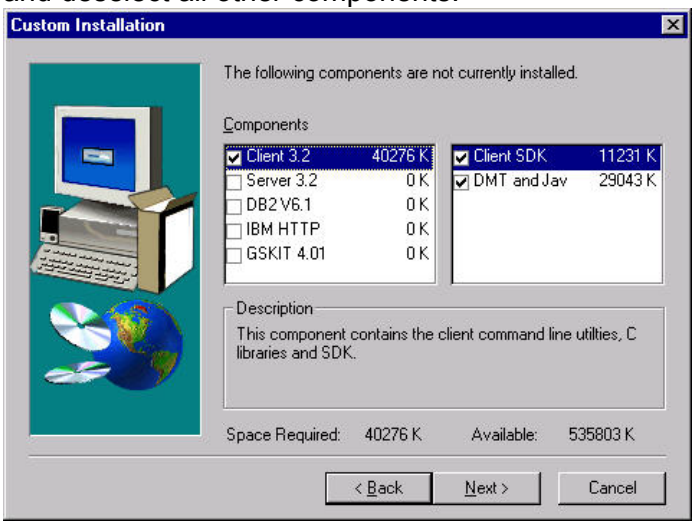
f. Click on '**Next**'. The Select Components panel will be displayed:

g. Click on '**Custom**'. The **'Choose Destination Location'** panel is displayed:

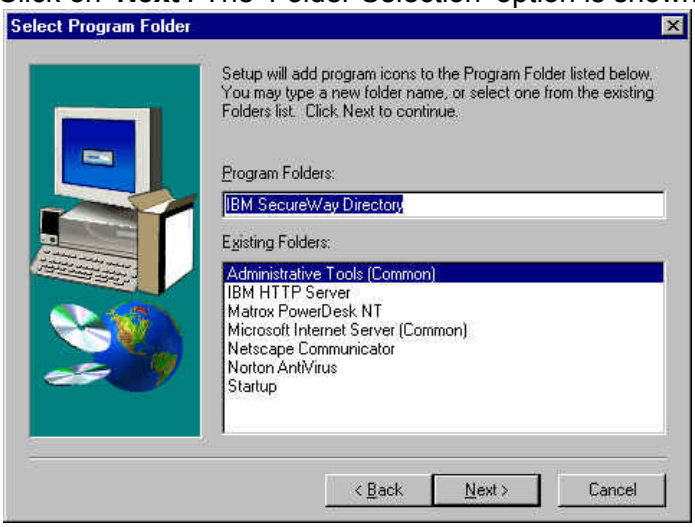


h. Click on '**Next**'. The 'Custom Installation' panel is displayed. Select only the Client component,

and deselect all other components:



i. Click on '**Next**'. The 'Folder Selection' option is shown:

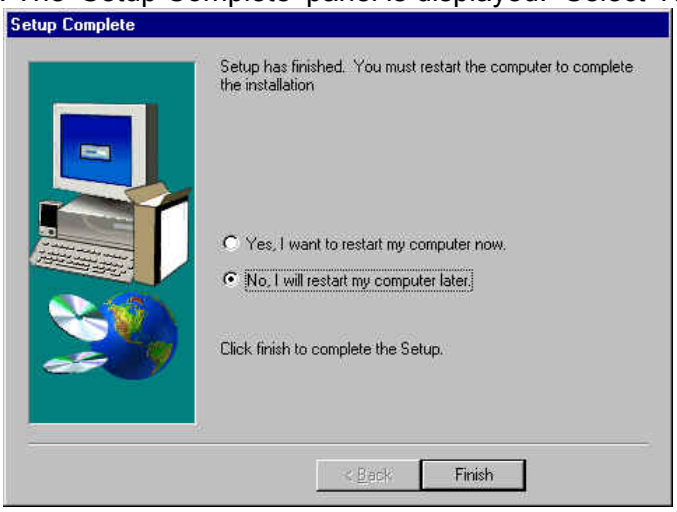


j. Click on '**Next**'. The summary screen is displayed:

k. Review the settings and click on '**Next**'. The files are copied across, you are given the option of viewing the README:

l. Select 'Yes' or 'No' as you feel appropriate.

m. The 'Setup Complete' panel is displayed. Select 'No, I will restart my computer later':



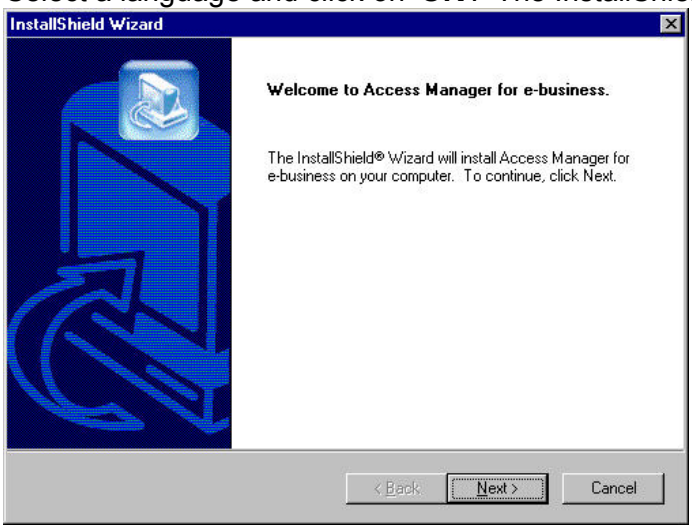
n. Click on '**Finish**'.

6.8 Access Manager Servers installation (Windows)

a. Insert the **IBM Tivoli Access Manager Base for Windows Version 3.9** CD.

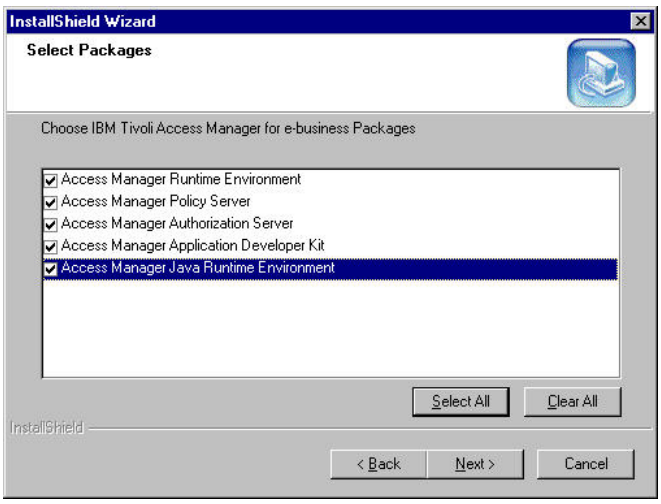
b. Using 'My Computer' find the **\windows\PolicyDirector\Disk Images\Disk1** directory on the CD, and double click on **setup.exe**. The **'Choose Setup Language'** dialogue box is displayed:

c. Select a language and click on '**OK**'. The InstallShield Wizard panel will be displayed:

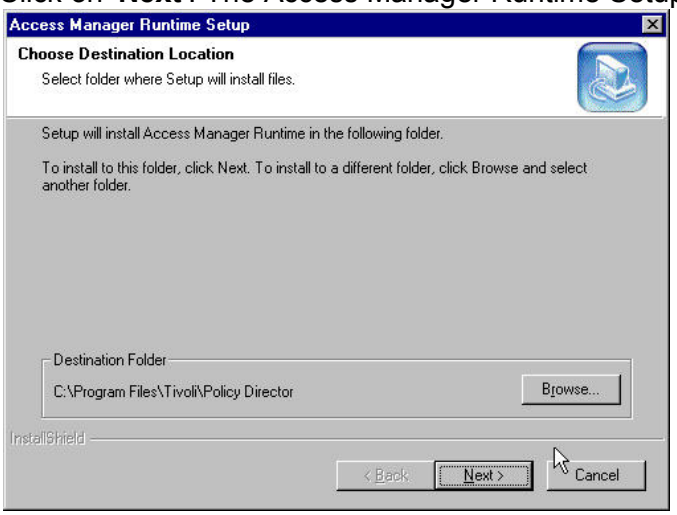


d. Click on '**Next**'. The License Agreement panel is displayed:

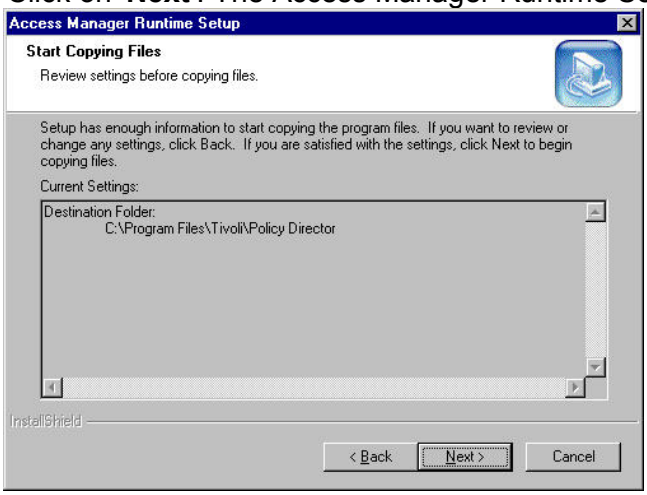
e. Click on '**Yes**'. The **'Select Packages'** panel will be displayed. Select the Access Manager packages you require (at a minimum the Access Manager Runtime Environment and Access Manager Policy Server, we chose all the packages here for our install):



f. Click on '**Next**'. The Access Manager Runtime Setup panel is displayed:



g. Click on '**Next**'. The Access Manager Runtime Setup summary screen is displayed:



h. Review the settings and click on '**Next**'. The files are copied across and the Access Manager Installation Complete panel is displayed. Select '**No, I will restart my computer later**' (unless you do not plan to go on and install WebSEAL or other PD components on this machine in which case you can select '**Yes, I want to restart my computer now**'):


Policy Director Installation Complete
Installation has completed, but not all of the selected components were installed.
The system must be rebooted.
Yes, I want to restart my computer now.
No, I will restart my computer later.
OK

i. Click on '**OK**'.

6.9 Install Access Manager Runtime Environment (Windows)

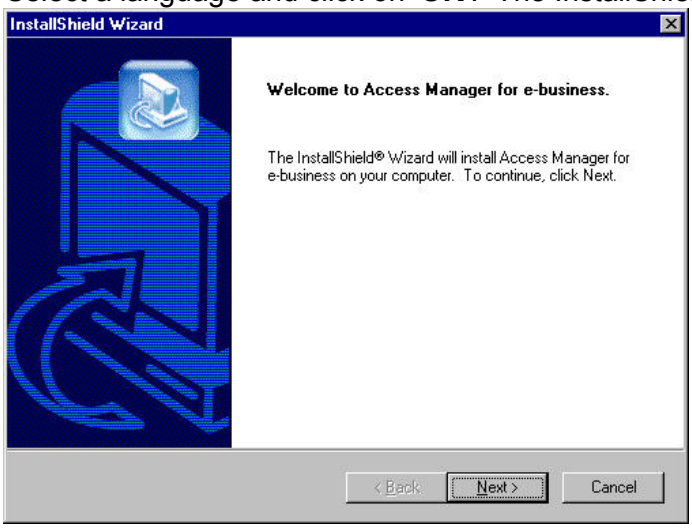
This sequence of steps should be followed on a box requiring **connectivity** with any of the Access Manager servers, such as the C Language Authorization API, the pdadmin API or the pdadmin command line interface.

This should not be carried out on boxes are running the Access Manager servers as they will already have the Runtime Environment installed.

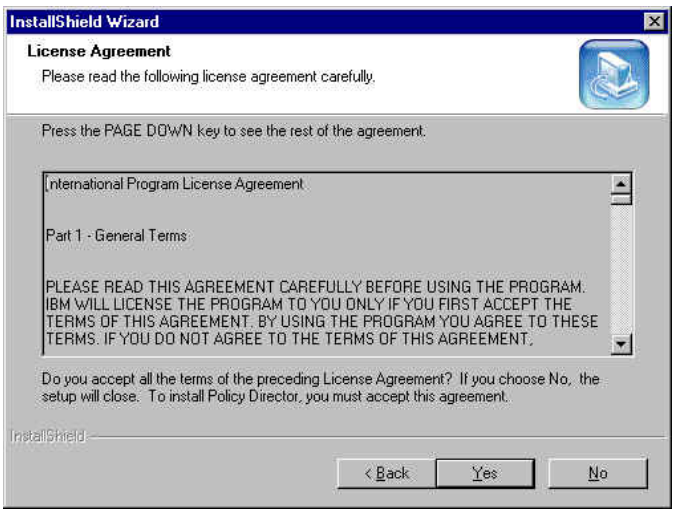
a. Insert the **IBM Tivoli Access Manager Base for Windows Version 3.9** CD.

b. Using 'My Computer' find the **\windows\PolicyDirector\Disk Images\Disk1** directory on the CD, and double click on **setup.exe**. The 'Choose Setup Language' dialogue box is displayed:

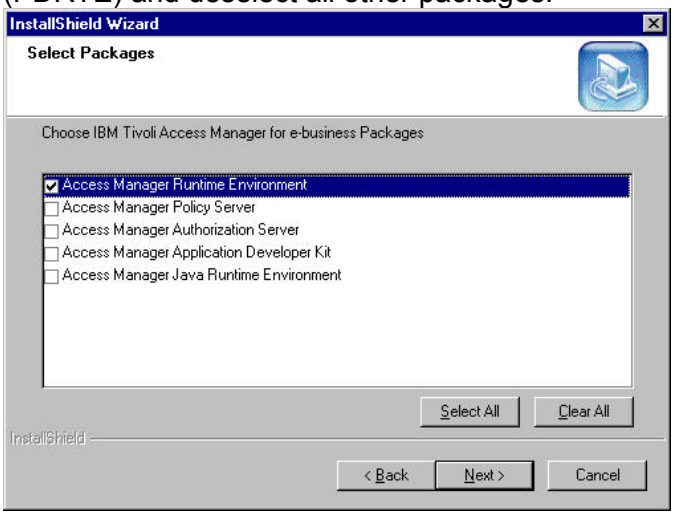
c. Select a language and click on '**OK**'. The InstallShield Wizard panel will be displayed:



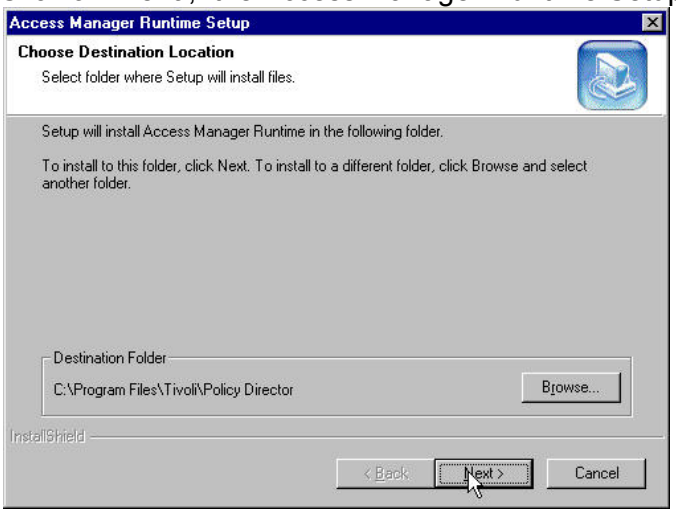
d. Click on '**Next**'. The License Agreement panel is displayed:



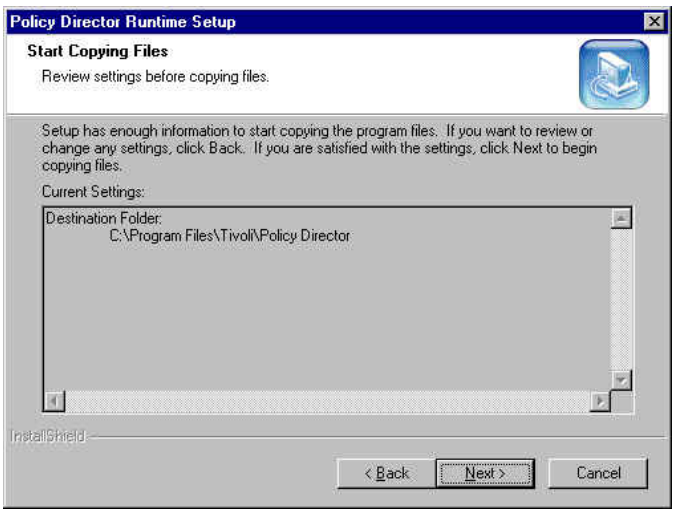
e. Click on '**Yes**'. The 'Select Packages' panel will be displayed. Select Access Manager Runtime (PDRTE) and deselect all other packages:



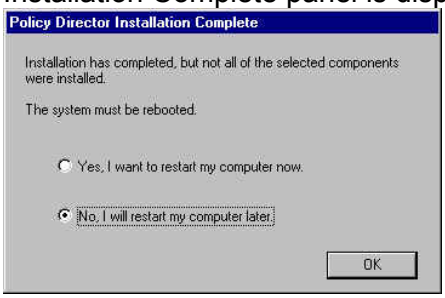
f. Click on '**Next**'; the Access Manager Runtime Setup panel is displayed:



g. Click on '**Next**'; the Access Manager Runtime Setup summary screen is displayed:



h. Review the settings and click on '**Next**'; the files are copied across and the Access Manager Installation Complete panel is displayed. Select 'No, I will restart my computer later':



i. Click on '**OK**'.

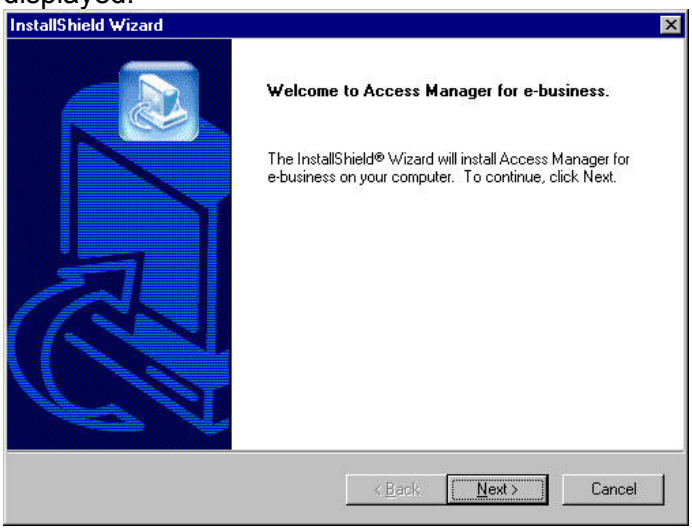
j. If you are not going to install WebSEAL then the computer can be re-booted by issuing Start → Shut Down → Restart.

6.10 Install WebSEAL (Windows)

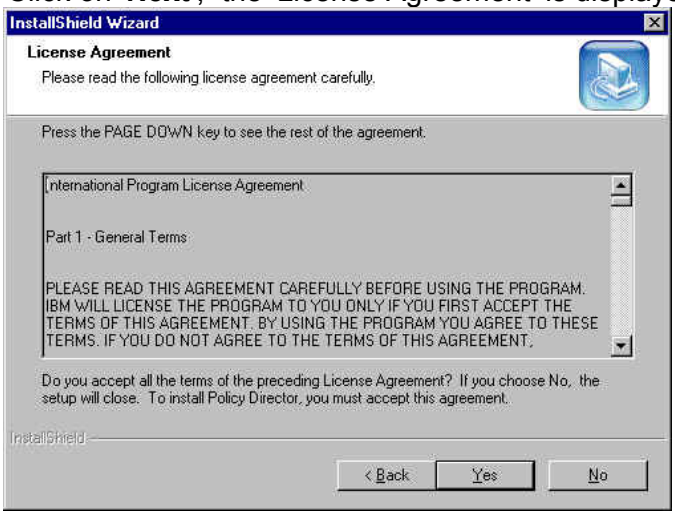
a. Insert the **IBM Tivoli Access Manager Web Security for Windows Version 3.9** CD.

b. Using Windows Explorer find the **\Windows\PolicyDirector\Disk Images\Disk 1** directory on the CD and double click on **setup.exe**. The 'Choose Setup Language' panel is displayed:

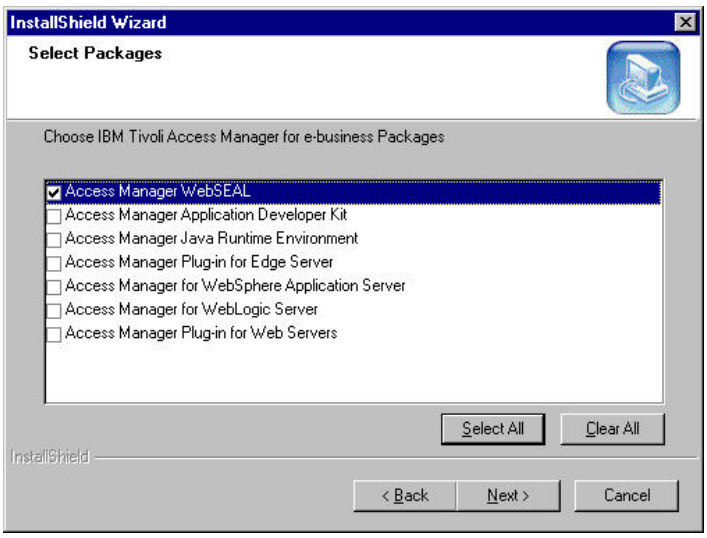
c. Select a language and click on '**OK**'. The 'Access Manager WebSEAL Setup' panel will be displayed.



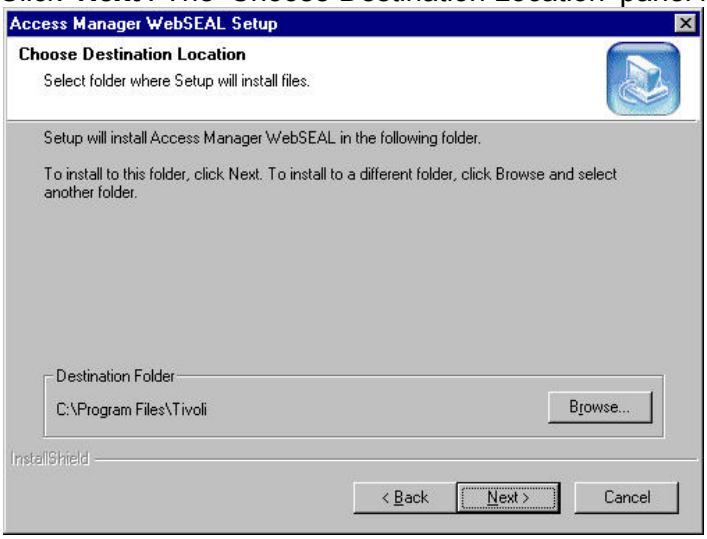
d. Click on '**Next**'; the 'License Agreement' is displayed.



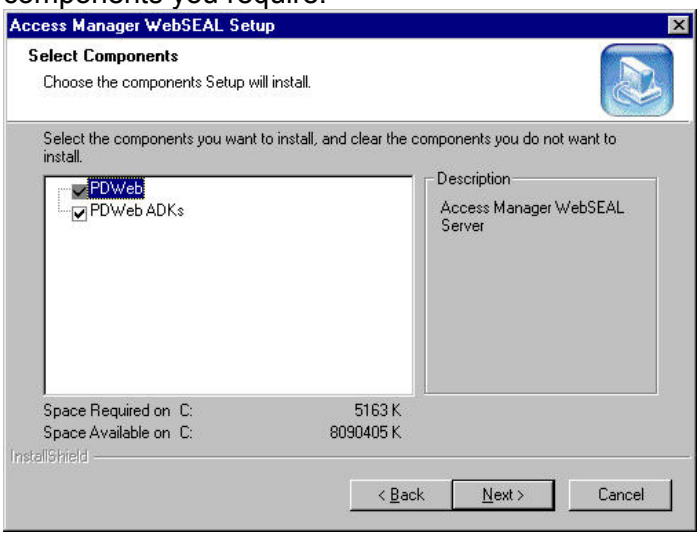
e. Click on **'Yes'**; the 'Select Packages' panel is displayed. Select the components you want:



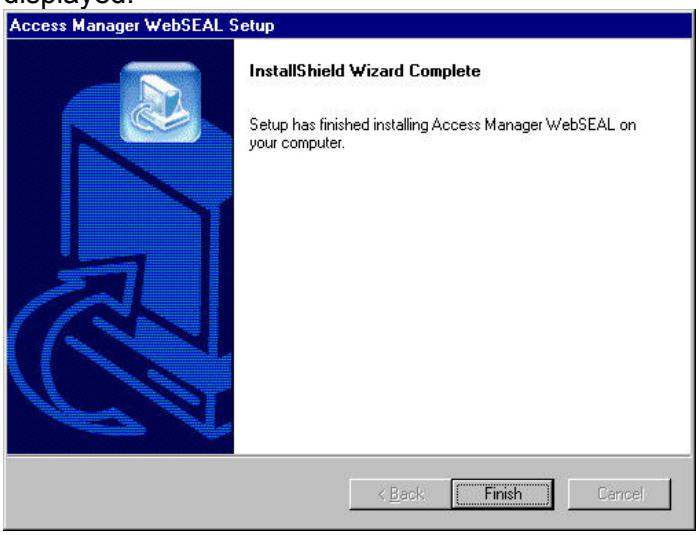
f. Click '**Next**'. The 'Choose Destination Location' panel is shown:



g. Click **'Next'**. The 'Select Components' panel is shown for the WebSEAL components. Select the components you require.



h. Click **'Next'**. The files are copied across and the InstallShield Wizard Complete panel is displayed:



i. Click on **'Finish'**.

j. Click **'OK'**. At this point the computer can be re-booted by issuing Start -> Shut Down -> 'Restart the computer'.

WebSEAL InstallShield Installation Failures

We have seen some situations where the InstallShield install has failed (it just died quietly) after displaying the 'Choose Destination Location' panel but before displaying the 'Select Components' panel. We tried the usual things to fix the problem (re-boot, clear out `%TEMP%` etc) without success.

The workaround we found was, instead of installing from `\windows\PolicyDirector\Disk Images\Disk1\setup.exe`, to install using **`\windows\PolicyDirector\Disk Images\Disk1\WebSEAL\Disk Images\Disk 1\setup.exe`** on the CD. This fixed the problem.

6.11 Access Manager Configuration (Windows)

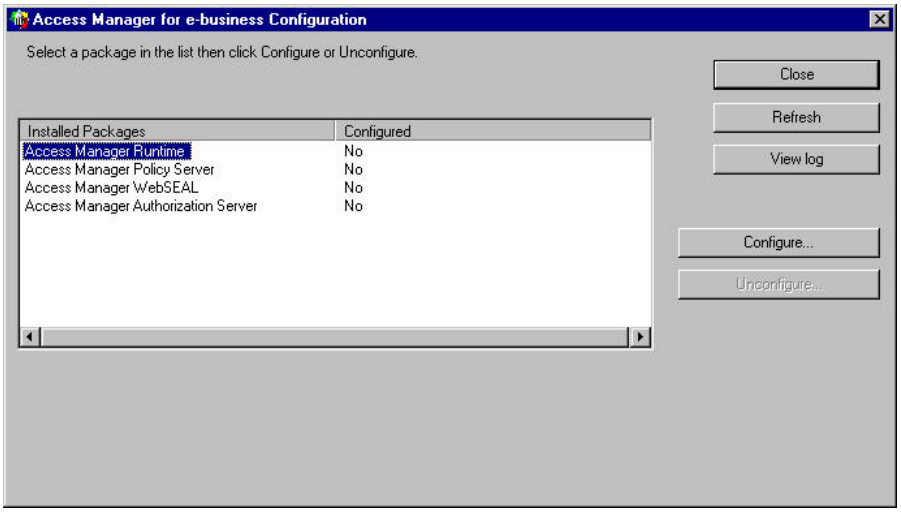
This section describes how to configure the Access Manager components we installed earlier.

a. Ensure that the user registry you are using has started - in our case the IBM SecureWay Directory. (You can do this by issuing the command `ldapsearch -h ldap_server_hostname -D cn=root -w ldap_password -b "" -s base objectclass=*`.)

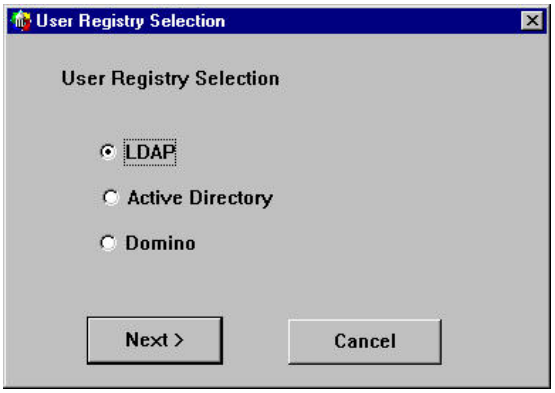
b. Use Start → Programs → Access Manager for e-business → Configuration. The 'Access Manager for e-business Configuration' panel appears.

c. The servers need to be configured in the following order: Access Manager Runtime, then Access Manager Policy Server; then either Access Manager Authorization Server and/or Access Manager WebSEAL as required.

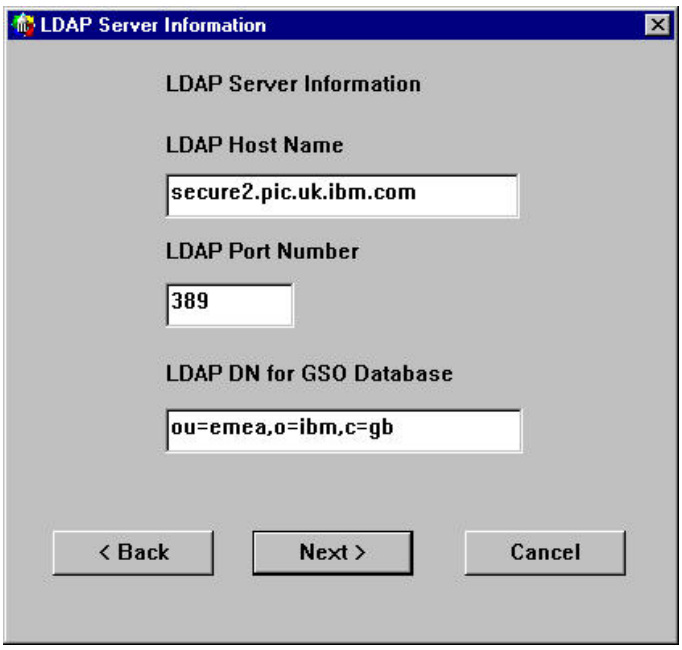
d. Highlight the **'Access Manager Runtime'** in the installed packages column:



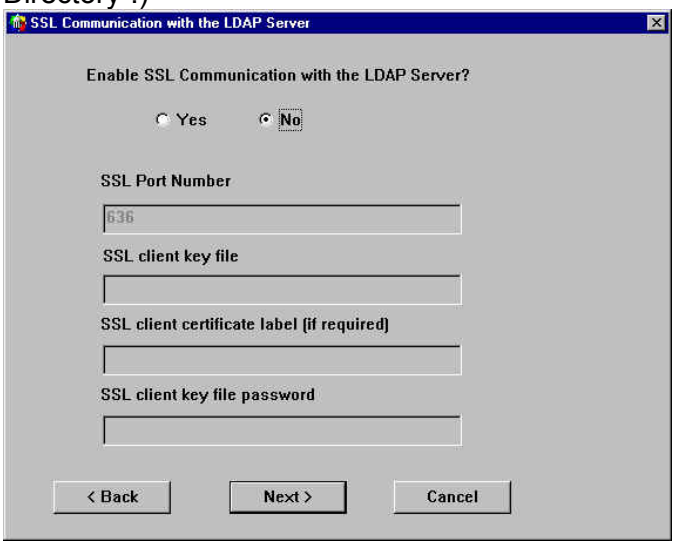
e. Click on **'Configure'**. You are prompted to select your User Registry. We selected 'LDAP'



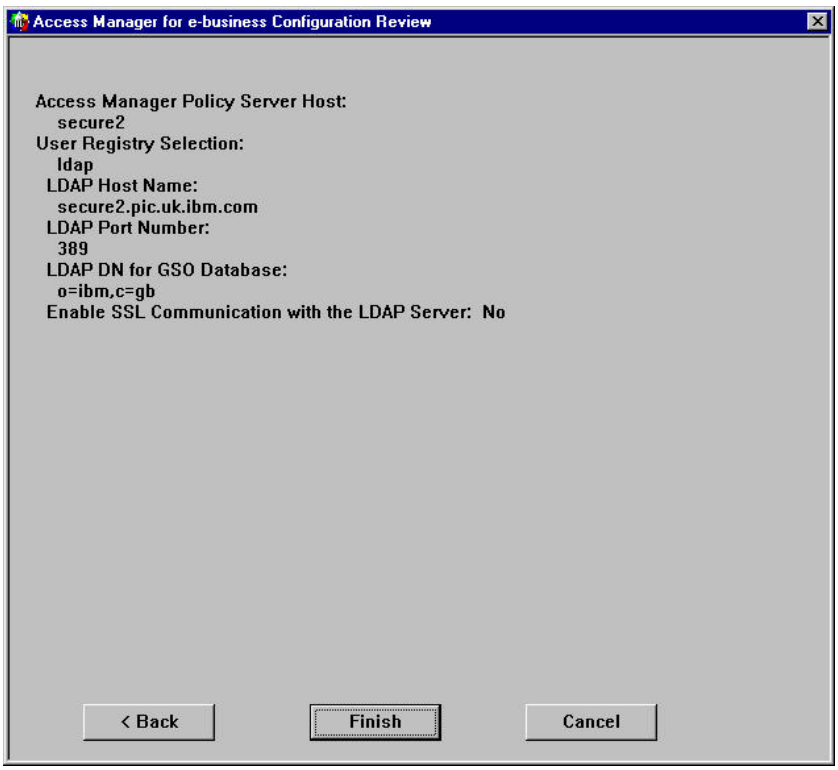
f. Click **'Next'**. You are prompted for the LDAP Server information. Enter the fully qualified LDAP Host Name, the port number and the LDAP DN for GSO. In our case the values were: **secure2.pic.uk.ibm.com, 389, ou=emea,o=ibm,c=gb.**



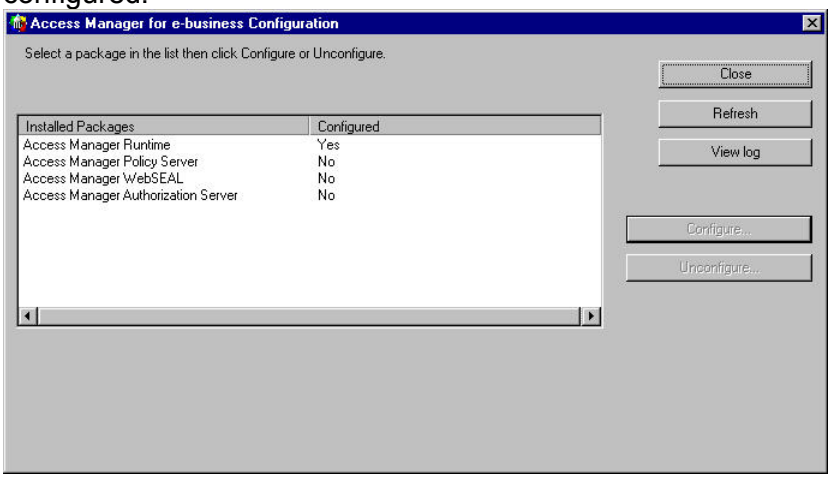
g. Click on '**Next**'. You are prompted whether to Enable SSL Communication with the LDAP Server. Select '**No'**. (If you want to use SSL communication with the LDAP Server, ensure that you have followed the steps in a later section called "Setting up an SSL connection to the LDAP Directory".)



h. Click on '**Next**'. You are shown a Configuration Review panel:



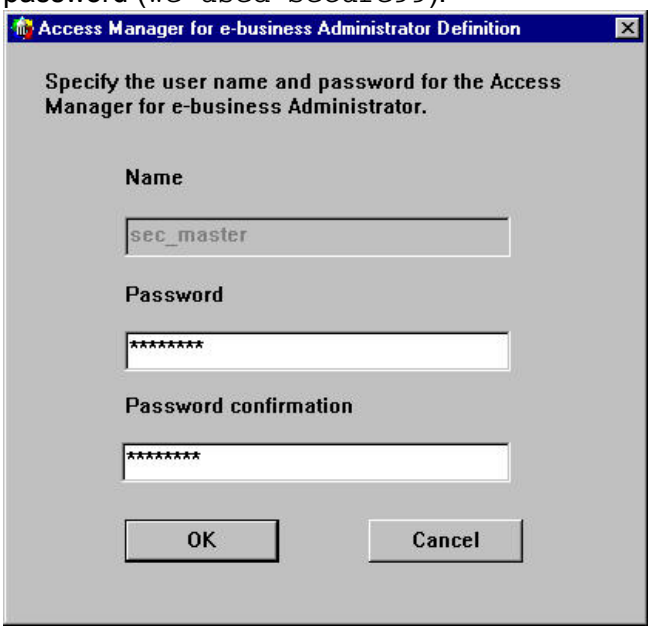
i. After reviewing the values click '**Finish**'. You will see a message 'Configuring Access Manager Runtime'. After a successful configuration, PD Runtime Environment will be marked as configured:



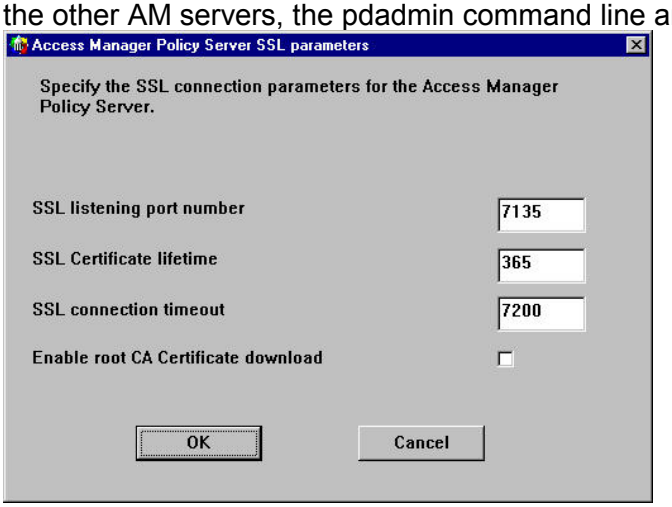
j. Next highlight **'Access Manager Policy Server'** and click on **'Configure'**. The **'LDAP Administrator Login'** panel is displayed. Enter the LDAP Administrator Name and password (`cn=root` and `Secure99` in our case):

k. Click **'OK'**. The 'Access Manager for e-business Administrator Definition' panel is displayed.

The Access Manager for e-business Administrator Name is fixed as **sec_master**, specify the password (`we used Secure99`):



l. Click on **'OK'**. The 'Access Manager Policy Server SSL parameters' panel is displayed. This screen configures the ports that the Policy Server will use for accepting SSL connections from the other AM servers, the pdadmin command line and the Admin Console.



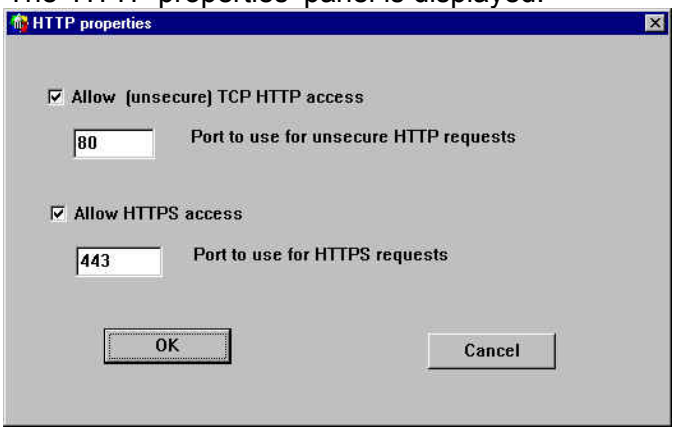
m. (If desired you can also select 'Enable root CA Certificate download'. This simplifies the distribution of the Root CA Certificate to subsequent Access Manager machines, but may introduce security exposures if the network can be compromised during the configuration step. The certificate is used to support SSL communications between the Access Manager components and must be present on all PD servers configured into the secure domain.)

n. Accept these values and click on **'OK'**. A message 'Configuring Access Manager Policy Server' is displayed. Then an 'Information' panel is displayed:

o. Click on **'OK'** to continue.

p. You are returned to the 'Access Manager for e-business Configuration' panel once again. Select the next component you want to configure, in our case WebSEAL. Highlight '**Access Manager WebSEAL**' and click on **'Configure'**.

q. The 'HTTP properties' panel is displayed:

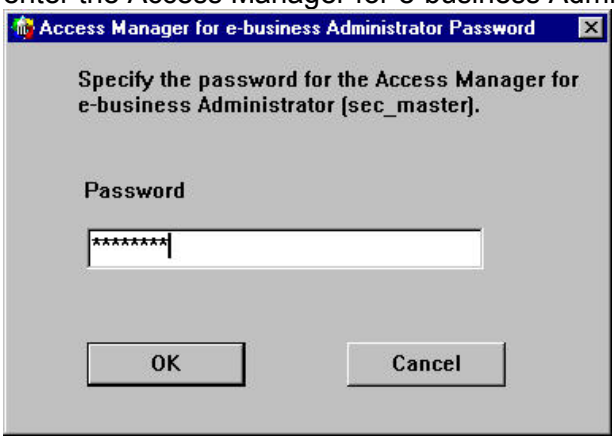


r. Accept the values and click on **'OK'**. The 'Access Manager for e-business Administrator Password' panel is displayed; enter the Access Manager for e-business Administrator password (in our case `used Secure99`):

s. Click on '**OK**'. WebSEAL is then configured.

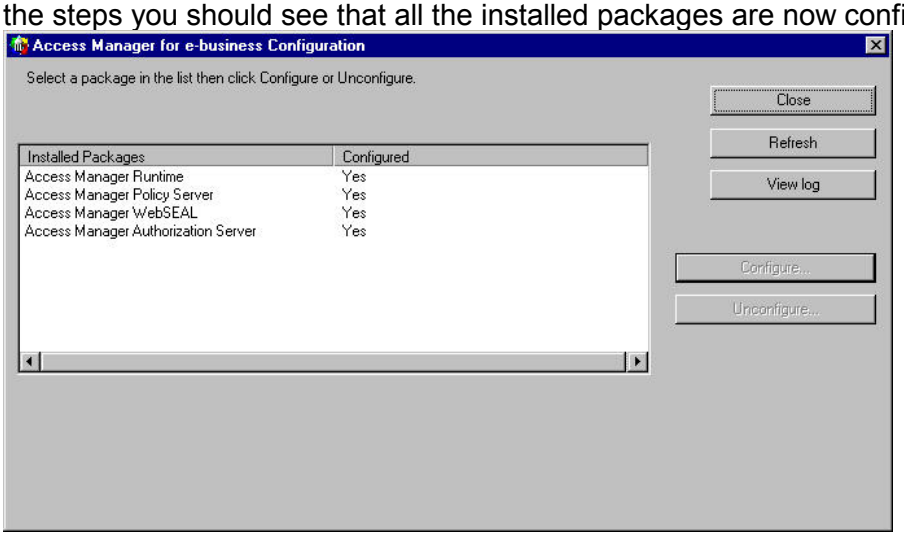
t. The 'Access Manager for e-business Configuration' panel is displayed once again. Highlight '**Access Manager Authorization Server'** and click on **'Configure'**. The 'LDAP Administrator Login' is displayed; enter the Administrator name and password (`cn=root` and `Secure99` in our case):

u. Click on **'OK'**. The 'Access Manager for e-business Administrator Password' panel is displayed; enter the Access Manager for e-business Administrator password:



v. Click on **'OK'**. The Access Manager Authorization Server is then configured.

w. You are then returned to the 'Access Manager Configuration' panel and if you have followed all the steps you should see that all the installed packages are now configured:



x. This completes the Access Manager configuration. Click on 'Close' to close the panel. You may want to check that the Access Manager services you have installed are started in Windows' Services before doing any testing.

y. You can now check that Access Manager is working by following the steps described in Section 22 - Initial Access Manager Validation on Page 170 below.

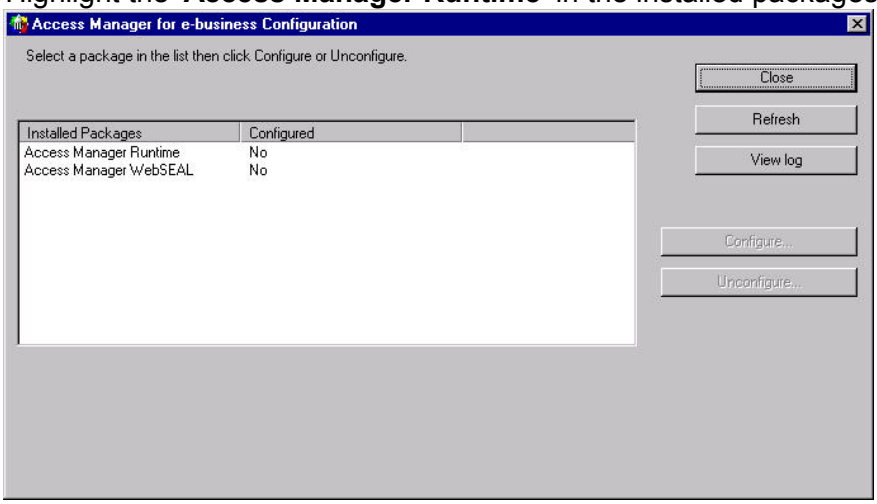
6.12 Access Manager RTE + WebSEAL Configuration (Windows)

This is an example of the steps to take when configuring a separate system with just WebSEAL installed.

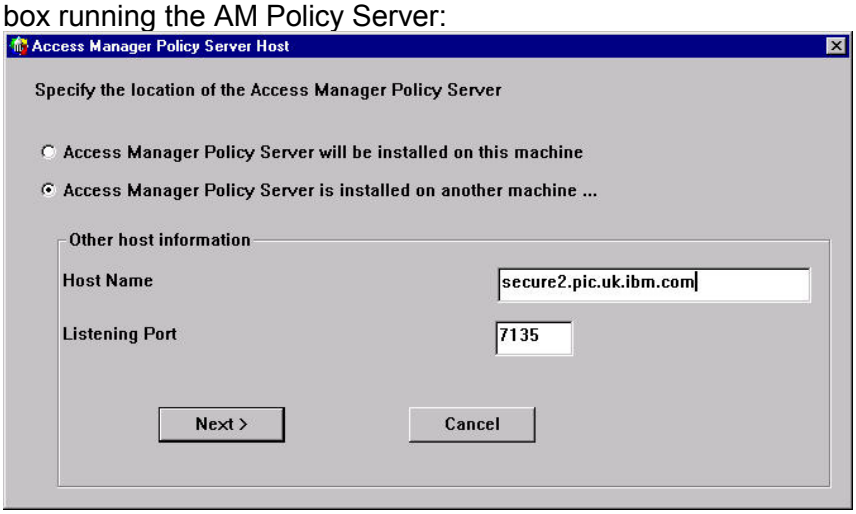
a. Unless you selected "Enable root CA Certificate download" when configuring the AM Policy Server, copy the file containing the AM CA Certificate file from the AM Policy Server to the WebSEAL machine (`C:\Program Files\Tivoli\Policy Director\keytab\pdcacert.b64`) by default.

b. Use Start → Programs → Access Manager → Configuration. The 'Access Manager Configuration' panel appears.

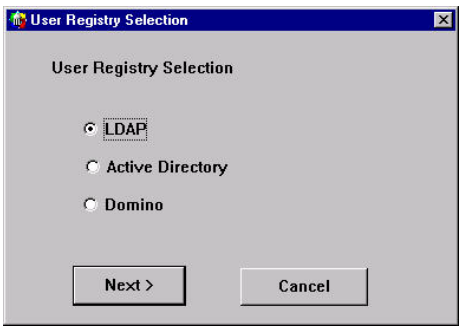
c. Highlight the '**Access Manager Runtime**' in the installed packages column:



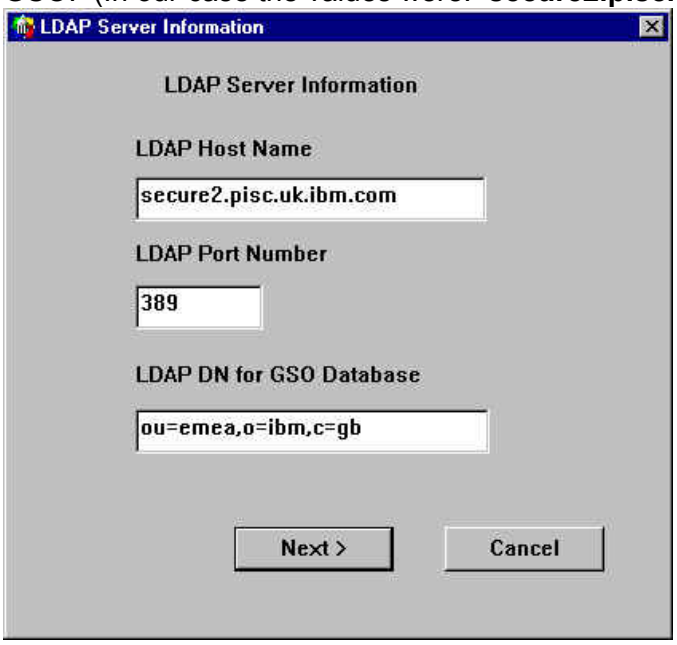
d. Click on 'Configure'. The Access Manager Policy Server Host dialogue box will be displayed. Specify that AM Policy Server is installed on another machine and specify the Host Name of the box running the AM Policy Server:



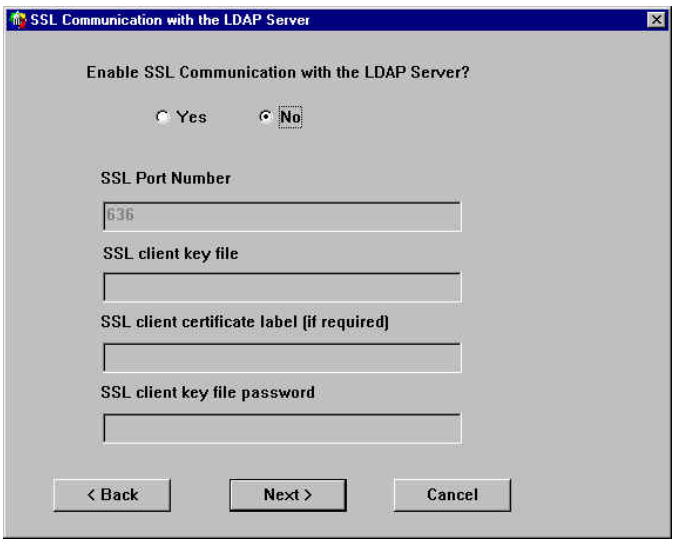
e. Click on '**Next**'. You are asked about which user registry you are using:



f. Select the registry you are using and click **'Next'**, you are prompted for the LDAP Server information. Enter the fully qualified LDAP Host Name, the port number and the LDAP DN for GSO. (In our case the values were: **secure2.pisc.uk.ibm.com, 389, ou=emea,o=ibm,c=gb**).

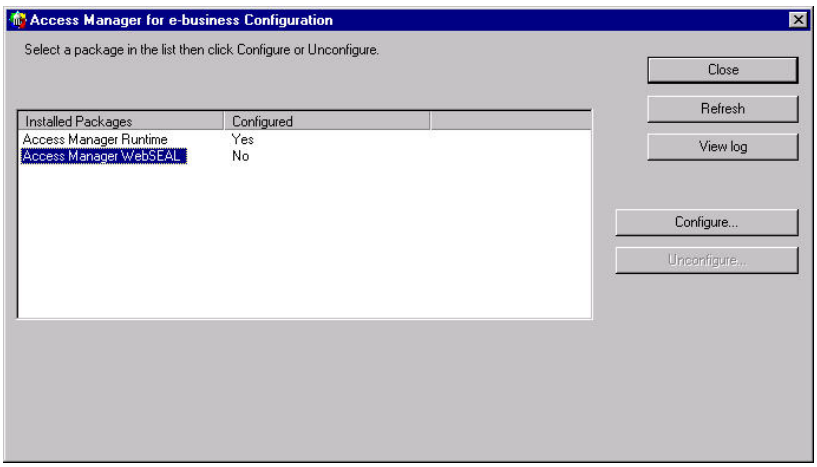


g. Click on '**Next**'. You are prompted whether to Enable SSL Communication with the LDAP Server. Select '**No'**. (If you want to use SSL communication with the LDAP Server, ensure that you have followed the steps in the later section "Setting up an SSL connection to the LDAP Directory").



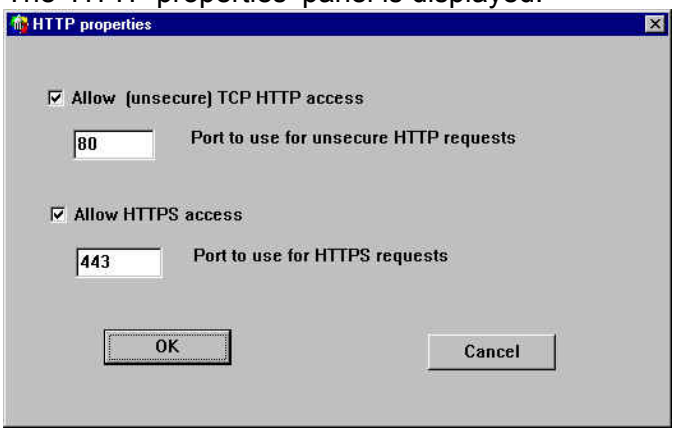
h. Click on '**Next**'. You are shown a 'Access Manager Configuration Review' panel:

i. After reviewing the values click '**Finish**'. You will see a message 'Configuring Access Manager Runtime'. After a successful configuration, Access Manager Runtime will be marked as configured:

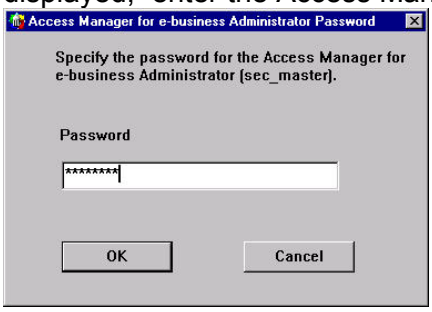


j. You are returned to the 'Access Manager Configuration' panel. Highlight '**Access Manager WebSEAL**' and click on 'Configure'.

k. The 'HTTP properties' panel is displayed:

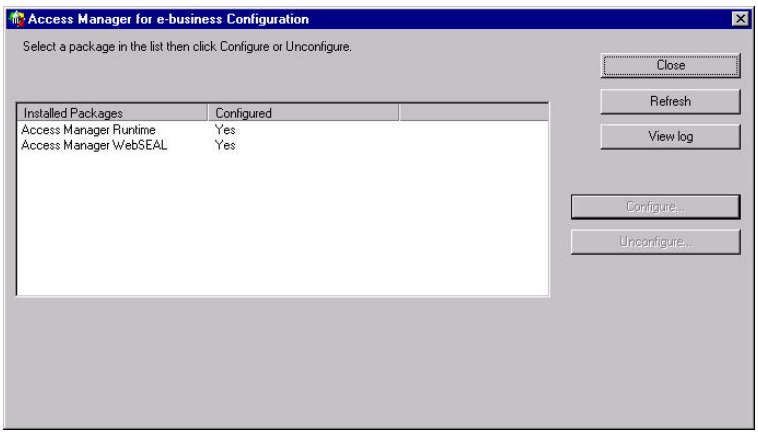


l. Accept the values and click on **'OK'**. The 'Access Manager Administrator Password' panel is displayed; enter the Access Manager Administrator password:



m. Click on '**OK**'; Access Manager WebSEAL is then configured.

n. You are then returned to the 'Access Manager Configuration' panel. This completes the Access Manager configuration:



o. Click on '**Close**' to close the panel.

p. You can now check that Access Manager is working by following the steps described in Section 22 - Initial Access Manager Validation on Page 170 below.

6.13 Web Portal Manager Installation & Configuration (Windows)

This section describes how to install the Web Portal Manager (WPM), the Access Manager web-based interface.

a. Ensure that GSKit 5.0.4.67 or higher has been installed, and IBM HTTP Server with SSL support. (The 'Additional Modules' component in the HTTP Server installation provides the SSL libraries.) If this is a new machine ensure that the AM Runtime and requisites are installed (such as the LDAP client).

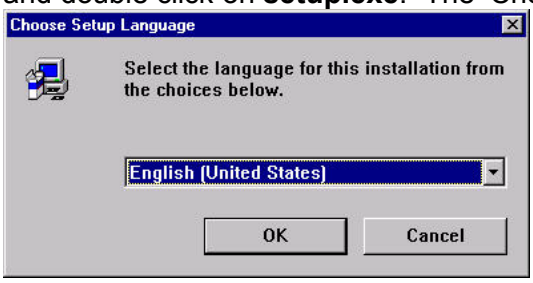
b. Ensure that you have the necessary prerequisites for WebSphere 4.0 Single Server Edition:

- 75 MB disk space to install from CD
- 300 MB disk space for product (footprint)
- 256 MB of RAM to run IBM WebSphere Application Server (512 MB is recommended)
- Network interface

c. Use Start -> Settings -> Control Panel -> Services (NT) or Start -> Programs -> Administrator Tools -> Services (2000) to stop the IBM HTTP Server and IBM HTTP Administration services.

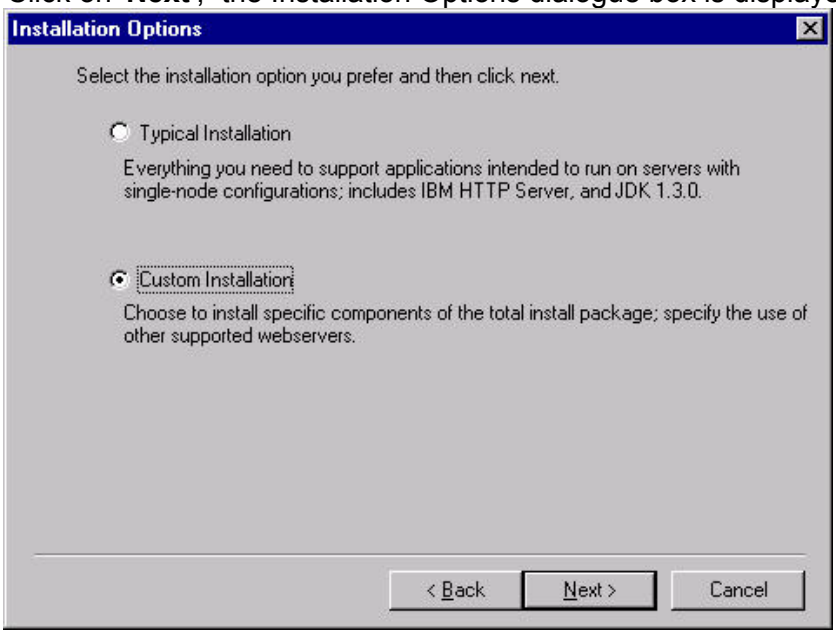
d. Insert the **IBM Tivoli Access Manager Web Portal Manager for Windows Version 3.9** CD.

e. Using 'My Computer' or Windows Explorer find the **\windows\WebSphere** directory on the CD, and double click on **setup.exe**. The 'Choose Setup Language' dialog box appears:

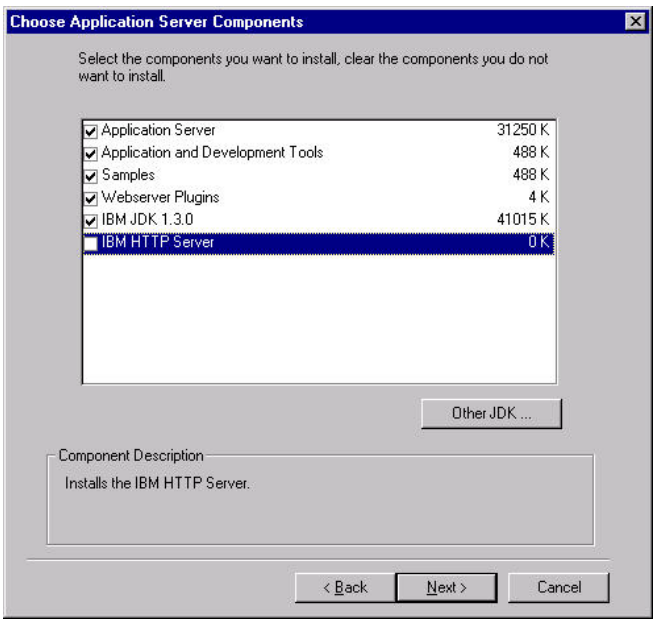


f. Select a language and click on '**OK**', The IBM WebSphere Application Server Advanced Single Server Edition v4.0 welcome screen is displayed:

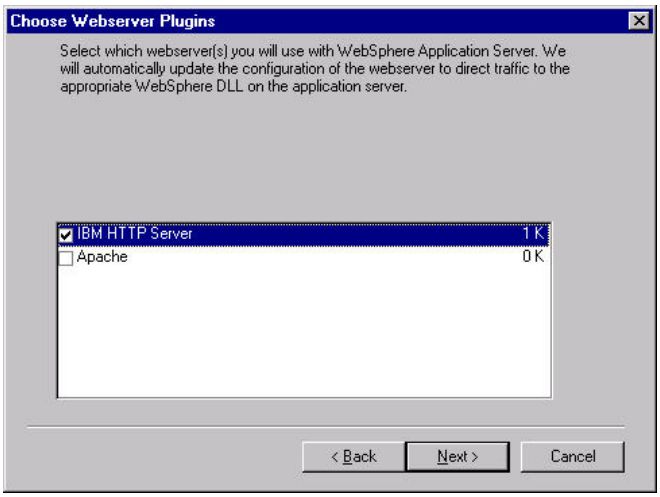
g. Click on '**Next**'; the Installation Options dialogue box is displayed. Select 'Custom Installation':



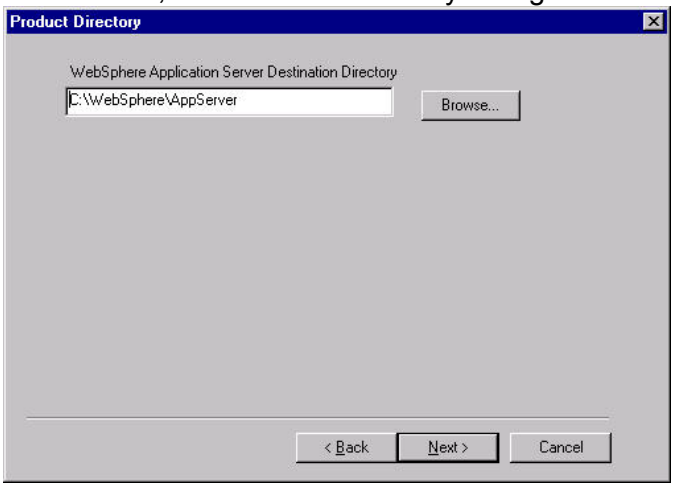
h. Click on '**Next**'; deselect the 'IBM HTTP Server' which we have already installed:



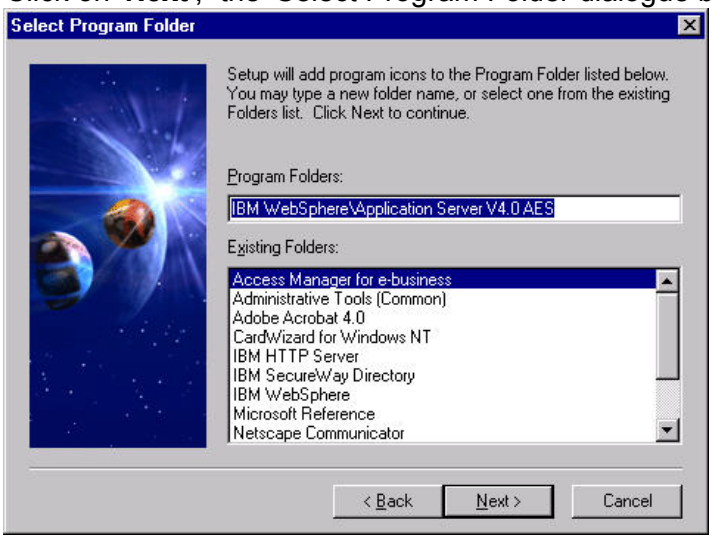
i. Click **'Next'**; you are asked about which webserver you have installed. Select **'IBM HTTP Server'**:



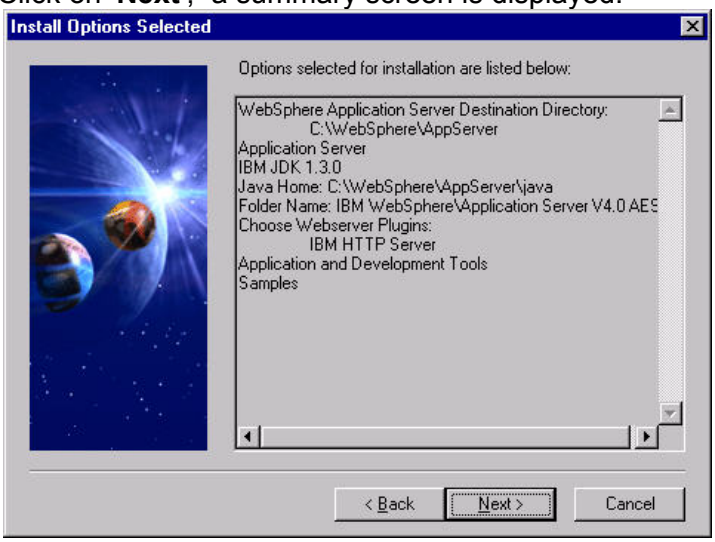
j. Click **'Next'**; the Product Directory dialogue box is displayed:



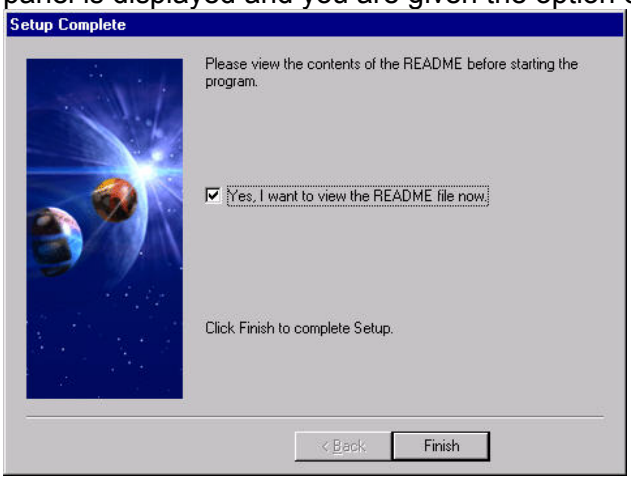
k. Click on '**Next**'; the 'Select Program Folder dialogue box is displayed:



l. Click on '**Next**'; a summary screen is displayed:



m. Review the settings and click on **'Next'**; the files are copied across, then the **'Setup Complete'** panel is displayed and you are given the option of viewing the README file:



n. Click on **'Finish'**; the 'Restarting Windows' dialogue box will be displayed. Select **'Yes, I want**

restart my computer now':

o. Click on '**OK**'.

p. When the system reboots close the 'WebSphere Application Server – First Steps' window, and use Windows Services to stop the IBM HTTP Server and IBM HTTP Administration services. Ensure the WebSphere Application Server is not active - you can do this by issuing the following command:
`C:\WebSphere\AppServer\bin\stopserver`

q. Still using the **IBM Tivoli Access Manager Web Portal Manager for Windows Version 3.9** CD: copy all the files from the **\windows\websphere\ptf402** directory on the CD to a temporary directory on the hard drive.

r. It is probably worth reviewing the contents of `was40_aes_ptf_2.Readme` in this directory.

s. Run **install.bat** from the temporary directory:

```
C:\ptf402>install.bat

   WebSphere Application Server 4.0, Advanced Edition, Single Server PTF 2

Please shut down the Application Server and any Webservers that might be
running.  If not the PTF may not be installed properly.

Please press return to continue.

Enter the directory where the IBM WebSphere Application Server is installed:
c:\WebSphere\AppServer
WASHOME c:\WebSphere\AppServer
JDKHOME c:\WebSphere\AppServer\java
        1 file(s) copied.
"Installing the WebSphere Application Server Advanced Edition Single Server Version 4.0 PTF 2"
2002/05/17 10:48:46 Extractor version: 1.29
2002/05/17 10:48:46
2002/05/17 10:48:46 Input Jar File      : C:/ptf402/was40_aes_ptf_2.jar  src=Default
2002/05/17 10:48:46 Start of extraction for C:/ptf402/was40_aes_ptf_2.jar
2002/05/17 10:48:46 No target message provided, default enabled.
2002/05/17 10:48:46 Target Directory    : c:\WebSphere\AppServer
2002/05/17 10:48:46 Testing Temporary Directory : C:\TEMP
2002/05/17 10:48:46 Full Temporary Directory : C:\TEMP
2002/05/17 10:48:46 The temporary directory is usable.
2002/05/17 10:48:46 Backup Jar File     : c:\WebSphere\AppServer\was40_aes_ptf_2_backup.jar
2002/05/17 10:48:46 This update applies to the following components:
2002/05/17 10:48:46     Client
2002/05/17 10:48:46     Server
2002/05/17 10:48:46     Samples
2002/05/17 10:48:46     Console
2002/05/17 10:48:46     Common
2002/05/17 10:48:46     Deploytools
2002/05/17 10:48:46     Plugins
2002/05/17 10:48:46     Samples_Common
2002/05/17 10:48:46     Server_Common
2002/05/17 10:48:46     Tools_Common
2002/05/17 10:48:46     J2EEClient
```

```
2002/05/17 10:48:46     JTCClient
2002/05/17 10:48:46
2002/05/17 10:48:46 The following components were detected installed:
2002/05/17 10:48:46      Console
2002/05/17 10:48:46      Deploytools
2002/05/17 10:48:46      J2EEClient
2002/05/17 10:48:46      Tools_Common
2002/05/17 10:48:46      Common
2002/05/17 10:48:46      Client
2002/05/17 10:48:46      Samples
2002/05/17 10:48:46      Server_Common
2002/05/17 10:48:46      JTCClient
2002/05/17 10:48:46      Server
2002/05/17 10:48:46      Samples_Common
2002/05/17 10:48:46      Plugins
2002/05/17 10:48:46
2002/05/17 10:48:46 Product file type: XML
2002/05/17 10:48:46 Product file [ c:\WebSphere\AppServer/properties/com/ibm/websphere/product.xml
]

2002/05/17 10:48:47 No prior history events noted.
2002/05/17 10:48:48 Determining files to back up
2002/05/17 10:48:48 scanning     1 of 13273    0% complete
2002/05/17 10:48:51 scanning  9284 of 13273   69% complete
2002/05/17 10:48:53 scanning 13273 of 13273  100% complete
2002/05/17 10:48:53
2002/05/17 10:48:55 Backing Up  466 of 1102   42% complete
2002/05/17 10:48:59 Backing Up  561 of 1102   50% complete
2002/05/17 10:49:03 Backing Up  583 of 1102   52% complete
2002/05/17 10:49:08 Backing Up  633 of 1102   57% complete
2002/05/17 10:49:12 Backing Up  717 of 1102   65% complete
2002/05/17 10:49:16 Backing Up  922 of 1102   83% complete
2002/05/17 10:49:21 Backing Up 1045 of 1102   94% complete
2002/05/17 10:49:25 Backing Up 1059 of 1102   96% complete
2002/05/17 10:49:29 Backing Up 1067 of 1102   96% complete
2002/05/17 10:49:33 Backing Up 1082 of 1102   98% complete
2002/05/17 10:49:37 Backing Up 1102 of 1102  100% complete
2002/05/17 10:49:37
2002/05/17 10:49:37 Applying entry     1 of 13272    0% complete
2002/05/17 10:49:41 Applying entry  1131 of 13272    8% complete
2002/05/17 10:49:46 Applying entry  1999 of 13272   15% complete
2002/05/17 10:49:50 Applying entry  3206 of 13272   24% complete
2002/05/17 10:49:55 Applying entry  4621 of 13272   34% complete
2002/05/17 10:50:00 Applying entry  5883 of 13272   44% complete
2002/05/17 10:50:04 Applying entry  7228 of 13272   54% complete
2002/05/17 10:50:08 Applying entry  8802 of 13272   66% complete
2002/05/17 10:50:12 Applying entry  8960 of 13272   67% complete
2002/05/17 10:50:17 Applying entry  9278 of 13272   69% complete
2002/05/17 10:50:22 Applying entry 10078 of 13272   75% complete
2002/05/17 10:50:27 Applying entry 10190 of 13272   76% complete
2002/05/17 10:50:34 Applying entry 10521 of 13272   79% complete
2002/05/17 10:50:38 Applying entry 10699 of 13272   80% complete
2002/05/17 10:50:43 Applying entry 10860 of 13272   81% complete
2002/05/17 10:50:47 Applying entry 11074 of 13272   83% complete
2002/05/17 10:50:52 Applying entry 11465 of 13272   86% complete
2002/05/17 10:50:56 Applying entry 12524 of 13272   94% complete
2002/05/17 10:50:57 Applying entry 13272 of 13272  100% complete
2002/05/17 10:50:57 No Re-Sequencing of jar files was noted.
2002/05/17 10:50:57 Processing virtual script CopyEjbDeploy
2002/05/17 10:50:57 Updating c:\WebSphere\AppServer/properties/com/ibm/websphere/product.xml
2002/05/17 10:50:57 Input Jar File   : C:/ptf402/was40_aes_ptf_2.jar
2002/05/17 10:50:57 Target Directory : c:\WebSphere\AppServer
2002/05/17 10:50:57 Backup Jar File  : c:\WebSphere\AppServer\was40_aes_ptf_2_backup.jar
2002/05/17 10:50:57 Warnings Issued  : 0
2002/05/17 10:50:57 Log File         : c:\WebSphere\AppServer\logs\was40_aes_ptf_2.log
2002/05/17 10:50:57
2002/05/17 10:50:57 End of extraction for C:/ptf402/was40_aes_ptf_2.jar with no errors.
2002/05/17 10:50:57
2002/05/17 10:50:57 Please view the log for details.
        1 file(s) copied.
        1 file(s) copied.
Upgrading IBM JDK
```

```
191 File(s) copied
2002/05/17 10:51:18 Extractor version: 1.29
2002/05/17 10:51:18
2002/05/17 10:51:18 Input Jar File      : C:/ptf402/jdk_ptf_2.jar  src=Default
2002/05/17 10:51:18 Start of extraction for C:/ptf402/jdk_ptf_2.jar
2002/05/17 10:51:18 No target message provided, default enabled.
2002/05/17 10:51:18 Target Directory    : c:\WebSphere\AppServer\java_ptf_2
2002/05/17 10:51:18 Testing Temporary Directory : C:\TEMP
2002/05/17 10:51:18 Full Temporary Directory : C:\TEMP
2002/05/17 10:51:18 The temporary directory is usable.
2002/05/17 10:51:18 Backup Jar File     : c:\WebSphere\AppServer\jdk_ptf_2_backup.jar
2002/05/17 10:51:18 This update applies to the following components:
2002/05/17 10:51:18     JDK
2002/05/17 10:51:18     JRE
2002/05/17 10:51:18
2002/05/17 10:51:18 The following components were detected installed:
2002/05/17 10:51:18      JRE
2002/05/17 10:51:18      JDK
2002/05/17 10:51:18
2002/05/17 10:51:18 No set product file.
2002/05/17 10:51:18 Bypassing duplicate application checking by request.
2002/05/17 10:51:18 Determining files to back up
2002/05/17 10:51:18 scanning   1 of 213    0% complete
2002/05/17 10:51:21 scanning 138 of 213   64% complete
2002/05/17 10:51:25 scanning 181 of 213   84% complete
2002/05/17 10:51:25 scanning 213 of 213  100% complete
2002/05/17 10:51:25
2002/05/17 10:51:26 Backing Up   1 of 187    0% complete
2002/05/17 10:51:30 Backing Up  70 of 187   37% complete
2002/05/17 10:51:34 Backing Up 129 of 187   68% complete
2002/05/17 10:51:41 Backing Up 180 of 187   96% complete
2002/05/17 10:51:44 Backing Up 187 of 187  100% complete
2002/05/17 10:51:44
2002/05/17 10:51:44 Applying entry   1 of 212    0% complete
2002/05/17 10:51:48 Applying entry  89 of 212   41% complete
2002/05/17 10:51:53 Applying entry 188 of 212   88% complete
2002/05/17 10:51:53 Applying entry 212 of 212  100% complete
2002/05/17 10:51:53 No Re-Sequencing of jar files was noted.
2002/05/17 10:51:53 Input Jar File   : C:/ptf402/jdk_ptf_2.jar
2002/05/17 10:51:53 Target Directory : c:\WebSphere\AppServer\java_ptf_2
2002/05/17 10:51:53 Backup Jar File  : c:\WebSphere\AppServer\jdk_ptf_2_backup.jar
2002/05/17 10:51:53 Warnings Issued  : 0
2002/05/17 10:51:53 Log File         : c:\WebSphere\AppServer\logs\jdk_ptf_2.log
2002/05/17 10:51:53
2002/05/17 10:51:53 End of extraction for C:/ptf402/jdk_ptf_2.jar with no errors.
2002/05/17 10:51:53
2002/05/17 10:51:53 Please view the log for details.
Press any key to continue . . .
191 File(s) copied
The system cannot find the path specified.
        0 file(s) copied.
WARNING: If you install IBM HTTP Server PTF, you may not be able to uninstall it cleanly. The
GSkit
package will not be uninstalled.
Do you wish to upgrade the IBM HTTP Server:(Yes/No)
Yes
Enter the directory where the IBM HTTP Server is installed:
c:\Program Files\IBM HTTP Server
Upgrading IHS
2002/05/17 10:53:45 Extractor version: 1.29
2002/05/17 10:53:45
2002/05/17 10:53:45 Input Jar File      : C:/ptf402/ihs_ptf_2.jar  src=Default
2002/05/17 10:53:45 Start of extraction for C:/ptf402/ihs_ptf_2.jar
2002/05/17 10:53:45 No target message provided, default enabled.
2002/05/17 10:53:45 Target Directory    : c:\Program Files\IBM HTTP Server
2002/05/17 10:53:45 Testing Temporary Directory : C:\TEMP
2002/05/17 10:53:45 Full Temporary Directory : C:\TEMP
2002/05/17 10:53:45 The temporary directory is usable.
2002/05/17 10:53:45 Backup Jar File     : c:\WebSphere\AppServer\ihs_ptf_2_backup.jar
2002/05/17 10:53:45 Component checking deactiviated, affected components entry is null.
2002/05/17 10:53:45 No set product file.
2002/05/17 10:53:45 Bypassing duplicate application checking by request.
```

```
2002/05/17 10:53:45 Determining files to back up
2002/05/17 10:53:45 scanning  1 of 55    1% complete
2002/05/17 10:53:48 scanning 55 of 55  100% complete
2002/05/17 10:53:48
2002/05/17 10:53:48 Backing Up 17 of 29   58% complete
2002/05/17 10:53:49 Backing Up 29 of 29  100% complete
2002/05/17 10:53:49
2002/05/17 10:53:49 Applying entry  1 of 54    1% complete
2002/05/17 10:53:50 Applying entry 54 of 54  100% complete
2002/05/17 10:53:50 No Re-Sequencing of jar files was noted.
2002/05/17 10:53:50 Input Jar File   : C:/ptf402/ihs_ptf_2.jar
2002/05/17 10:53:50 Target Directory : c:\Program Files\IBM HTTP Server
2002/05/17 10:53:50 Backup Jar File  : c:\WebSphere\AppServer\ihs_ptf_2_backup.jar
2002/05/17 10:53:50 Warnings Issued  : 0
2002/05/17 10:53:50 Log File         : c:\WebSphere\AppServer\logs\ihs_ptf_2.log
2002/05/17 10:53:50
2002/05/17 10:53:50 End of extraction for C:/ptf402/ihs_ptf_2.jar with no errors.
2002/05/17 10:53:50
2002/05/17 10:53:50 Please view the log for details.
IBM WebSphere Application Server V4.0.2 AEs Fixpack install complete
File not found - \CONF\HTTPD.CONF
The system cannot find the path specified.
The system cannot find the path specified.
The system cannot find the path specified.
The system cannot find the path specified.

C:\ptf402>
```

t. You will have a dialogue similar to above. Once this is complete re-boot the computer by issuing Start -> Shut Down -> 'Restart the computer'.

u. Once the system has restarted and you have logged in again you need to start WebSphere: use Start → Programs → IBM WebSphere → Application Server V4.0 AES → Start Application Server to start WebSphere. You will see a command window open similar to the following:

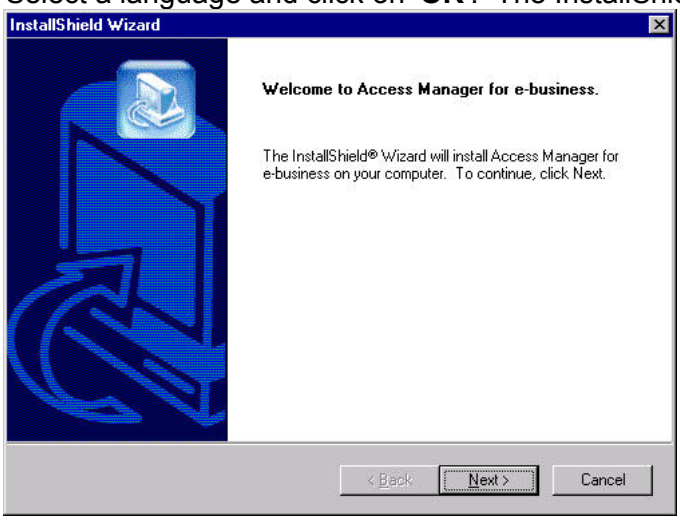
```
WebSphere Application Server, Advanced Single Server Edition V4.0
Application Server Launcher
Copyright (C) IBM Corporation, 2001

The configuration file was defaulted to:
    C:\WebSphere\AppServer\config\server-cfg.xml
Using the single available node or the localhost node.
Using the single available server.
Will pause after displaying results.
Initiating server launch.
Loaded domain "WebSphere Administrative Domain".
Selected node "harperv".
Selected server "Default Server".
WSPL0065I: Initiated server launch with process id 359.
Time mark: Monday, May 27, 2002 5:55:28 PM GMT+01:00
Waiting for the server to be initialized.
Time mark: Monday, May 27, 2002 5:55:37 PM GMT+01:00
Initialized server.
Waiting for applications to be started.
Time mark: Monday, May 27, 2002 5:56:25 PM GMT+01:00
Started applications.
WSPL0057I: The server Default Server is open for e-business.
Please review the server log files for additional information.
Standard output: C:\WebSphere\AppServer/logs/default_server_stdout.log
Standard error: C:\WebSphere\AppServer/logs/default_server_stderr.log
Pausing; press the enter key to continue.
```

v. The phrase 'The server Default Server is open for e-business' indicates that the WebSphere Application Server is running. Press the enter key to continue and the window will close.

w. Still using the **IBM Tivoli Access Manager Web Portal Manager for Windows Version 3.9** CD:

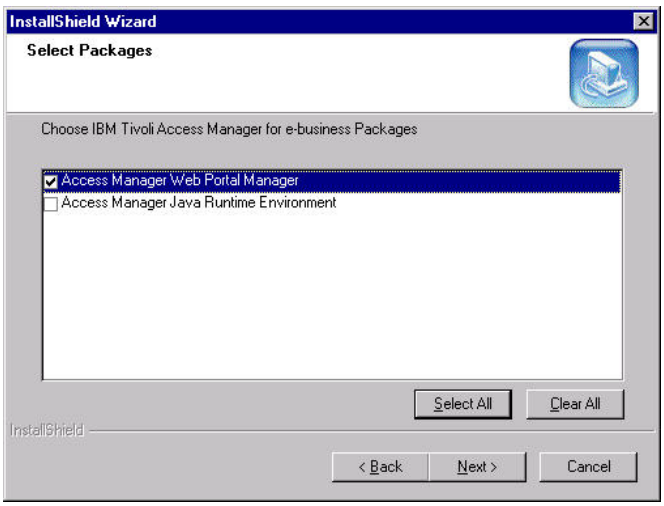
x. Using 'My Computer' find the **\windows\Policy Director\Disk Images\Disk1** directory on the CD, and double click on **setup.exe**. The 'Choose Setup Language' dialogue box is displayed:

y. Select a language and click on '**OK**'. The InstallShield Wizard panel will be displayed:

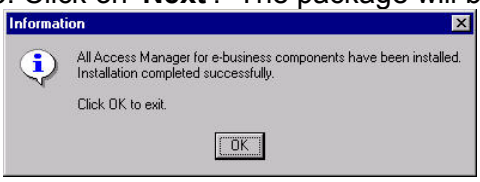


z. Click on '**Next**'. The License Agreement panel is displayed:

aa. Click on '**Yes**'. The 'Select Packages' panel will be displayed. Select 'Access Manager Web Portal Manager':



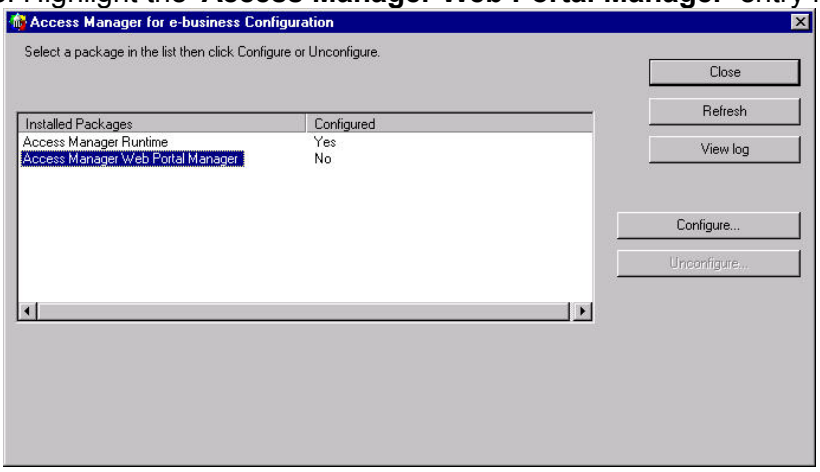
bb. Click on '**Next**'. The package will be installed, and then an Information message displayed:



cc. Click on '**OK**' to dismiss the dialogue.

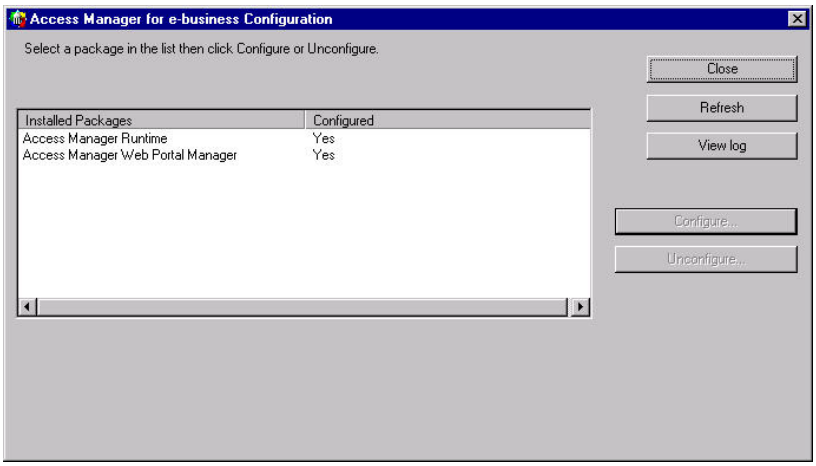
dd. Use Start → Programs → Access Manager for e-business → Configuration. The 'Access Manager Configuration' panel appears.

ee. Highlight the '**Access Manager Web Portal Manager**' entry in the installed packages column:



ff. Click on **'Configure'**; the Web Portal Manager is then configured.

gg. You are then returned to the 'Access Manager Configuration' panel:



hh. Click on '**Close**' to close the panel.

6.14 Changing Web Portal Manager port numbers (Windows)

The Web Portal Manager runs as a WebSphere application – a set of Java Server Pages, by default it will listen on ports 80 and 443. If you are running WPM on the same machine that you are using to run WebSEAL and want WebSEAL to own ports 80 and 443, IBM HTTP Server and WebSphere must be re-configured.

a. We earlier edited the HTTP configuration file, `httpd.conf`, so that IBM HTTP Server would listen on Port 81 for non-SSL traffic. However as a result of the WPM installation and configuration, additional lines are placed at the end of `httpd.conf` which disallow any non-SSL traffic. (This is a security measure to protect against sniffing administrator traffic.) The additional lines which were placed at the end of our configuration file following WPM installation and configuration were as follows:

```
### BEGIN PDWPM CONFIG ENTRY ###
Listen 443
LoadModule ibm_ssl_module modules/IBMModuleSSL128.dll
SSLEnable
Keyfile "C:\Program Files\Tivoli\Policy Director\\keytab\pdwpm.kdb"
SSLV2Timeout 100
SSLV3Timeout 1000
### END PDWPM CONFIG ENTRY ###
```

b. If you are running WebSEAL on the same machine that you are using to run WPM and want WebSEAL to own ports 80 and 443, IBM HTTP Server and WebSphere must be re-configured as follows:
(a) Edit the HTTP configuration file, `httpd.conf`, by default found in the `C:\Program Files\IBM HTTP Server\conf` directory. Locate the port value in the `httpd.conf` file and change it from `Port 80` to a different port number - we had already changed this to `Port 81` in an earlier step.
(b) Find the `Listen` line near the end of the file (added by the WPM configuration). Change the reference to 443 to a different port number - we used 4443:

```
### BEGIN PDWPM CONFIG ENTRY ###
Listen 4443
LoadModule ibm_ssl_module modules/IBMModuleSSL128.dll
SSLEnable
Keyfile "C:\Program Files\Tivoli\Policy Director\\keytab\pdwpm.kdb"
SSLV2Timeout 100
SSLV3Timeout 1000
### END PDWPM CONFIG ENTRY ###
```

c. If you want to enable non-SSL traffic (to port 81 in our case), edit `httpd.conf`, as follows:

```
### BEGIN PDWPM CONFIG ENTRY ###
Listen 4443
LoadModule ibm_ssl_module modules/IBMModuleSSL128.dll
<VirtualHost :4443>
SSLEnable
SSLClientAuth none
DocumentRoot "C:/Program Files/IBM HTTP Server/htdocs"
</VirtualHost>
SSLDisable
```

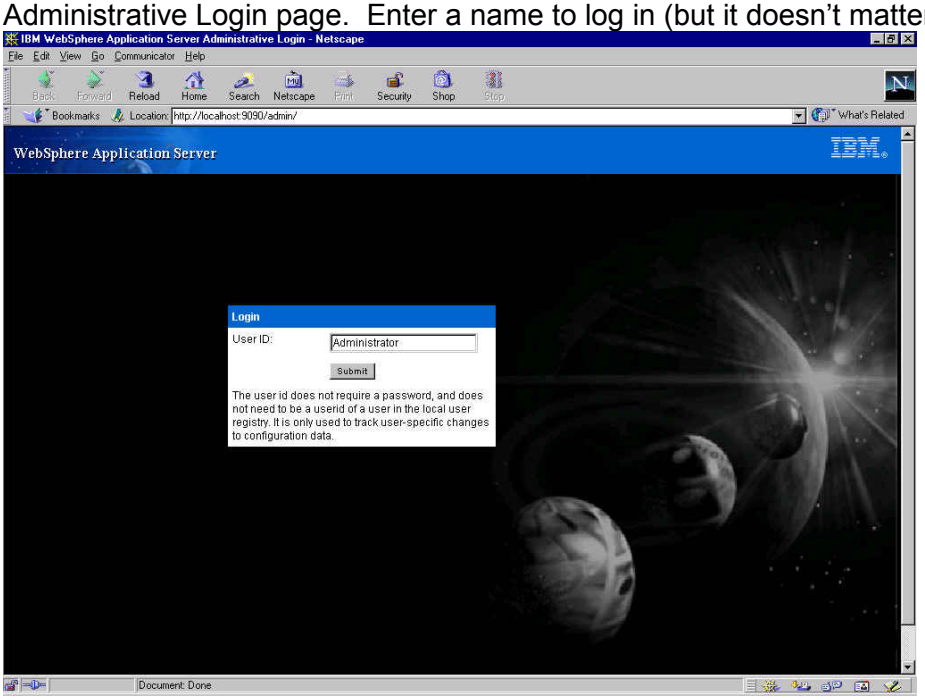
```
Keyfile "C:\Program Files\Tivoli\Policy Director\\keytab\pdwpm.kdb"
SSLV2Timeout 100
SSLV3Timeout 1000
### END PDWPM CONFIG ENTRY ###
```

d. Use Start -> Settings -> Control Panel -> Services (NT), or Start -> Programs -> Administrator Tools -> Services (2000), to stop and re-start IBM HTTP Server for the changes to take effect.

e. At this point you should be able to connect to the IBM HTTP Server on the new ports. You will be able to see the IBM HTTP Server splash screen but not the WPM – in order for that to work WebSphere must be reconfigured with the new ports.

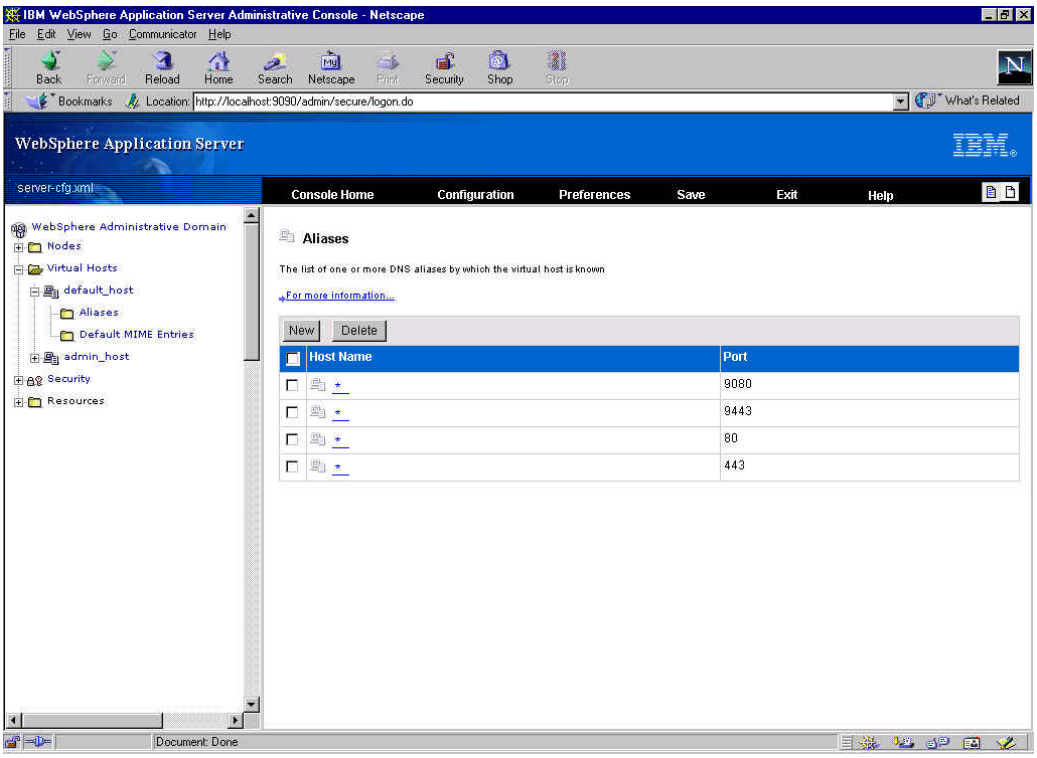
f. If it is not already running start WebSphere Application Server by using Start → Programs → IBM WebSphere → Application Server V4.0 AES → Start Application Server.

g. Use Start → Programs → IBM WebSphere → Application Server V4.0 AES → Administrator's Console (or point a web browser at `http://hostname:9090/admin`) to start the WebSphere Administrative Console. You will be presented with the WebSphere Application Server Administrative Login page. Enter a name to log in (but it doesn't matter what this name is):

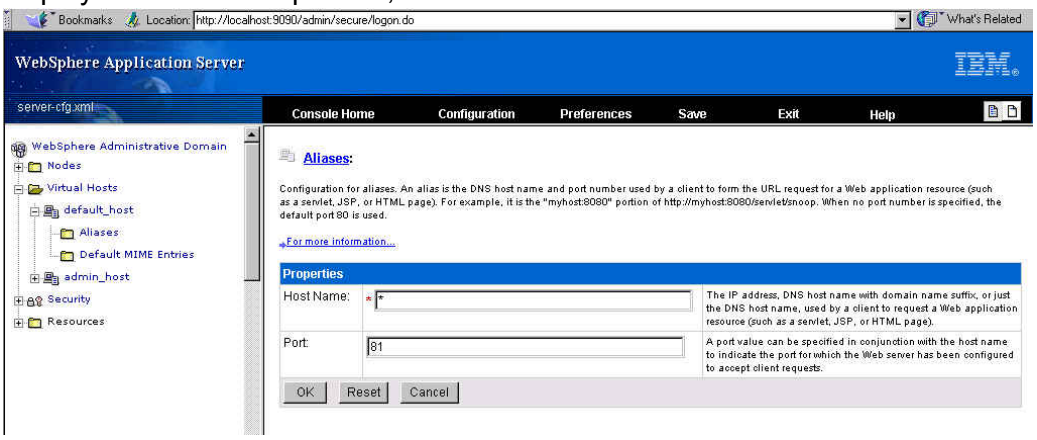


h. Click on 'Submit'.

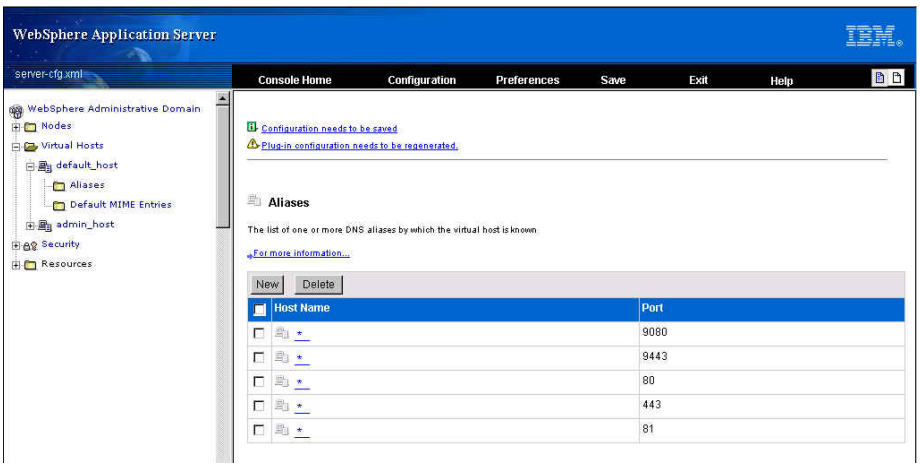
i. In the left-hand panel, click on the '+' sign to the left of Virtual Hosts and then click on the '+' sign to the left of default_host. Then click on 'Aliases'. The panel should look like this:



j. We need to add new aliases, for ports 81 and 4443. First, click on 'New'; a new panel will be displayed. Under 'Properties', add `*` in the 'Host Name' field and `81` in the 'Port' field:

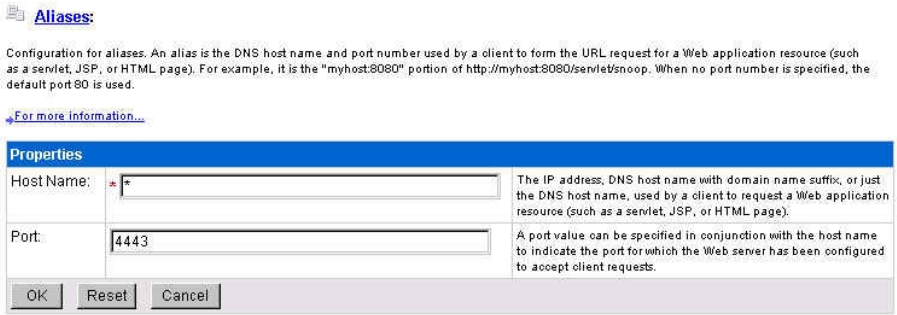


k. Click on 'OK'. You are returned to the 'Aliases' page, showing the new entry:

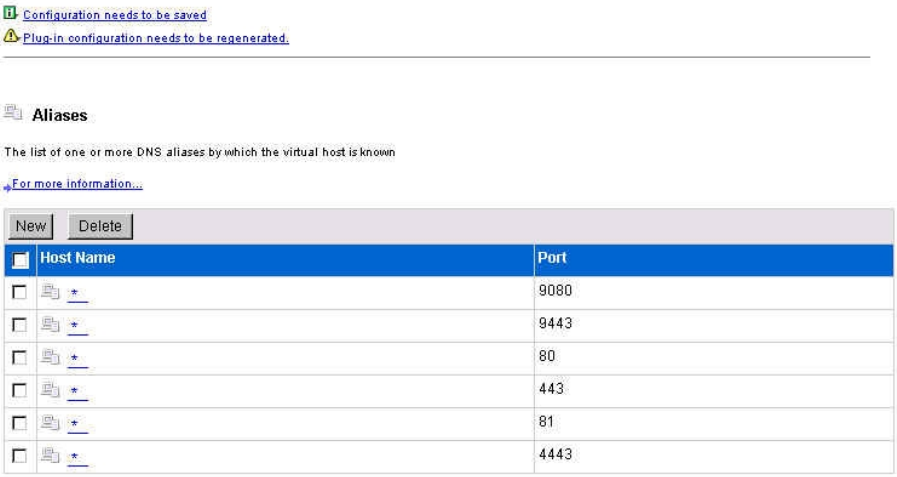


l. Notice the two messages at the top of the right-hand panel. The first says "Configuration needs to be saved" and the second says "Plug-in configuration needs to be regenerated". These operations can be carried out once the second alias has been added.

m. Click on 'New'; again, a new panel will be displayed. Under 'Properties', add `*` in the 'Host Name' field and `4443` in the 'Port' field:



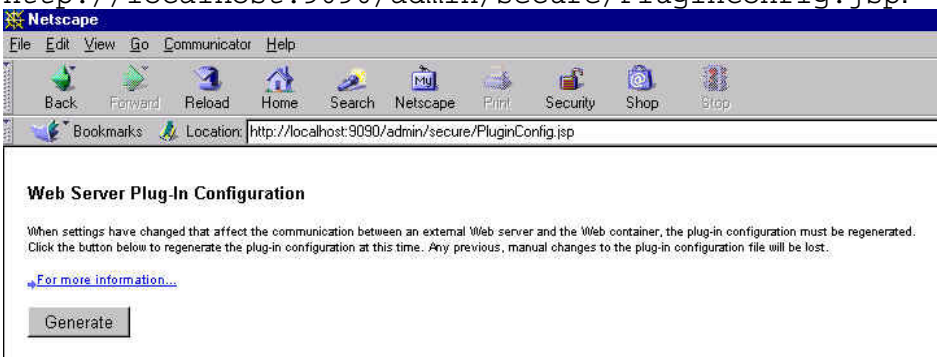
n. Click on 'OK'. You are returned to the 'Aliases' page, showing the new entry:



o. Click on 'Configuration needs to be saved'. A 'Save Configuration' panel is displayed:

p. Click on 'OK'. You are returned to the WebSphere Application Server Welcome screen.

q. You now need to re-generate the Plug-in configuration. In practice the only way that we were able to do this was to point the web browser at `http://localhost:9090/admin/secure/PluginConfig.jsp`:



r. Click on 'Generate'. After the operation had completed the browser displayed a message: 'This document contained no data'. However examination of `C:\WebSphere\AppServer\config\config/plugin-cfg.xml` indicated that this was not a problem and the file had been updated with the new port numbers:

```
<VirtualHostGroup Name="default_host">
        <VirtualHost Name="*:9080"/>
        <VirtualHost Name="*:9443"/>
        <VirtualHost Name="*:80"/>
        <VirtualHost Name="*:443"/>
        <VirtualHost Name="*:81"/>
        <VirtualHost Name="*:4443"/>
</VirtualHostGroup>
```

s. Stop and start the application server. We did this by using the command prompt:

```
C:\>stopserver

WebSphere Application Server, Advanced Single Server Edition V4.0
WebSphere Application Server, Advanced Developer Edition V4.0
WebSphere Application Server, Advanced Edition V4.0
Runtime Utility Program
Copyright (C) IBM Corporation, 1997-2001

WSRU0025I: Loading configuration from file.
WSRU0028I: Using the specified configuration file:
    C:\WebSphere\AppServer\config\server-cfg.xml
WSRU0029I: The diagnostic host name read as localhost.
WSRU0030I: The diagnostic port was read as 7000.
Stopping server.
The server was successfully stopped.
```

```
C:\>startserver

WebSphere Application Server, Advanced Single Server Edition V4.0
Application Server Launcher
Copyright (C) IBM Corporation, 2001

The configuration file was defaulted to:
    C:\WebSphere\AppServer\config\server-cfg.xml
Using the single available node or the localhost node.
Using the single available server.
Initiating server launch.
Loaded domain "WebSphere Administrative Domain".
Selected node "secure5".
Selected server "Default Server".
WSPL0065I: Initiated server launch with process id 315.
Time mark: Tuesday, May 28, 2002 11:01:35 AM GMT+01:00
Waiting for the server to be initialized.
Time mark: Tuesday, May 28, 2002 11:01:39 AM GMT+01:00
Initialized server.
Waiting for applications to be started.
Time mark: Tuesday, May 28, 2002 11:02:13 AM GMT+01:00
Started applications.
WSPL0057I: The server Default Server is open for e-business.
Please review the server log files for additional information.
Standard output: C:\WebSphere\AppServer/logs/default_server_stdout.log
Standard error: C:\WebSphere\AppServer/logs/default_server_stderr.log

C:\>
```

Note the highlighted line: `WSPL0057I: The server Default Server is open for e-business` – this indicates that the application server has started correctly.

Notes on WebSphere Application Server and DB2 Versions

Access Manager is supplied with WebSphere Application Server Advanced Single Server Edition (AEs). Web Portal Manager is supported only with WAS Advanced Single Server Edition, not Advanced Edition (AE). If you try and install WPM with WAS AE the WPM Configuration will fail: you need to use the WAS Console Application Install wizard.

WAS AE Requires DB2 *Enterprise* Edition, whereas DB2 *Personal* Edition is supplied with the version of IBM SecureWay Directory which is shipped with Access Manager.

There is more information on installing WPM with WAS AE on Windows in Section 34 - Installing and Configuring Web Portal Manager on page 255 below.

6.15 Verify Web Portal Manager operation

a. Ensure that the IBM HTTP Server was restarted after making any updates to `httpd.conf`.

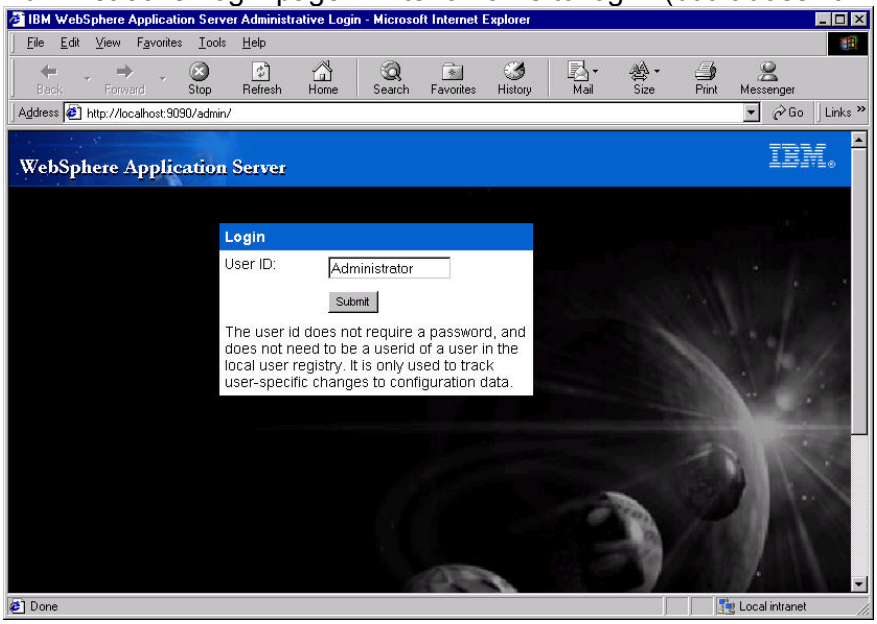
b. Start the IBM SecureWay Directory Server.

c. Start the Access Manager Servers.

d. Point a web browser at `http://hostname:9090/admin`. You will again be presented with the WebSphere Application Server Administrative Login page.

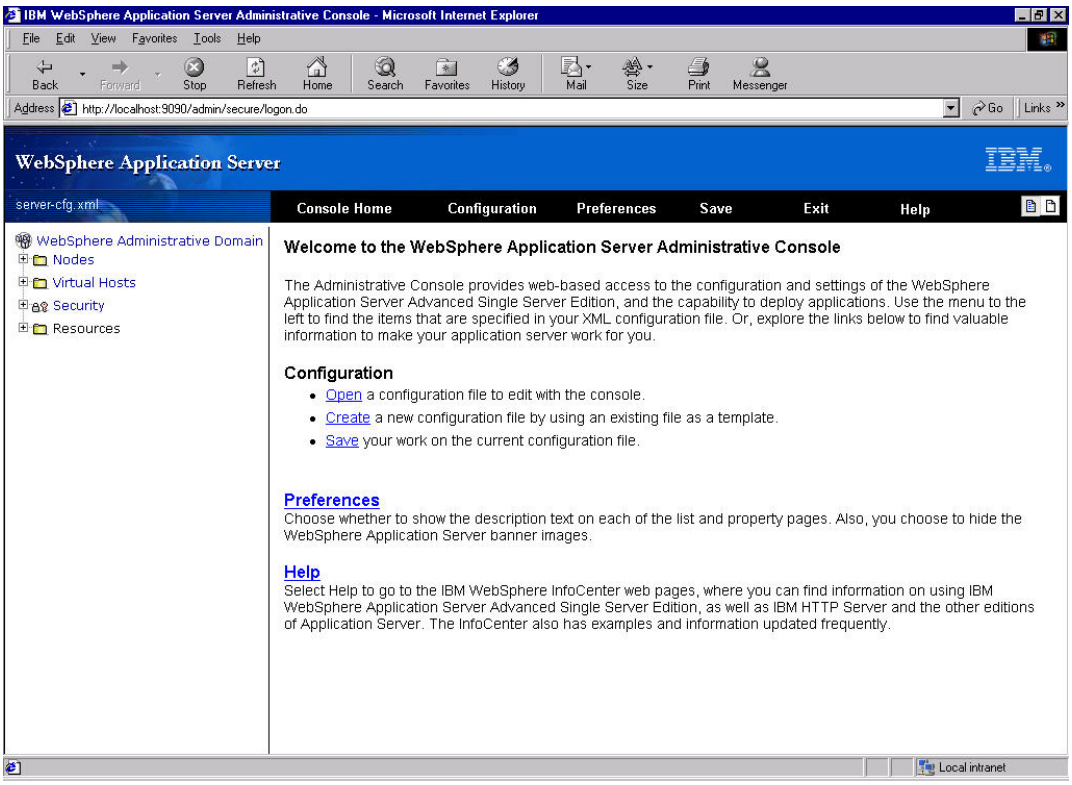
e. Enter a userid and click on 'Submit'. You will be presented with the WebSphere Application Server Administrative Console.

f. Use Start → Programs → IBM WebSphere → Application Server V4.0 AES → Administrator's Console (or point a web browser at `http://hostname:9090/admin`) to start the WebSphere Administrative Console. You will be presented with the WebSphere Application Server Administrative Login page. Enter a name to log in (but it doesn't matter what this name is):



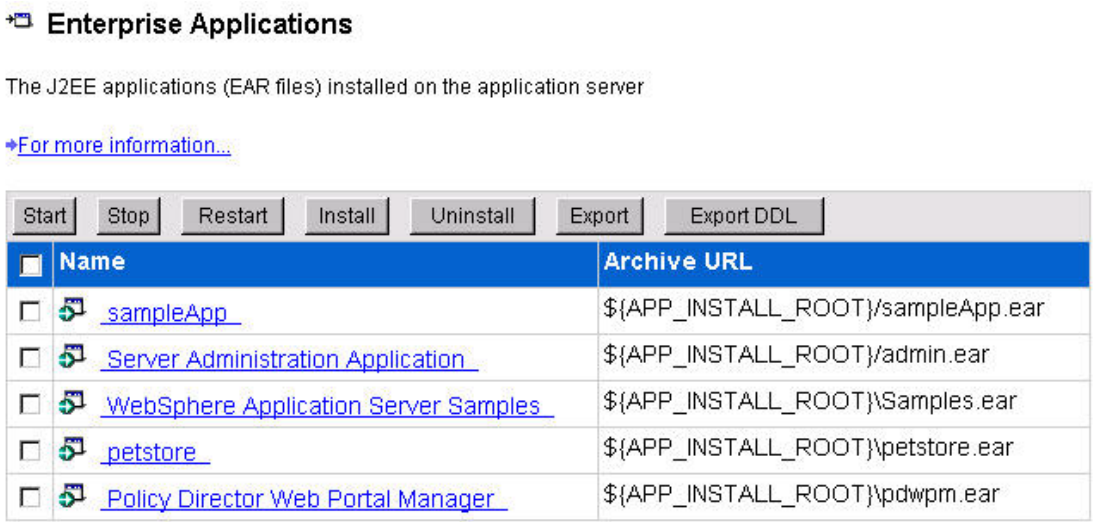
g. Click on 'Submit'. You may be presented with '`Alert: The changes that were made before your session timed out have been saved to a temporary configuration file`'. If so, click on 'OK'.

h. You will be presented with the WebSphere Application Server Administrative Console:



i. You can use this console to verify that WPM is running: in the left-hand panel, click on the '+' sign to the left of Nodes and then click on the '+' sign to the left of your node (in our case secure5):

j. Click on 'Enterprise Applications':

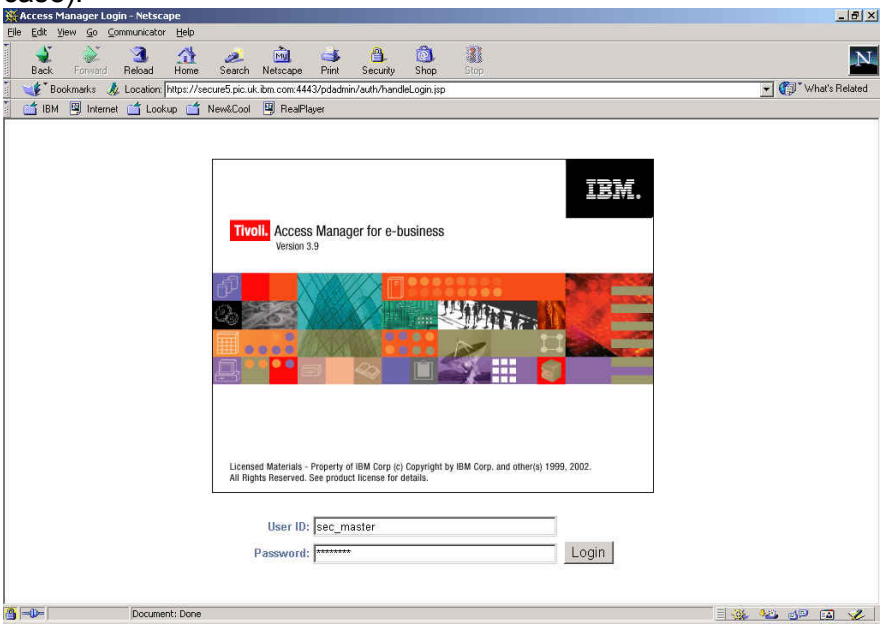


k. The  indicates that the application is running.

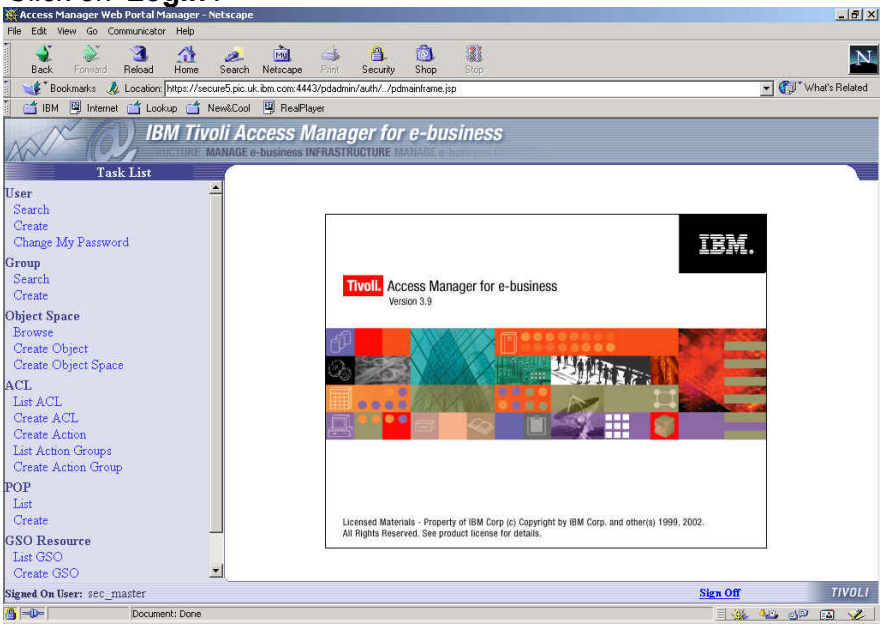
l. Point a web browser at **`https://`*hostname*:*port number*`/pdadmin`** (`https://secure5.pic.uk.ibm.com:4443/pdadmin` in our case).

m. You will be presented with various 'Name Check' or other security alert windows – accept these warnings. The Web Portal Manager sign-in screen will be displayed.

n. Enter the Access Manager Administrator userid (`sec_master`) and password (`Secure99` in our case):



o. Click on '**Login**':



p. From here you can use the Web Portal Manager to administer Access Manager.

General notes: Refer to the Publications Section on page 240 below for information about where to obtain information about **WebSphere Application Server**.

If you hit problems with IBM HTTP Server try looking at the contents of `/usr/HTTPServer/logs`, particularly `/usr/HTTPServer/logs/error_log`.

Part III - AIX Environment

Note: Quick installation is also supported using shell scripts for UNIX systems such as AIX and Solaris - these scripts make it easy to install Access Manager by automatically installing required software and prerequisites. The following sections describe the *native* installation processes for AIX.

7. AIX System Preparation and general AIX Notes

- An Access Manager AIX 4.3.3 system requires the following software patch for the operating system: `bos.rte.libpthreads - t`his patch must be at level 4.3.3.51 or greater. AIX 5.1.0 requires that `bos.rte.libpthreads` be at level 5.1.0.10 or greater. You can download these patches from the following support site:
  http://www.ibm.com/partnerworld/pwhome.nsf/weblook/home.html
  and clicking on **Support & Downloads**. (You can check which level is installed by issuing `lslpp -l |grep libpthreads` at a command prompt.)

- We try to assume a minimum level of AIX knowledge in these chapters: we have therefore tried to document most steps, but we may not have mentioned every **F4**, 'Enter' etc.

- Ensure that the date and time are set correctly across the environment you are using - this may avoid problems later on.

- Ensure that you have IP connectivity (for example, attempt to 'ping' another machine).

- Our experiences here are based on AIX 4.3.3, although we have successfully followed the same procedures on other versions of AIX.

- Throughout these chapters we make use of an AIX system management tool called **SMIT**. You launch this by typing '**smitty**' at a command line - this will start the menu driven tool.

- During the installation of Access Manager and its pre-requisites it will be necessary to use a number of CDs. At some points you may need to mount them explicitly using with the `mount` command.

  Depending on how your AIX system has been set up you may need to create a file system on which to mount the CD:

  Using **smitty**, select:
  System Storage Management (Physical & Logical Storage)
  File Systems
  Add / Change / Show / Delete File Systems
  CDROM File Systems
  Add a CDROM File System (or you can use the `Change / Show` option if you think that this

may already have been set).
In the '**DEVICE Name**' field, press **F4** then select the CD-ROM device (in our case `cd0`) and press **Enter**
In the `MOUNT POINT` field, enter a new directory name where you want to mount the CD (in our case `/cdrom`) and press **Enter**
When you see `OK` next to `Command:`, press **F10** to exit smitty.

If you do not specify that this should be mounted automatically at system restart, you will need to type `mount /cdrom` when you are going to use this mount point.

- Please be aware that the graphical screens shown in these chapters may vary slightly depending on your AIX environment.

- Note also that file and directory names in AIX are case sensitive.

- **Disk space**: **ensure that there is sufficient space in the various filesystems**. Whereas smitty will automatically increase the allocation if necessary, other steps will just fail frequently without any helpful error messages. The increases in disk space during the Access Manager installation described here are as detailed below. Clearly this does not take into account the storage required for a large user registry, etc., but is provided for information.

Increases in filesystem usage following the install and configure steps			
Filesystem	512-blocks used	MB used	Inodes used
/	262,000	131	653
/usr	590,000	295	7,873
/var	65,500	33	76
/tmp	164,000	82	17
/home	32,800	16	509

8. LDAP Server installation/configuration (AIX)

Note: You can find additional information on configuring the IBM SecureWay Directory in the *IBM SecureWay Directory Version 3.2.2 for AIX Installation and Configuration Guide* – this is on the **IBM Tivoli Access Manager Base for AIX Version 3.9** CD at `/doc/Directory/aparent.pdf`. There are other SecureWay Directory product manuals in the same directory.

8.1 Operating system pre-requisites

The IBM SecureWay Directory requires these levels of the following filesets:

```
X11.Dt.lib 4.3.3.2
X11.Dt.rte 4.3.3.3
X11.adt.motif 4.3.3.1
X11.base.lib 4.3.3.2
X11.base.rte 4.3.3.2
X11.compat.lib.X11R5 4.3.3.2
X11.motif.lib 4.3.3.2
X11.motif.mwm 4.3.3.1
bos.adt.include 4.3.3.1
bos.adt.prof 4.3.3.3
bos.net.tcp.client 4.3.3.3
bos.rte.libpthreads 4.3.3.3
bos.sysmgt.serv_aid 4.3.3.2
```

The 4.3.3.0 levels of these filesets are not sufficient, and if they are not already installed on your system you will need to upgrade. (You can type, for example, `lslpp -l |grep X11.Dt.lib` to determine the level of `X11.Dt.lib` installed on your machine. If the system is for demonstration use you can upgrade using CD 23 from AIX DEMOpkg 2000.) This upgrade process is not described here any further.

8.2 Install the IBM HTTP Server

Note: The web server is used to enable browser based administration of the LDAP server. If this is not possible or not desired, see the section entitled *If you are unable to run the LDAP Administrative web server…* on page 108 below.

a. Log in as `root`.

b. Insert the **IBM Tivoli Access Manager Base for AIX Version 3.9** CD.

c. Using **smitty**, select:
Software Installation and Maintenance ->
Install and Update Software ->
Install and Update from LATEST Available Software

d. Against `Input device / directory for software` press **F4** and select the CD-ROM – typically `/dev/cd0`.

e. Against `SOFTWARE to install` press **F4.** A list of SOFTWARE to install will be displayed.

f. Move the cursor to each of the following entries and press **F7** to select it:

- **`http_server.admin`** **ALL**
- **`http_server.base`** **ALL**
- **`http_server.man.en_us`** **ALL**
- **`http_server.ssl.128`** **ALL**

g. Then press **Enter**:

```
Install and Update from LATEST Available Software

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                                        [Entry Fields]
* INPUT device / directory for software                 /dev/cd0              >
* SOFTWARE to install                                  [http_server.admin     > +
  PREVIEW only? (install operation will NOT occur)      no                     +
  COMMIT software updates?                              yes                    +
  SAVE replaced files?                                  no                     +
  AUTOMATICALLY install requisite software?             yes                    +
  EXTEND file systems if space needed?                  yes                    +
  OVERWRITE same or newer versions?                     no                     +
  VERIFY install and check file sizes?                  no                     +
  Include corresponding LANGUAGE filesets?              yes                    +
  DETAILED output?                                      no                     +
  Process multiple volumes?                             yes                    +


F1=Help             F2=Refresh          F3=Cancel           F4=List
F5=Reset            F6=Command          F7=Edit             F8=Image
F9=Shell            F10=Exit            Enter=Do
```

h. Press **Enter**. You will be asked if you are sure. Press **Enter** again. The software will be installed. Exit smitty.

i. By default the IBM HTTP Server listens to port 80, the same as WebSEAL. If you are going to install WebSEAL on the same machine, to avoid port conflicts edit the HTTP configuration file `/usr/HTTPServer/conf/httpd.conf`. Locate the Port value and change it from `Port 80` to a different port number – we used `Port 81`.

j. Change directory to `/usr/HTTPServer/bin`

k. Start the server by entering the following command:
`./apachectl start`

(If the server is already running first issue `./apachectl stop`, or else issue `ps -ef|grep httpd` to determine the PID and then issue `kill` *`process id`* to stop it; then re-attempt to start it.)

l. If you want the web server to start automatically upon system boot, carry out the following steps:

- change directory to `/etc`
- create a file `rc.http` as follows

```
#!/usr/bin/sh
BINPATH=/usr/HTTPServer/bin
echo 'Starting IBM HTTP Server....'
$BINPATH/apachectl start
```

- Give the system root access to the server file and make it executable:
  `chown root:system rc.http`
  `chmod 0774 rc.http`

m. You can verify that the web server is working by pointing a web browser at `http://hostname:port number` (`http://charon.welwyn.uk.ibm.com:81` in our case) – this should result in the IBM HTTP Server splash screen being displayed.

8.3 Install GSKit

a. Still using the IBM Tivoli Access Manager Base for AIX Version 3.9 CD:

b. Using **smitty**, select:
Software Installation and Maintenance ->
Install and Update Software ->
Install and Update from LATEST Available Software

c. Against `Input device / directory for software` press **F4** and select the CD-ROM – typically `/dev/cd0`.

d. Against `SOFTWARE to install` press **F4.** A list of SOFTWARE to install will be displayed.

e. Move the cursor to **`gskmm ALL`** and press **F7** to select it. Then press **Enter**:

```
Install and Update from LATEST Available Software

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                                        [Entry Fields]
* INPUT device / directory for software                 /dev/cd0
* SOFTWARE to install                                  [gskmm                  > +
  PREVIEW only? (install operation will NOT occur)      no                       +
  COMMIT software updates?                              yes                      +
  SAVE replaced files?                                  no                       +
  AUTOMATICALLY install requisite software?             yes                      +
  EXTEND file systems if space needed?                  yes                      +
  OVERWRITE same or newer versions?                     no                       +
  VERIFY install and check file sizes?                  no                       +
  Include corresponding LANGUAGE filesets?              yes                      +
  DETAILED output?                                      no                       +
  Process multiple volumes?                             yes                      +



F1=Help             F2=Refresh          F3=Cancel           F4=List
F5=Reset            F6=Command          F7=Edit             F8=Image
F9=Shell            F10=Exit            Enter=Do
```

f. Press **Enter**. You will be asked if you are sure. Press **Enter** again. The software will be installed.

8.4 Install IBM SecureWay Directory

a. Still using the IBM Tivoli Access Manager Base for AIX Version 3.9 CD:

b. Using **smitty**, select:
Software Installation and Maintenance ->
Install and Update Software ->
Install and Update from LATEST Available Software

c. Against `Input device / directory for software` press **F4** and select the CD-ROM – typically `/dev/cd0`.

d. Against `SOFTWARE to install` press **F4.** A list of SOFTWARE to install will be displayed.

e. Move the cursor to each of the following entries and press **F7** to select it:

- **`ldap.max_crypto_client`** **ALL**
- **`ldap.max_crypto_server`** **ALL**

f. Then press **Enter**:

```
Install and Update from LATEST Available Software

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                                      [Entry Fields]
* INPUT device / directory for software               /dev/cd0              >
* SOFTWARE to install                                [ldap.max_crypto_client> +
  PREVIEW only? (install operation will NOT occur)    no                     +
  COMMIT software updates?                            yes                    +
  SAVE replaced files?                                no                     +
  AUTOMATICALLY install requisite software?           yes                    +
  EXTEND file systems if space needed?                yes                    +
  OVERWRITE same or newer versions?                   no                     +
  VERIFY install and check file sizes?                no                     +
  Include corresponding LANGUAGE filesets?            yes                    +
  DETAILED output?                                    no                     +
  Process multiple volumes?                           yes                    +


F1=Help             F2=Refresh          F3=Cancel           F4=List
F5=Reset            F6=Command          F7=Edit             F8=Image
F9=Shell            F10=Exit            Enter=Do
```

g. Press **Enter**. You will be asked if you are sure. Press **Enter** again. The software will be installed. (This also pulls in DB2 if it is not already installed).

8.5 Configure LDAP

a. At this point it is strongly suggested that you run `df` to ensure that you have sufficient space in your `/home` directory. The suggested *minimum* is 32 MB (or 65536 512-blocks). If you have insufficient space, you will get a series of failure messages when you attempt to run `ldapcfg`, with very little indication as to the cause of the problem.

b. Issue the following commands to create an appropriate directory for the LDAP instance:
If the /home directory does not already exist, create it by issuing `mkdir /home`
`mkdir /home/ldapdb2`
`chmod a+rwx /home/ldapdb2`
(In a production environment you will want to make permissions less permissive.)

c. Issue the following commands to configure LDAP:
ldapcfg –u "cn=root" –p *password*
(where *password* is the LDAP Administrator password – we used Secure99)
ldapcfg –l /home/ldapdb2
ldapcfg –s ibmhttp –f /usr/HTTPServer/conf/httpd.conf

d. Restart the IBM HTTP Server:
/usr/HTTPServer/bin/apachectl stop
/usr/HTTPServer/bin/apachectl start

e. The output should look similar to the following:

```
# mkdir /home/ldapdb2
# chmod a+rwx /home/ldapdb2
# ldapcfg -u "cn=root" -p Secure99
 Password for administrator DN cn=root has been set.

IBM Directory Configuration complete.
# ldapcfg -l /home/ldapdb2
 Creating the directory DB2 default database.
 This operation may take a few minutes.

Cannot open message catalog file ldapadm.cat.
Configuring the database.
Creating database instance: ldapdb2.
Created database instance: ldapdb2.
Starting database manager for instance: ldapdb2.
Started database manager for instance: ldapdb2.
Creating database: ldapdb2.
Created database: ldapdb2.
Updating configuration for database: ldapdb2.
Updated configuration for database: ldapdb2.
Completed configuration of the database.

IBM SecureWay Directory Configuration complete.
# ldapcfg -s ibmhttp -f /usr/HTTPServer/conf/httpd.conf

IBM SecureWay Directory Configuration complete.
The web server must be restarted for changes to take effect.
# /usr/HTTPServer/bin/apachectl stop
/usr/HTTPServer/bin/apachectl stop: httpd stopped
# /usr/HTTPServer/bin/apachectl start
/usr/HTTPServer/bin/apachectl start: httpd started
#
```

f.

Cannot open message catalog file messages

The ‘Cannot open message catalog file’ messages were displayed because the `slapd.cat` and `ldapadm.cat` files had not been installed. These files can be installed by installing the

`ldap.html.en_US ALL` packages on the IBM Tivoli Access Manager Language Support Version 3.9 CD.

g. Before starting the IBM SecureWay Directory server as root, verify that the user `root` is in the `dbsysadm` group. Verify that the file `/etc/group` contains an entry similar to the following:
`dbsysadm:!:400:ldapdb2,root`

h. Start the IBM SecureWay Directory Server:
`/usr/bin/slapd`

i. The output should look similar to the following:

```
# /usr/bin/slapd
Cannot open message catalog file slapd.cat.
Plugin of type EXTENDEDOP is successfully loaded from libevent.a.
Plugin of type EXTENDEDOP is successfully loaded from libtranext.a.
Plugin of type PREOPERATION is successfully loaded from libDSP.a.
Plugin of type EXTENDEDOP is successfully loaded from libevent.a.
Plugin of type EXTENDEDOP is successfully loaded from libtranext.a.
Plugin of type AUDIT is successfully loaded from /lib/libldapaudit.a.
Plugin of type EXTENDEDOP is successfully loaded from libevent.a.
Plugin of type EXTENDEDOP is successfully loaded from libtranext.a.
Plugin of type DATABASE is successfully loaded from /lib/libback-rdbm.a.

Non-SSL port initialized to 389.
Local UNIX socket name initialized to /tmp/s.slapd.
#
```

j. (This step is likely to take several minutes to run.)

k. To configure the IBM SecureWay Directory server to start automatically upon system boot, add the following line to `/etc/inittab`:
`ldapd:2:once:/usr/bin/slapd >/dev/console 2>&1 #Autostart LDAP/DB2 Services`

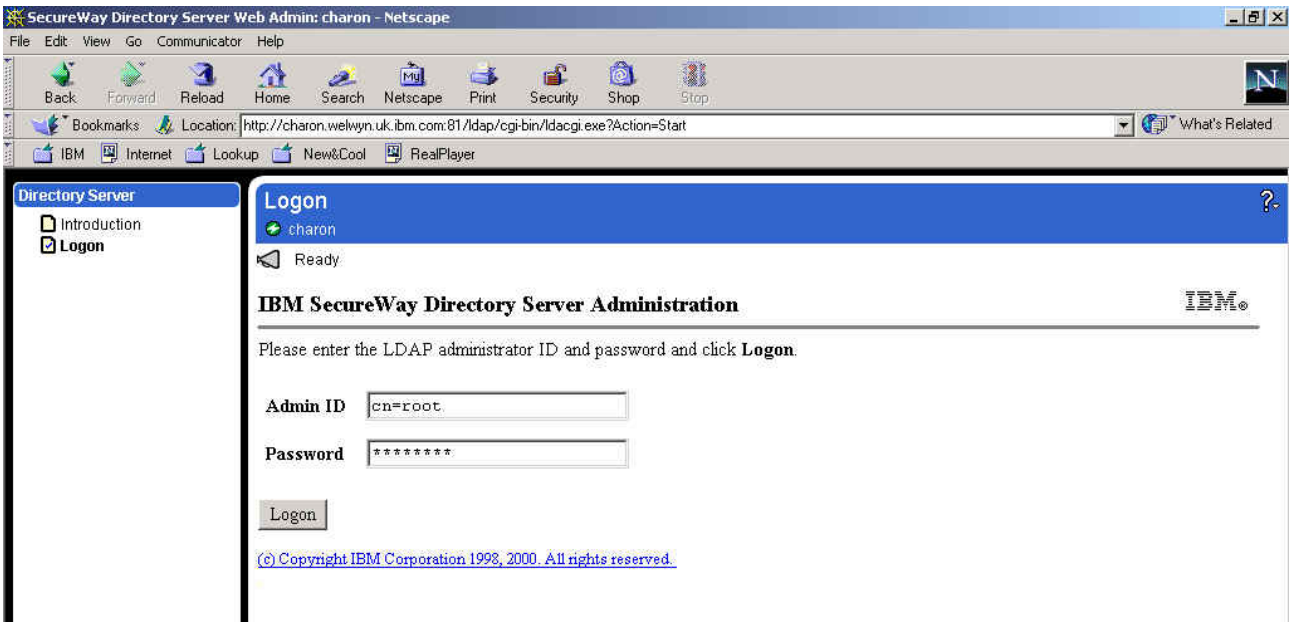
Alternatively, you can use the startup script `/cdrom/common/rc.pd_slapd`.

l. To determine whether slapd has started, issue:
`ps -ef|grep slapd`

(If `slapd` is not running, `/tmp/slapd.errors` might give some further information.)

8.6 Add Access Manager Suffixes

a. Point a web browser at `http://`*`hostname`*`:port number/ldap/index.html` (the port number was `81` in our case). The SecureWay Directory Server Logon panel is displayed. Set the User ID to the LDAP Administrator ID and the password to that which was entered previously (`cn=root` and `Secure99` in our case):



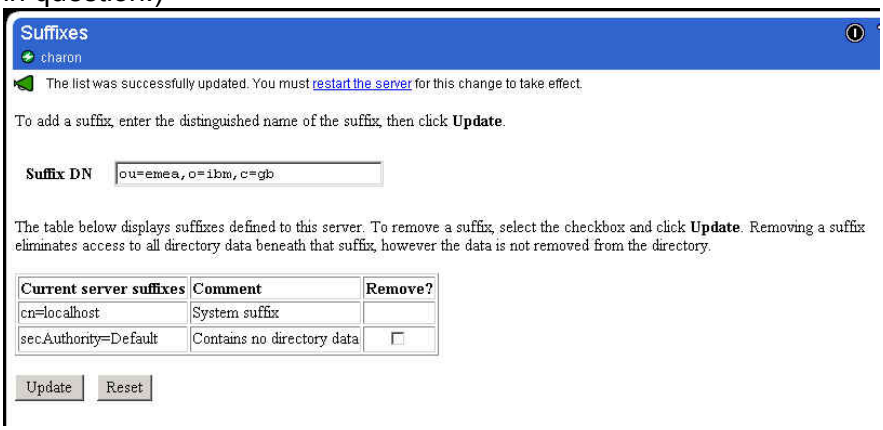
b. Click on 'Logon'. The 'IBM SecureWay Directory Server Administration' panel is displayed. It will indicate 'You must add suffixes' at the top of the screen:

c. Click on 'add suffixes'. Enter `secAuthority=Default` in the 'Suffix DN' box:

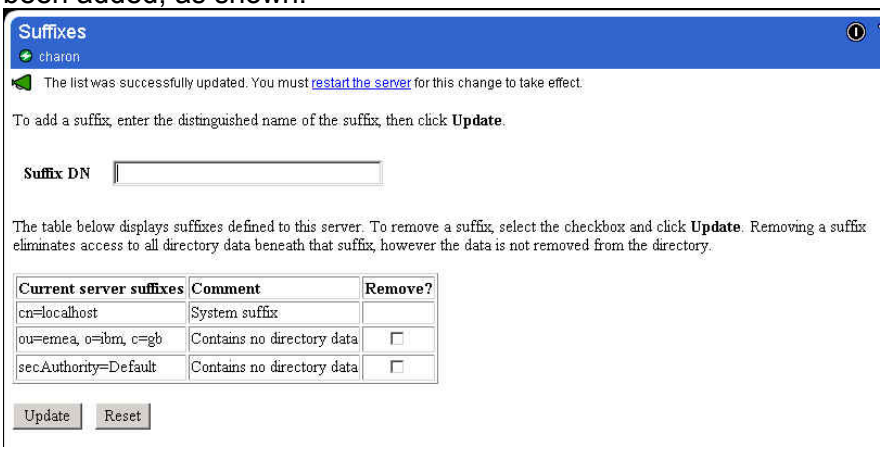
d. Click on 'Update'. The suffix should be added to the list of current server suffixes and a message should be displayed stating 'The suffix was successfully added. You must restart the server for this change to take effect'.

e. Enter a suffix for the Access Manager users and Global Sign-On (GSO) data. For example `ou=emea,o=ibm,c=gb` as shown below. All the Access Manager resources subsequently defined must sit below the suffix defined here - thus if the country, organization and organizational unit are specified here, all PD resources will have to be held within that organizational unit, whereas if just the country is specified here, all PD resources will merely have to be held within that country. Alternatively it would be possible to specify just a country and organization. Clearly this decision will depend on the directory strategy of the organization

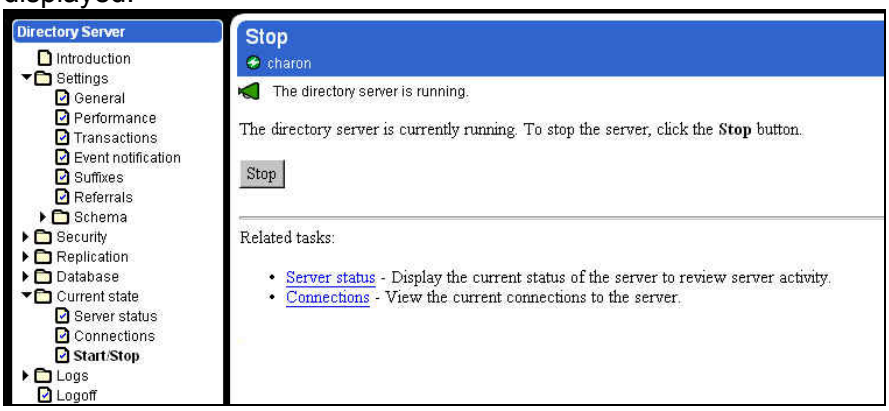
in question.)



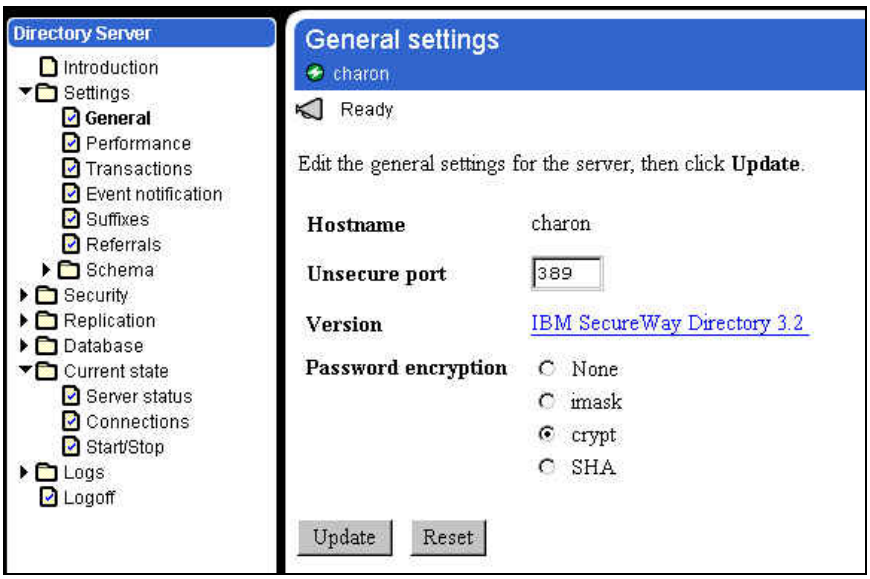
f. Click on 'Update'. A message should be displayed stating 'The list was successfully updated. You must restart the server for this change to take effect', and listing all the suffixes that have been added, as shown:



g. Click on the '<u>restart the server</u>' link at the top of the page. A message stating `'The directory server is starting'` is displayed. This restart process can take several minutes. Once complete a message stating `'The directory server is running'` will be displayed:



h. You may wish to specify one-way password encryption. To do this, click on Settings → General, then click the radio button for 'crypt':



i. Then click on 'Update'. It will display a message: '`The changes were successfully updated. You must restart the server for these changes to take effect`'. Click on 'restart the server' and wait for the server to restart.

j. The web browser is no longer required and may be closed.

If you are unable to run the LDAP Administrative web server…

There have been installations where (for various reasons) it has not been possible to run a web server to perform the LDAP administrative operations. In that case an alternative approach is to edit the configuration file manually. The file in question is:
`/usr/ldap/etc/slapd32.conf`

You can add the suffixes we added above by adding the following lines to `slapd32.conf` Beneath the entry `ibm-slapdSuffix: cn=localhost`:

```
Ibm-slapdSuffix: secAuthority=Default
ibm-slapdSuffix: ou=emea, o=ibm, c=gb
```

You can specify one-way password encryption by modifying the `ibm-slapdPwEncryption` line to:

```
Ibm-slapdPwEncryption: crypt
```

8.7 Directory Management Tool steps

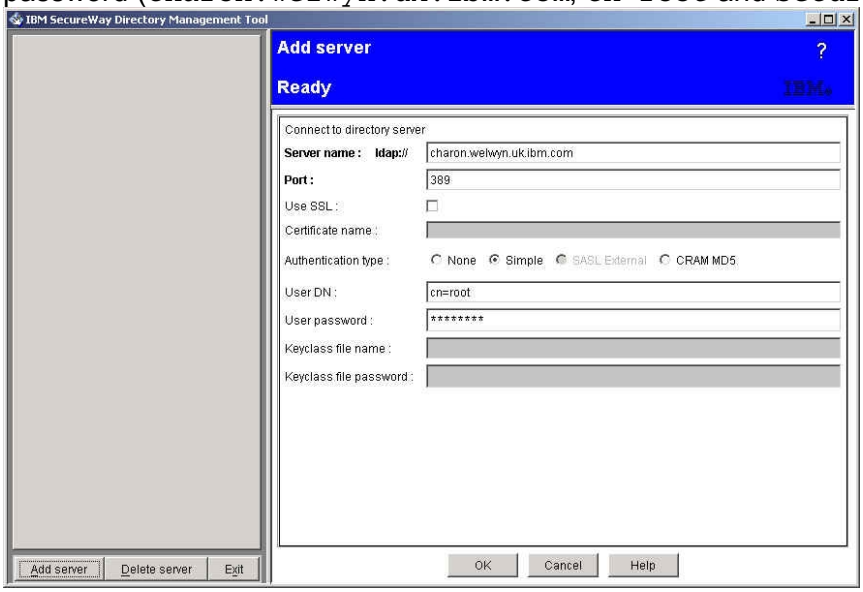
a. Start the Directory Management Tool. You can do one of the following:

- run the Directory Management Tool on the same AIX box as that on which the directory is located;
- run the Directory Management Tool on a remote system and point it at the AIX box on which the directory is located.

b. To start the Directory Management Tool on an AIX XWindows system, type `dmt` on the AIX command line. To start the Directory Management Tool on a PC, use Start -> Programs -> IBM SecureWay Directory -> Directory Management Tool.

c. ***If you are accessing the directory from a remote system***, as the Directory Management Tool is starting an error message may be displayed indicating 'An error occurred connecting to server "ldap://localhost:389"' – if so, click on 'OK' to dismiss the error message.

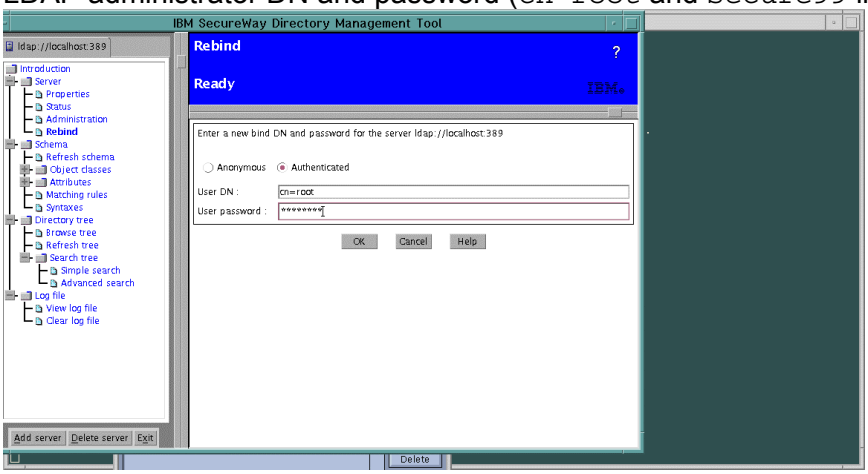
d. Click on 'Add server' (listed on the bottom left hand corner). An 'Add Server' frame is displayed. Click on `Authentication: Simple`. Enter the Server name, LDAP administrator DN and password (`charon.welwyn.uk.ibm.com`, `cn=root` and `Secure99` in our case):



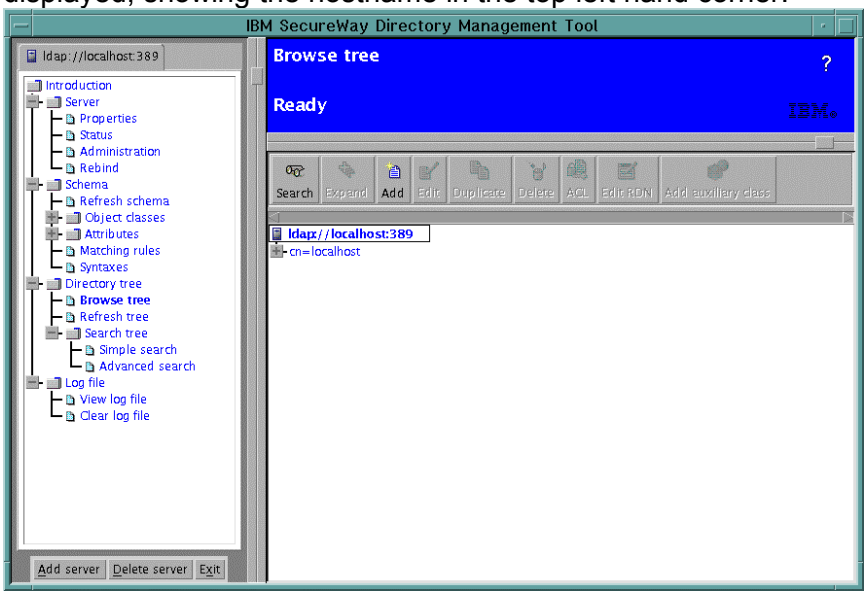
e. Click on 'OK'. A message panel indicating 'Retrieving server schema. Please wait.' may be displayed. The Directory Management Tool will be re-displayed, showing the hostname in the top left hand corner:

f. Click on the 'Browse tree' entry, on the left hand panel under the 'Directory tree' node. Message panels indicating that certain entries do not contain any data may be displayed; click on 'OK' to dismiss these dialogues. The 'Browse directory tree' panel will be displayed:

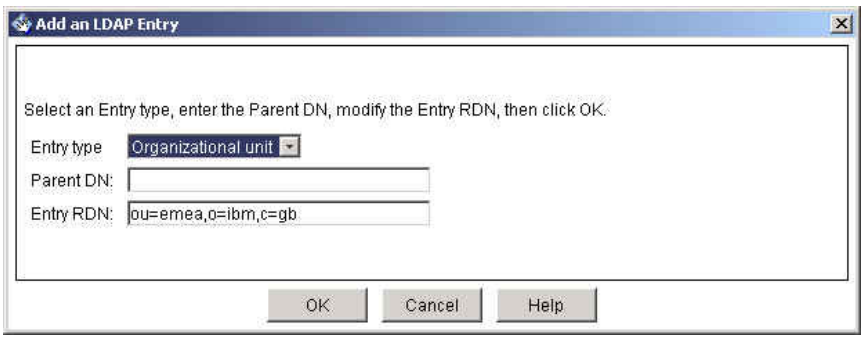
g. ***If you running the Directory Management Tool on the same AIX box as the directory***, click on 'Rebind' (listed under 'Server' in the left hand panel). Click on 'Authenticated' and enter the LDAP administrator DN and password (`cn=root` and `Secure99` in our case):



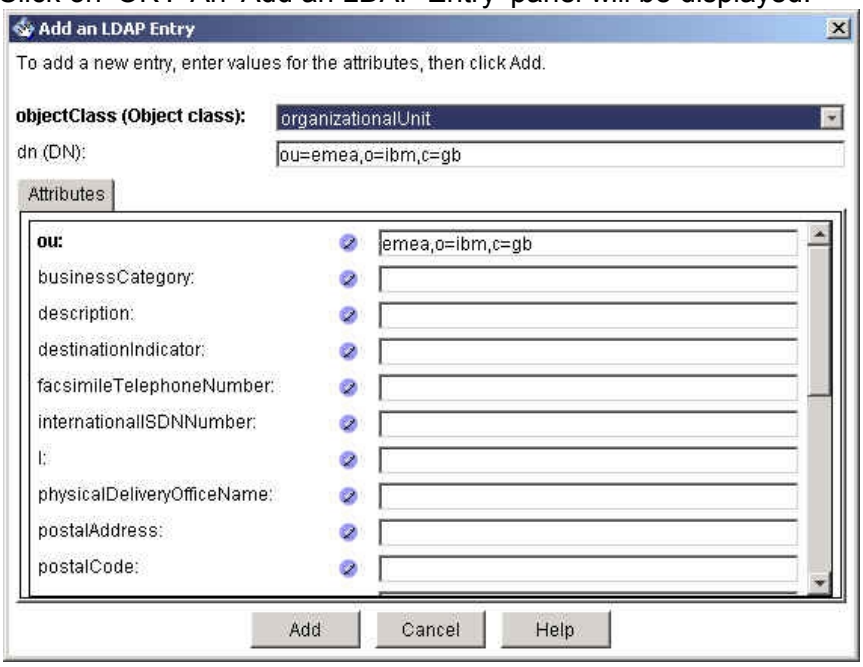
h. Click on 'OK'. Message panels indicating that certain entries do not contain any data may be displayed; click on 'OK' to dismiss these dialogues. The Directory Management Tool will be re-displayed, showing the hostname in the top left hand corner:



i. ***Click on 'Add' in the upper right hand frame***. An 'Add an LDAP Entry' dialogue is displayed. Against 'Entry RDN', enter the suffix previously entered for the Access Manager users and Global Sign-On (GSO) data (`ou=emea,o=ibm,c=gb` in our case). If you have specified an organizational unit (as in our case), select 'Organizational unit' as the entry type in the pull down list. If you have specified an organization (such as `o=ibm,c=gb`), select 'Organization' as the entry type in the pull down list. If you have specified just a country (such as `c=gb`), select 'Country' as the entry type in the pull down list.



j. Click on 'OK'. An 'Add an LDAP Entry' panel will be displayed:



k. If desired you can enter a description, etc. Click on 'Add'. Again, a warning indicating 'Entry "secauthority=default" does not contain any data' may be displayed – click on 'OK' to dismiss this. The entry which has just been added will be displayed:

l. The Directory Management Tool is no longer required and can be closed – click on 'Exit' to close it. The LDAP Configuration is now complete.

9. Access Manager Server installation (AIX)

a. Log in as `root`.

b. Insert the **IBM Tivoli Access Manager Base for AIX Version 3.9** CD.

c. Using **smitty**, select:
Software Installation and Maintenance ->
Install and Update Software ->
Install and Update from LATEST Available Software

d. Against `Input device / directory for software` press **F4** and select the CD-ROM – typically `/dev/cd0`.

e. Against `SOFTWARE to install` press **F4.** A list of SOFTWARE to install will be displayed. Move the cursor to **`PD ALL`** and press **F7** to select it. Then press **Enter**:

```
Install and Update from LATEST Available Software

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                                        [Entry Fields]
* INPUT device / directory for software                 /dev/cd0
* SOFTWARE to install                                  [PD                    > +
  PREVIEW only? (install operation will NOT occur)      no                      +
  COMMIT software updates?                              yes                     +
  SAVE replaced files?                                  no                      +
  AUTOMATICALLY install requisite software?             yes                     +
  EXTEND file systems if space needed?                  yes                     +
  OVERWRITE same or newer versions?                     no                      +
  VERIFY install and check file sizes?                  no                      +
  Include corresponding LANGUAGE filesets?              yes                     +
  DETAILED output?                                      no                      +
  Process multiple volumes?                             yes                     +


F1=Help             F2=Refresh          F3=Cancel           F4=List
F5=Reset            F6=Command          F7=Edit             F8=Image
F9=Shell            F10=Exit            Enter=Do
```

f. Press **Enter**. You will be asked if you are sure. Press **Enter** again. The software will be installed. Exit smitty.

10. WebSEAL Installation (AIX)

Note: This step will install WebSEAL together with any necessary pre-requisite components (namely Access Manager Runtime, GSKit and LDAP Client) if they are not already installed.

a. Log in as `root`.

b. Insert the **IBM Tivoli Access Manager Web Security for AIX Version 3.9** CD.

c. Using **smitty**, select:
Software Installation and Maintenance ->
Install and Update Software ->
Install and Update from LATEST Available Software

d. Against `Input device / directory for software` press **F4** and select the CD-ROM – typically `/dev/cd0`.

e. Against `SOFTWARE to install` press **F4.** A list of SOFTWARE to install will be displayed.

f. Move the cursor to each of the following entries and press **F7** to select it:

- **`3.9.0.0  Access Manager Runtime`**
- **`PDWeb  ALL`**
- **`gskkm  ALL`**
- **`ldap.client  ALL`**
- **`ldap.max_crypto_client  ALL`**

Note: If you are installing WebSEAL on the same box as the LDAP Server or the Access Manager Policy Server, then some of these packages may already be installed. (This is shown by the package name being preceded by an '@' sign in the list.)

g. Then press **Enter**:

```
Install and Update from LATEST Available Software

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                                        [Entry Fields]
* INPUT device / directory for software                 /dev/cd0              >
* SOFTWARE to install                                  [3.9.0.0  Access Manage> +
  PREVIEW only? (install operation will NOT occur)      no                      +
  COMMIT software updates?                              yes                     +
  SAVE replaced files?                                  no                      +
  AUTOMATICALLY install requisite software?             yes                     +
  EXTEND file systems if space needed?                  yes                     +
  OVERWRITE same or newer versions?                     no                      +
  VERIFY install and check file sizes?                  no                      +
  Include corresponding LANGUAGE filesets?              yes                     +
  DETAILED output?                                      no                      +
  Process multiple volumes?                             yes                     +


F1=Help             F2=Refresh          F3=Cancel           F4=List
F5=Reset            F6=Command          F7=Edit             F8=Image
F9=Shell            F10=Exit            Enter=Do
```

h. Press **Enter**. You will be asked if you are sure. Press **Enter** again. The software will be installed. Exit smitty.

11. Access Manager Configuration (AIX)

Note: This section describes how to configure all the Access Manager servers and WebSEAL.

a. Ensure that the Directory (and any intervening network) is working correctly. (You can do this by issuing the command `ldapsearch -h` *`ldap_server_hostname`* `-D cn=root -w` *`ldap_password`* `-b "" -s base objectclass=*`)

b. Using smitty, select:
Communications Applications and Services ->
Access Manager for e-business

c. You will be presented with the Access Manager for e-business Setup Menu. Type `1` (corresponding to Configure Package):

```
Access Manager for e-business Setup Menu

        1. Configure Package
        2. Unconfigure Package
        3. Display Configuration Status
        x. Exit

Please select the menu item [x]: 1
```

d. Press Enter. You will be presented with the Access Manager for e-business Configuration Menu. Type `1` (corresponding to Access Manager Runtime Configuration):

```
        Access Manager for e-business Configuration Menu


        1. Access Manager Runtime Configuration
        2. Access Manager Policy Server Configuration
        3. Access Manager Authorization Server Configuration
        4. Access Manager WebSEAL Configuration
        x. Return to Access Manager for e-business Setup Menu


Please select the menu item [x]: 1
```

e. Press Enter. When prompted enter the LDAP Server hostname. The output should look similar to the following:

```
Access Manager for e-business Configuration Menu


        1. Access Manager Runtime Configuration
        2. Access Manager Policy Server Configuration
        3. Access Manager Authorization Server Configuration
        4. Access Manager WebSEAL Configuration
        x. Return to Access Manager for e-business Setup Menu


Please select the menu item [x]: 1

Enter the LDAP server hostname: charon.welwyn.uk.ibm.com

Enter the LDAP server port number [389]:
This package has been successfully configured.


Press <enter> to continue ...
```

f. Press Enter. You will again be presented with the Access Manager for e-business Configuration Menu. Type `1` (this time corresponding to Access Manager Policy Server Configuration) and press Enter. When prompted enter the LDAP administrator password (we used `Secure99`), the LDAP DN for the GSO database (we used `ou=emea,o=ibm,c=gb`), and a password for the Access Manager Administrator `sec_master` (we again used `Secure99`). Unless you have configured the LDAP directory for SSL communication answer `n` when asked whether SSL communication is to be enabled between the Access Manager server and the LDAP server. The configuration process can take several minutes. (If desired you can also select 'Enable root CA Certificate download'. This simplifies the distribution of the Root CA Certificate to subsequent Access Manager machines, but may introduce security exposures if the network can be compromised during the configuration step.) The output should look similar to the following:

```
Access Manager for e-business Configuration Menu


        1. Access Manager Policy Server Configuration
        2. Access Manager Authorization Server Configuration
        3. Access Manager WebSEAL Configuration
        x. Return to Access Manager for e-business Setup Menu


Please select the menu item [x]: 1
Enter the LDAP administrative user DN [cn=root]:
Enter the LDAP administrative user password: Secure99
Do you want to enable SSL communication between the
Access Manager Policy Server and the LDAP server (y/n) [Yes]? n
Enter the LDAP DN for GSO database: ou=emea,o=ibm,c=gb

You are required to provide a password for the
Access Manager Administrator account.
The administrator login name is sec_master and cannot be changed.
```

```
Enter the password for the Access Manager Administrator: Secure99
Re-enter the password for confirmation: Secure99

Enter the SSL server port for Access Manager Policy Server [7135]:
Enter the Policy Server SSL certificate lifetime [365]:

Selecting the Enable root CA Certificate download option simplifies the
configuration of the Runtime on subsequent machines.  Enabling this option
may introduce a security exposure if a non-trusted host can impersonate the
Access Manager Policy Server in the network.
Enable root CA Certificate download (y/n) [No]? y

* Configuring server

Generating Server Certificates, please wait.

Creating the SSL certificate.  This may take several minutes...

The SSL configuration of the Access Manager Policy Server has completed
successfully.
The Policy Server's signed SSL certificate is base-64 encoded and saved in
text file
  /var/PolicyDirector/keytab/pdcacert.b64
This file is required by the configuration program on each machine in your
secure domain.

SSL Configuration completed successfully


* Starting server


Access Manager Policy Server v3.9.0 (Build 020412)

Copyright (C) IBM Corporation 1994-2002.  All Rights Reserved.

2002-05-17-09:24:11.899+00:00I----- 0x1354A0A0 pdmgrd NOTICE ivc general
ivmgrd.cpp 710 0x00000001
Server startup
2002-05-17-09:24:11.999+00:00I----- 0x1354A0A0 pdmgrd NOTICE ivc general
ivmgrd.cpp 715 0x00000001
Loading configuration
This package has been successfully configured.


Press <enter> to continue ...
```

g. Press Enter. You will again be presented with the Access Manager for e-business Configuration Menu. Type `1` (this time corresponding to Access Manager Authorization Server Configuration) and press Enter. When prompted enter the LDAP administrator password (we used `Secure99`), and the password for the Access Manager Administrator `sec_master` (we again used `Secure99`). Unless you have configured the LDAP directory for SSL communication answer `n` when asked whether SSL communication is to be enabled between the Access Manager server and the LDAP server. The configuration process can take several minutes. The output should look similar to the following:

```
Access Manager for e-business Configuration Menu


        1. Access Manager Authorization Server Configuration
        2. Access Manager WebSEAL Configuration
        x. Return to Access Manager for e-business Setup Menu



Please select the menu item [x]: 1
Enter the LDAP administrative user DN [cn=root]:
Enter the LDAP administrative user password: Secure99
Do you want to enable SSL communication between the
Access Manager Policy Server and the LDAP server (y/n) [Yes]? n
Enter the password for the Access Manager Administrator: Secure99

* Configuring server


Configuration of server ivacld is in progress.  This may take several minutes.
..


SSL configuration has completed successfully for the server.



* Starting server


Access Manager Authorization Server v3.9.0 (Build 020412)

Copyright (C) IBM Corporation 1994-2002.  All Rights Reserved.

2002-05-17-10:54:27.183+00:00I----- 0x1354A0A0 pdacld NOTICE ivc general ivacl
d.cpp 397 0x00000001
Server startup
2002-05-17-10:54:27.247+00:00I----- 0x1354A0A0 pdacld NOTICE ivc general ivacl
d.cpp 402 0x00000001
Loading configuration
This package has been successfully configured.


Press <enter> to continue ...
```

(The first time we attempted to configure the Access Manager Authorization Server, the

configuration failed with a message "`Timeout occurred while attempting to read from socket`". However after unconfiguring this package, the second attempt at configuring it was successful.)

h. Press Enter. You will again be presented with the Access Manager for e-business Configuration Menu. Type `1` (this time corresponding to Access Manager WebSEAL Configuration). Press Enter. When prompted enter the password for the Access Manager Administrator `sec_master` (we used `Secure99`). Unless you have configured the LDAP directory for SSL communication answer `n` when asked whether SSL communication is to be enabled between the Access Manager server and the LDAP server. The configuration process can take several minutes. The output should look similar to the following:

```
        Access Manager for e-business Configuration Menu


        1. Access Manager WebSEAL Configuration
        x. Return to Access Manager for e-business Setup Menu


Please select the menu item [x]: 1
Enter the password for the Access Manager Administrator: Secure99
Do you want to enable SSL communication between the
Access Manager Policy Server and the LDAP server (y/n) [Yes]? n
Please check Web Server configuration:

1. Enable TCP HTTP?               Yes

2. HTTP Port                      80

3. Enable HTTPS?                  Yes

4. HTTPS Port                     443

5. Web document root directory    /opt/pdweb/www/docs


a. Accept configuration and continue with installation

x. Exit installation

Select item to change: a
* Configuring the Web Server


Configuration of server webseald is in progress.  This may take several
minutes...


SSL configuration has completed successfully for the server.


* Starting server


Access Manager WebSEAL Version 3.9.0 (Build 020412)
```

```
Copyright (C) IBM Corporation 1994-2002.  All Rights Reserved.


Press <enter> to continue ...
```

i. Press Enter. You can now check that Access Manager is working by following the steps described in Section Part V - 22 - Initial Access Manager Validation on Page 170 below.

12. Web Portal Manager Installation and Configuration (AIX)

Note: This step includes the installation of Web Portal Manager together with any necessary pre-requisite components (namely WebSphere Application Server, Access Manager Runtime, GSKit and the LDAP Client) if they are not already installed.

12.1 Install the Access Manager pre-requisite software

a. Log in as `root`.

b. Insert the **IBM Tivoli Access Manager Web Portal Manager for AIX Version 3.9** CD.

c. Using **smitty**, select:
Software Installation and Maintenance ->
Install and Update Software ->
Install and Update from LATEST Available Software

d. Against `Input device / directory for software` press **F4** and select the CD-ROM – typically `/dev/cd0`.

e. Against `SOFTWARE to install` press **F4.** A list of SOFTWARE to install will be displayed.

f. Move the cursor to each of the following entries and press **F7** to select it:

- **`gskkm`** **ALL**
- **`ldap.client`** **ALL**
- **`ldap.max_crypto_client`** **ALL**

Note: If you are installing Web Portal Manager on the same box as the LDAP Server or the Access Manager Policy Server, then some or all of these packages may already be installed. (This is shown by the package name being preceded by an '@' sign in the list.)

g. Then press **Enter**:

```
Install and Update from LATEST Available Software

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                                        [Entry Fields]
* INPUT device / directory for software                 /dev/cd0              >
* SOFTWARE to install                                  [gskkm                 > +
  PREVIEW only? (install operation will NOT occur)      no                      +
  COMMIT software updates?                              yes                     +
  SAVE replaced files?                                  no                      +
  AUTOMATICALLY install requisite software?             yes                     +
  EXTEND file systems if space needed?                  yes                     +
  OVERWRITE same or newer versions?                     no                      +
  VERIFY install and check file sizes?                  no                      +
  Include corresponding LANGUAGE filesets?              yes                     +
  DETAILED output?                                      no                      +
```

```
  Process multiple volumes?                          yes                    +



F1=Help             F2=Refresh          F3=Cancel           F4=List
F5=Reset            F6=Command          F7=Edit             F8=Image
F9=Shell            F10=Exit            Enter=Do
```

h. Press **Enter**. You will be asked if you are sure. Press **Enter** again. The software will be installed.

i. **If IBM HTTP Server is not already installed** then install IBM HTTP Server as described in Section 8.2 - *Install the IBM HTTP Server* on Page 100 above.

12.2 Install WebSphere Application Server

a. Insert /continue to use the **IBM Tivoli Access Manager Web Portal Manager for AIX Version 3.9** CD.

b. Ensure that a mount point for the CD-ROM device is defined and mounted. (We used `/cdrom`.)

c. Change directory to `/cdrom/usr/sys/inst.images/WebSphere`

d. Enter the command
```
./install.sh -silent -responseFile ./install.script –prereqfile \
./prereq.properties
```
(this step may take several minutes to run).

e. The output should look similar to the following:

```
# ./install.sh –silent –responseFile ./install.script –prereqfile
./prereq.properties
Installing Samples
Launching SEAppinstall.sh for Samples.ear
Launching SEAppinstall.sh for petstore.ear
Creating SampleDB
Launching createSampleDB.sh
A copy of the log file is in /tmp/install.log
The install log file is install.log and is stored in the logs directory
Ending the application...
#
```

12.3 Install the WebSphere Application Server PTFs

a. Stop the WebSphere Application Server, HTTP Server and the LDAP server:

```
# /usr/WebSphere/AppServer/bin/stopServer.sh

WebSphere Application Server, Advanced Single Server Edition V4.0
WebSphere Application Server, Advanced Developer Edition V4.0
WebSphere Application Server, Advanced Edition V4.0
Runtime Utility Program
Copyright (C) IBM Corporation, 1997-2001
```

```
WSRU0025I: Loading configuration from file.
WSRU0028I: Using the specified configuration file:
    /usr/WebSphere/AppServer/config/server-cfg.xml
WSRU0029I: The diagnostic host name read as localhost.
WSRU0030I: The diagnostic port was read as 7000.
Stopping server.
WSRV0056E: A connection could not be made to perform the requested operation.
This usually indicates that the target utility server is stopped.
This may indicate that the wrong diagnostic port was used.
WSRU0031E: Command Failure: Stop Server.
WSRU0032E: Transfer failed:
WSRV0057E: Failed to complete transfer with DrAdmin server.
# /usr/HTTPServer/bin/apachectl stop
/usr/HTTPServer/bin/apachectl stop: httpd stopped
# ps -ef |grep slapd
    root 15750 17914   1 05:17:52  pts/0  0:00 grep slapd
    ldap 25178     1   0 05:03:39  pts/0  0:06 /usr/bin/slapd
# kill 25178
#
```

b. Change directory to `/cdrom/usr/sys/inst.images/WebSphere_PTF2`

c. It is probably worth reviewing the contents of `was40_aes_ptf_2.Readme` in this directory.

d. Copy the contents of this directory to a temporary directory:

```
# cd /cdrom/usr/sys/inst.images/WebSphere_PTF2
# mkdir /tmp/was_ptf2
# cp * /tmp/was_ptf2
#
```

e. Change directory to the temporary directory and issue the following command: `./install.sh`
The output should look similar to the following:

```
# cd /tmp/was_ptf2
# ./install.sh
WebSphere Application Server 4.0, Advanced Edition Single Server PTF 2
Please shut down the Application Server and any Webservers that might be running.
If not the PTF may not be installed properly
If you want to install silently, please issue install.sh -silent
silent install        =
IHS install           =  true
J2C Connector install =  maybe
Please enter the WebSphere root directory
/usr/WebSphere/AppServer
Installing the WebSphere Application Server 4.0 PTF 2
2002/05/21 06:07:33 Extractor version: 1.29
2002/05/21 06:07:40
2002/05/21 06:07:41 Input Jar File      : /tmp/was_ptf2/was40_aes_ptf_2.jar  src=Default
2002/05/21 06:07:44 Start of extraction for /tmp/was_ptf2/was40_aes_ptf_2.jar
2002/05/21 06:07:44 No target message provided, default enabled.
2002/05/21 06:07:44 Target Directory    : /usr/WebSphere/AppServer
2002/05/21 06:07:45 Testing Temporary Directory : /tmp
2002/05/21 06:07:45 Full Temporary Directory : /tmp
2002/05/21 06:07:45 The temporary directory is usable.
2002/05/21 06:07:45 Backup Jar File     : /usr/WebSphere/AppServer/was40_ptf_2_backup.jar
2002/05/21 06:07:45 This update applies to the following components:
2002/05/21 06:07:45     Client
2002/05/21 06:07:45     Server
2002/05/21 06:07:45     Samples
2002/05/21 06:07:45     Console
2002/05/21 06:07:45     Common
2002/05/21 06:07:45     Deploytools
2002/05/21 06:07:45     Plugins
2002/05/21 06:07:45     Samples_Common
```

```
2002/05/21 06:07:45     Server_Common
2002/05/21 06:07:45     Tools_Common
2002/05/21 06:07:45     J2EEClient
2002/05/21 06:07:45     JTCClient
2002/05/21 06:07:45
2002/05/21 06:07:45 The following components were detected installed:
2002/05/21 06:07:47      Console
2002/05/21 06:07:47      Deploytools
2002/05/21 06:07:47      J2EEClient
2002/05/21 06:07:47      Tools_Common
2002/05/21 06:07:47      Common
2002/05/21 06:07:47      Client
2002/05/21 06:07:47      Samples
2002/05/21 06:07:47      Server_Common
2002/05/21 06:07:47      JTCClient
2002/05/21 06:07:47      Server
2002/05/21 06:07:47      Samples_Common
2002/05/21 06:07:47      Plugins
2002/05/21 06:07:48
2002/05/21 06:07:48 Product file type: XML
2002/05/21 06:07:49 Product file [
/usr/WebSphere/AppServer/properties/com/ibm/websphere/product.xml ]
2002/05/21 06:08:38 No prior history events noted.
2002/05/21 06:08:43 Determining files to back up
2002/05/21 06:08:44 scanning     1 of 13271    0% complete
. . . .
. . . .
. . . .
2002/05/21 06:44:26 Applying entry 12921 of 13270   97% complete
Launched chmod 711 /usr/WebSphere/AppServer/uninstall_ptf_2.sh
Cmd ended rc=0
2002/05/21 06:44:38 Applying entry 13270 of 13270  100% complete
2002/05/21 06:44:39 No Re-Sequencing of jar files was noted.
2002/05/21 06:44:39 Processing virtual script CopyEjbDeploy
Launched  cp /usr/WebSphere/AppServer/bin/ejbdeploy.sh
/usr/WebSphere/AppServer/deploytool/itp/ejbdeploy.sh
Cmd ended rc=0
2002/05/21 06:44:43 Updating /usr/WebSphere/AppServer/properties/com/ibm/websphere/product.xml
2002/05/21 06:44:45 Input Jar File   : /tmp/was_ptf2/was40_aes_ptf_2.jar
2002/05/21 06:44:45 Target Directory : /usr/WebSphere/AppServer
2002/05/21 06:44:45 Backup Jar File  : /usr/WebSphere/AppServer/was40_ptf_2_backup.jar
2002/05/21 06:44:45 Warnings Issued  : 0
2002/05/21 06:44:45 Log File         : /usr/WebSphere/AppServer/logs/was40_ptf_2.log
2002/05/21 06:44:45
2002/05/21 06:44:45 End of extraction for /tmp/was_ptf2/was40_aes_ptf_2.jar with no errors.
2002/05/21 06:44:45
2002/05/21 06:44:45 Please view the log for details.
Installing JDK PTF 2
2002/05/21 06:46:19 Extractor version: 1.29
2002/05/21 06:46:25
2002/05/21 06:46:26 Input Jar File      : /tmp/was_ptf2/jdk_ptf_2.jar  src=Default
2002/05/21 06:46:27 Start of extraction for /tmp/was_ptf2/jdk_ptf_2.jar
2002/05/21 06:46:27 No target message provided, default enabled.
2002/05/21 06:46:27 Target Directory    : /usr/WebSphere/AppServer/java_ptf_2
2002/05/21 06:46:27 Testing Temporary Directory : /tmp
2002/05/21 06:46:27 Full Temporary Directory : /tmp
2002/05/21 06:46:27 The temporary directory is usable.
2002/05/21 06:46:27 Backup Jar File     : /usr/WebSphere/AppServer/jdk_ptf_2_backup.jar
2002/05/21 06:46:27 This update applies to the following components:
2002/05/21 06:46:27     JDK
2002/05/21 06:46:27     JRE
2002/05/21 06:46:27
2002/05/21 06:46:27 The following components were detected installed:
2002/05/21 06:46:29      JRE
2002/05/21 06:46:29      JDK
2002/05/21 06:46:29
2002/05/21 06:46:29 No set product file.
2002/05/21 06:46:29 Bypassing duplicate application checking by request.
2002/05/21 06:46:30 Determining files to back up
2002/05/21 06:46:30 scanning   1 of 301    0% complete
. . . .
. . . .
```

```
. . . .
2002/05/21 06:58:17 Applying entry 300 of 300  100% complete
2002/05/21 06:58:17 No Re-Sequencing of jar files was noted.
2002/05/21 06:58:17 Input Jar File   : /tmp/was_ptf2/jdk_ptf_2.jar
2002/05/21 06:58:17 Target Directory : /usr/WebSphere/AppServer/java_ptf_2
2002/05/21 06:58:17 Backup Jar File  : /usr/WebSphere/AppServer/jdk_ptf_2_backup.jar
2002/05/21 06:58:17 Warnings Issued  : 0
2002/05/21 06:58:17 Log File         : /usr/WebSphere/AppServer/logs/jdk_ptf_2.log
2002/05/21 06:58:17
2002/05/21 06:58:17 End of extraction for /tmp/was_ptf2/jdk_ptf_2.jar with no errors.
2002/05/21 06:58:17
2002/05/21 06:58:17 Please view the log for details.
WARNING: If you install the IBM HTTP Server PTF, the back level of IHS may not work properly with
the new level of GSkit.
Please enter whether you want to install IHS WebServer PTF (y/n)
y
Installing IHS PTF
2002/05/21 07:08:14 Extractor version: 1.29
2002/05/21 07:08:20
2002/05/21 07:08:21 Input Jar File      : /tmp/was_ptf2/ihs_ptf_2.jar  src=Default
2002/05/21 07:08:21 Start of extraction for /tmp/was_ptf2/ihs_ptf_2.jar
2002/05/21 07:08:21 No target message provided, default enabled.
2002/05/21 07:08:22 Target Directory    : /usr/HTTPServer
2002/05/21 07:08:22 Testing Temporary Directory : /tmp
2002/05/21 07:08:22 Full Temporary Directory : /tmp
2002/05/21 07:08:22 The temporary directory is usable.
2002/05/21 07:08:22 Backup Jar File     : /usr/WebSphere/AppServer/ihs_ptf_2_backup.jar
2002/05/21 07:08:22 Component checking deactiviated, affected components entry is null.
2002/05/21 07:08:22 No set product file.
2002/05/21 07:08:22 Bypassing duplicate application checking by request.
2002/05/21 07:08:22 Determining files to back up
2002/05/21 07:08:22 scanning  1 of 41    2% complete
2002/05/21 07:08:47 scanning  6 of 41   14% complete
2002/05/21 07:08:48 scanning 41 of 41  100% complete
2002/05/21 07:08:48
2002/05/21 07:08:56 Backing Up  2 of 15   13% complete
2002/05/21 07:09:29 Backing Up  4 of 15   26% complete
2002/05/21 07:09:37 Backing Up 13 of 15   86% complete
2002/05/21 07:09:37 Backing Up 15 of 15  100% complete
2002/05/21 07:09:37
2002/05/21 07:09:38 Applying entry  1 of 40    2% complete
2002/05/21 07:10:03 Applying entry  6 of 40   15% complete
2002/05/21 07:10:04 Applying entry 40 of 40  100% complete
2002/05/21 07:10:04 No Re-Sequencing of jar files was noted.
2002/05/21 07:10:04 Input Jar File   : /tmp/was_ptf2/ihs_ptf_2.jar
2002/05/21 07:10:04 Target Directory : /usr/HTTPServer
2002/05/21 07:10:05 Backup Jar File  : /usr/WebSphere/AppServer/ihs_ptf_2_backup.jar
2002/05/21 07:10:05 Warnings Issued  : 0
2002/05/21 07:10:05 Log File         : /usr/WebSphere/AppServer/logs/ihs_ptf_2.log
2002/05/21 07:10:05
2002/05/21 07:10:05 End of extraction for /tmp/was_ptf2/ihs_ptf_2.jar with no errors.
2002/05/21 07:10:05
2002/05/21 07:10:05 Please view the log for details.
Installing the gskit package
Installing new version of GSkit.
+-----------------------------------------------------------------------------+
                    Pre-installation Verification...
+-----------------------------------------------------------------------------+
Verifying selections...done
Verifying requisites...done
Results...

WARNINGS
--------
  Problems described in this section are not likely to be the source of any
  immediate or serious failures, but further actions may be necessary or
  desired.

  Already Installed
  -----------------
  The number of selected filesets that are either already installed
  or effectively installed through superseding filesets is 1.  See
```

```
  the summaries at the end of this installation for details.

  NOTE:  Base level filesets may be reinstalled using the "Force"
  option (-F flag), or they may be removed, using the deinstall or
  "Remove Software Products" facility (-u flag), and then reinstalled.

  << End of Warning Section >>

FILESET STATISTICS
------------------
    1  Selected to be installed, of which:
        1  Already installed (directly or via superseding filesets)
  ----
    0  Total to be installed


Pre-installation Failure/Warning Summary
----------------------------------------
Name                      Level           Pre-installation Failure/Warning
-------------------------------------------------------------------------------
gskkm.rte                 5.0.4.25        Already superseded by 5.0.4.67

#
```

12.4 Install Web Portal Manager

a. Using **smitty**, select:
   Software Installation and Maintenance ->
   Install and Update Software ->
   Install and Update from LATEST Available Software

b. Against `Input device / directory for software` press **F4** and select the CD-ROM – typically `/dev/cd0`.

c. Against `SOFTWARE to install` press **F4.** A list of SOFTWARE to install will be displayed.

d. Move the cursor to each of the following entries and press **F7** to select it:

- **`3.9.0.0  Access Manager Runtime  ALL`**
- **`3.9.0.0  Access Manager Web Portal Manager  ALL`**

Note: Again, if you are installing Web Portal Manager on the same box as the LDAP Server or the Access Manager Policy Server, then some or all of these packages may already be installed. (This is shown by the package name being preceded by an '@' sign in the list.)

e. Then press **Enter**:

```
Install and Update from LATEST Available Software

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                                        [Entry Fields]
* INPUT device / directory for software                 /dev/cd0              >
* SOFTWARE to install                                  [3.9.0.0  Access Manage> +
  PREVIEW only? (install operation will NOT occur)      no                     +
  COMMIT software updates?                              yes                    +
  SAVE replaced files?                                  no                     +
  AUTOMATICALLY install requisite software?             yes                    +
  EXTEND file systems if space needed?                  yes                    +
  OVERWRITE same or newer versions?                     no                     +
```

```
  VERIFY install and check file sizes?                no                      +
  Include corresponding LANGUAGE filesets?            yes                     +
  DETAILED output?                                    no                      +
  Process multiple volumes?                           yes                     +



F1=Help             F2=Refresh          F3=Cancel           F4=List
F5=Reset            F6=Command          F7=Edit             F8=Image
F9=Shell            F10=Exit            Enter=Do
```

f. Press **Enter**. You will be asked if you are sure. Press **Enter** again. The software will be installed.

12.5 Configure Web Portal Manager

a. Start the IBM SecureWay Directory Server (`/usr/bin/slapd`).

b. Ensure that the Directory (and any intervening network) is working correctly. (You can do this by issuing the command `ldapsearch –h` *`ldap_server_hostname`* `–D cn=root –w` *`ldap_password`* `–b "" –s base objectclass=*`)

c. Ensure that the Access Manager Policy Server is running (`ps -ef|grep pdmgrd`).

d. Using smitty, select:
Communications Applications and Services ->
Access Manager for e-business

e. You will be presented with the Access Manager for e-business Setup Menu. Type `1` (corresponding to Configure Package):

```
Access Manager for e-business Setup Menu

        1. Configure Package
        2. Unconfigure Package
        3. Display Configuration Status
        x. Exit

Please select the menu item [x]: 1
```

f. Press Enter. You will be presented with the Access Manager for e-business Configuration Menu. Type `1` (corresponding to Access Manager Runtime Configuration):

```
Access Manager for e-business Configuration Menu


        1. Access Manager Web Portal Manager Configuration
        x. Return to Access Manager for e-business Setup Menu



Please select the menu item [x]: 1
```

g. Press Enter. The output should look similar to the following:

```
Access Manager for e-business Configuration Menu


        1. Access Manager Web Portal Manager Configuration
        x. Return to Access Manager for e-business Setup Menu



Please select the menu item [x]: 1

Stopping WebSphere Application Server with command
          /usr/WebSphere/AppServer/bin/stopServer.sh



WebSphere Application Server, Advanced Single Server Edition V4.0
WebSphere Application Server, Advanced Developer Edition V4.0
WebSphere Application Server, Advanced Edition V4.0
Runtime Utility Program
Copyright (C) IBM Corporation, 1997-2001

WSRU0025I: Loading configuration from file.
WSRU0028I: Using the specified configuration file:
    /usr/WebSphere/AppServer/config/server-cfg.xml
WSRU0029I: The diagnostic host name read as localhost.
WSRU0030I: The diagnostic port was read as 7000.
Stopping server.
Failed to open socket
WSRU0054E: Exception: java.net.ConnectException: A remote host refused an attempted connect
operation.
java.net.ConnectException: A remote host refused an attempted connect operation.
        at java.net.PlainSocketImpl.socketConnect(Native Method)
        at java.net.PlainSocketImpl.doConnect(PlainSocketImpl.java:329)
        at java.net.PlainSocketImpl.connectToAddress(PlainSocketImpl.java:141)
        at java.net.PlainSocketImpl.connect(PlainSocketImpl.java:128)
        at java.net.Socket.<init>(Socket.java:285)
        at java.net.Socket.<init>(Socket.java:112)
        at com.ibm.ejs.sm.util.debug.DrClientSocket$1.run(DrClientSocket.java:83)
        at java.security.AccessController.doPrivileged(Native Method)
        at com.ibm.ejs.sm.util.debug.DrClientSocket.prepareSocket(DrClientSocket.java:80)
        at com.ibm.ejs.sm.util.debug.DrClientSocket.prepare(DrClientSocket.java:73)
        at com.ibm.ejs.sm.util.debug.DrSocket.sendThenReceive(DrSocket.java:144)
        at com.ibm.ejs.sm.util.debug.DrClientAccessor.sendThenReceive(DrClientAccessor.java:854)
        at com.ibm.ejs.sm.util.debug.DrClientAccessor.processRequest(DrClientAccessor.java:840)
        at com.ibm.ejs.sm.util.debug.DrClientAccessor.processRequest(DrClientAccessor.java:831)
        at com.ibm.ejs.sm.util.debug.DrClientAccessor.basicStopServer(DrClientAccessor.java:460)
        at com.ibm.ejs.sm.util.debug.DrAdmin.stopServer(DrAdmin.java:1076)
        at com.ibm.ejs.sm.util.debug.DrAdmin.processCommands(DrAdmin.java:658)
        at com.ibm.ejs.sm.util.debug.DrAdmin.process(DrAdmin.java:237)
        at com.ibm.ejs.sm.util.debug.DrAdmin.main(DrAdmin.java:157)
        at java.lang.reflect.Method.invoke(Native Method)
        at com.ibm.ws.bootstrap.WSLauncher.main(WSLauncher.java:158)
WSRU0031E: Command Failure: Stop Server.
WSRU0032E: Transfer failed:
WSRV0057E: Failed to complete transfer with DrAdmin server.

Installing Access Manager Web Portal Manager with command
         /usr/WebSphere/AppServer/bin/SEAppInstall.sh -install
/opt/PolicyDirector/java/export/pdwpm/pdwpm.ear -precompileJsp FALSE -interactive false


IBM WebSphere Application Server Release 4, Aes
J2EE Application Installation Tool, Version 1.0
Copyright IBM Corp., 1997-2001

The -configFile option was not specified. Using /usr/WebSphere/AppServer/config/server-cfg.xml
Loading Server Configuration from /usr/WebSphere/AppServer/config/server-cfg.xml
Server Configuration Loaded Successfully
Loading /opt/PolicyDirector/java/export/pdwpm/pdwpm.ear
```

```
Getting Expansion Directory for EAR File
Expanding EAR File to /usr/WebSphere/AppServer/installedApps/pdwpm.ear
Installed EAR On Server
Validating Application Bindings...
Finished validating Application Bindings.
Saving EAR File to directory
Saved EAR File to directory Successfully
Backing up Server Configuration to /usr/WebSphere/AppServer/config/server-cfg.xml~
Saving Server Configuration to /usr/WebSphere/AppServer/config/server-cfg.xml
Save Server Config Successful
JSP Pre-compile Skipped......
Installation Completed Successfully

Starting WebSphere Application Server with command
          /usr/WebSphere/AppServer/bin/startServer.sh -waitAmount 0



WebSphere Application Server, Advanced Single Server Edition V4.0
Application Server Launcher
Copyright (C) IBM Corporation, 2001

The configuration file was defaulted to:
    /usr/WebSphere/AppServer/config/server-cfg.xml
Using the single available node or the localhost node.
Using the single available server.
Will wait indefinitely for launch results.
Initiating server launch.
Loaded domain "WebSphere Administrative Domain".
Selected node "charon".
Selected server "Default Server".
WSPL0065I: Initiated server launch with process id 11950.
Time mark: Tuesday, May 21, 2002 8:05:00 AM CDT
Waiting for the server to be initialized.
Time mark: Tuesday, May 21, 2002 8:06:39 AM CDT
Initialized server.
Waiting for applications to be started.
Time mark: Tuesday, May 21, 2002 8:58:03 AM CDT
Started applications.
WSPL0057I: The server Default Server is open for e-business.
Please review the server log files for additional information.
Standard output: /usr/WebSphere/AppServer/logs/default_server_stdout.log
Standard error: /usr/WebSphere/AppServer/logs/default_server_stderr.log

Regenerating WebSphere plugin configuration with command
         /usr/WebSphere/AppServer/bin/GenPluginCfg.sh -configFile
/usr/WebSphere/AppServer/config/server-cfg.xml


IBM WebSphere Application Server Advanced Single Server Edition, Release 4.0
Web Server Plugin Configuration Generator
Copyright IBM Corp., 1997-2001

Loading Server Configuration from /usr/WebSphere/AppServer/config/server-cfg.xml
Server Configuration Load Successful
Generating Plugin Configuration from /usr/WebSphere/AppServer/config/server-cfg.xml
Plugin Config Generation Completed Successfully
/usr/HTTPServer/bin/apachectl restart: httpd restarted

Press <enter> to continue ...
```

h. Press Enter.

12.6 Set the HTTP Server port numbers

a. We earlier edited the HTTP configuration file, `httpd.conf`, so that IBM HTTP Server would

listen on Port 81 for non-SSL traffic. However as a result of the WPM installation and configuration, additional lines are placed at the end of `httpd.conf` which disallow any non-SSL traffic. (This is a security measure to protect against sniffing administrator traffic.) The additional lines which were placed at the end of our configuration file following WPM installation and configuration were as follows:

```
### BEGIN PDWPM CONFIG ENTRY ###
Listen 443
LoadModule ibm_ssl_module libexec/mod_ibm_ssl_128.so
SSLEnable
Keyfile "/var/PolicyDirector/keytab/pdwpm.kdb"
SSLV2Timeout 100
SSLV3Timeout 1000
### END PDWPM CONFIG ENTRY ###
```

b. If you are running WebSEAL on the same machine that you are using to run WPM and want WebSEAL to own ports 80 and 443, IBM HTTP Server and WebSphere must be re-configured as follows:
(a) Edit the HTTP configuration file, `httpd.conf`, by default found in the `/usr/HTTPServer/conf` directory. Locate the port value in the httpd.conf file and change it from Port 80 to a different port number - we had already changed this to Port 81 in an earlier step.
(b) Find the `Listen` line near the end of the file (added by the WPM configuration). Change the reference to 443 to a different port number - we used 4443:

```
### BEGIN PDWPM CONFIG ENTRY ###
Listen 4443
LoadModule ibm_ssl_module libexec/mod_ibm_ssl_128.so
SSLEnable
Keyfile "/var/PolicyDirector/keytab/pdwpm.kdb"
SSLV2Timeout 100
SSLV3Timeout 1000
### END PDWPM CONFIG ENTRY ###
```

c. If you want to enable non-SSL traffic (to port 81 in our case), edit `httpd.conf`, as follows:

```
### BEGIN PDWPM CONFIG ENTRY ###
Listen 4443
LoadModule ibm_ssl_module libexec/mod_ibm_ssl_128.so
<VirtualHost :4443>
SSLEnable
SSLClientAuth none
DocumentRoot /usr/HTTPServer/htdocs/en_US
</VirtualHost>
SSLDisable
Keyfile "/var/PolicyDirector/keytab/pdwpm.kdb"
SSLV2Timeout 100
SSLV3Timeout 1000
### END PDWPM CONFIG ENTRY ###
```

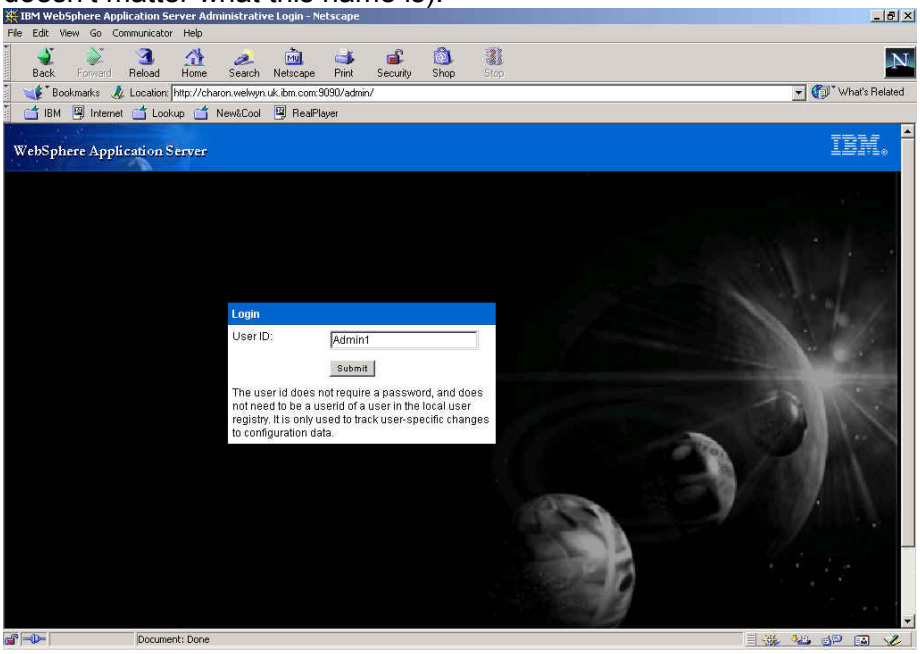
d. Restart the IBM HTTP Server:

```
/usr/HTTPServer/bin/apachectl stop
/usr/HTTPServer/bin/apachectl start
```

e. Start WebSphere Application Server by issuing:

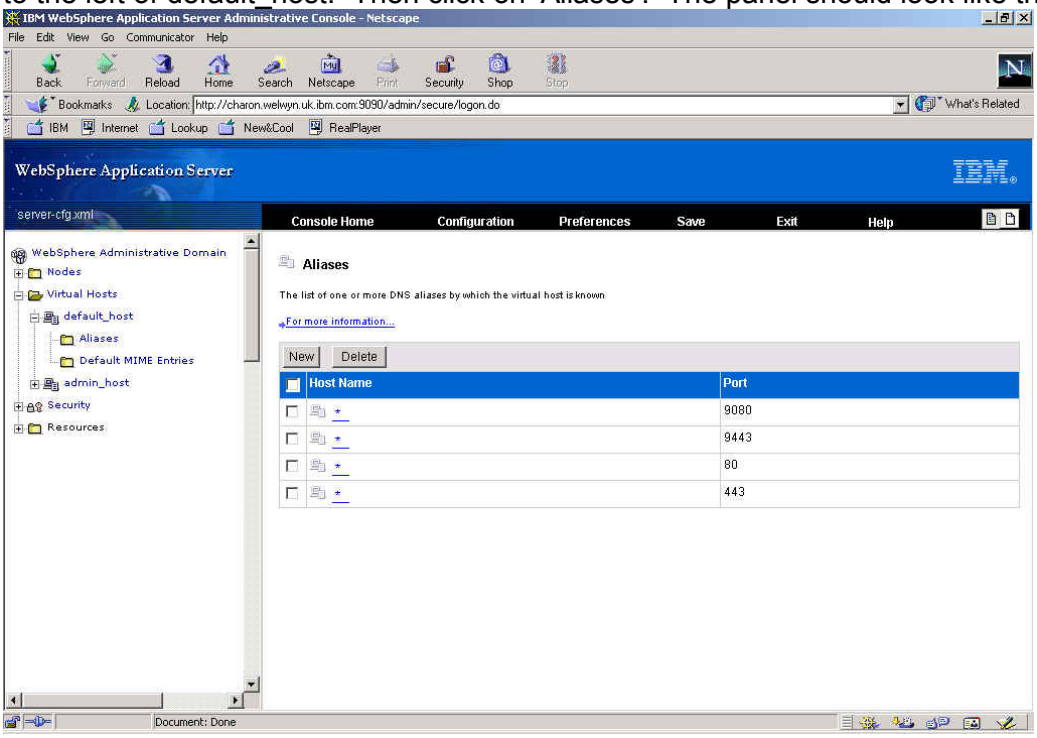
```
/usr/WebSphere/AppServer/bin/startServer.sh -waitAmount 0
```

f. Point a web browser at `http://hostname:9090/admin` (`http://charon.welwyn.uk.ibm.com:9090/admin` in our case). You will be presented with the WebSphere Application Server Administrative Login page. Enter a name to log in (but it doesn't matter what this name is):

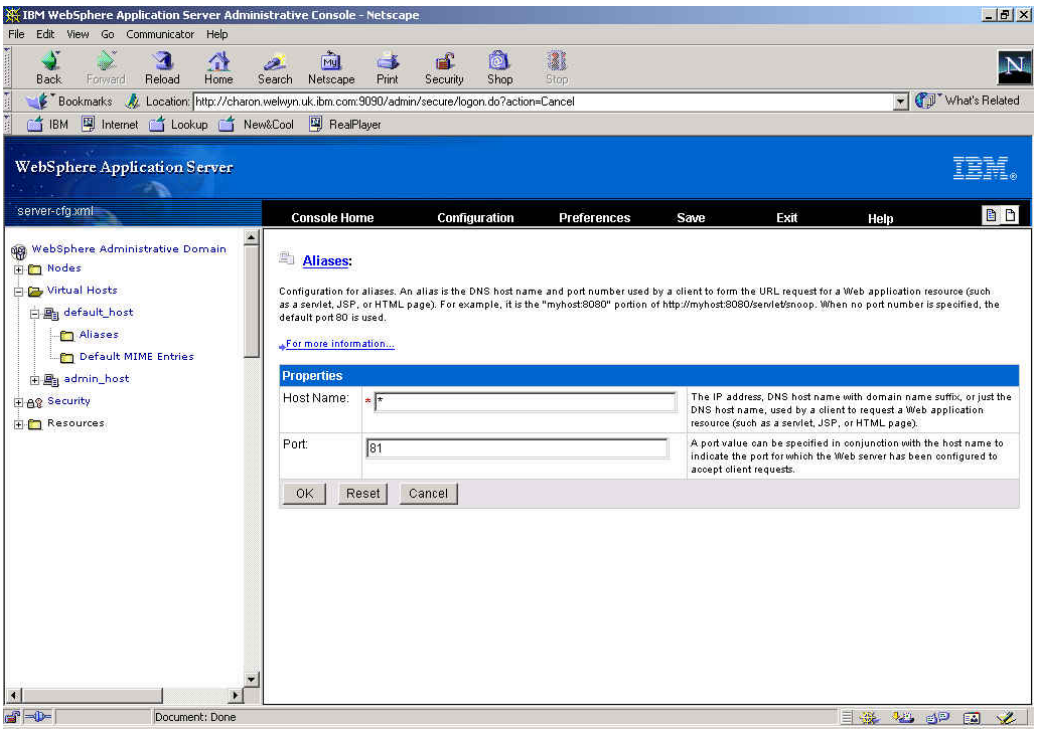


g. Click on 'Submit'.

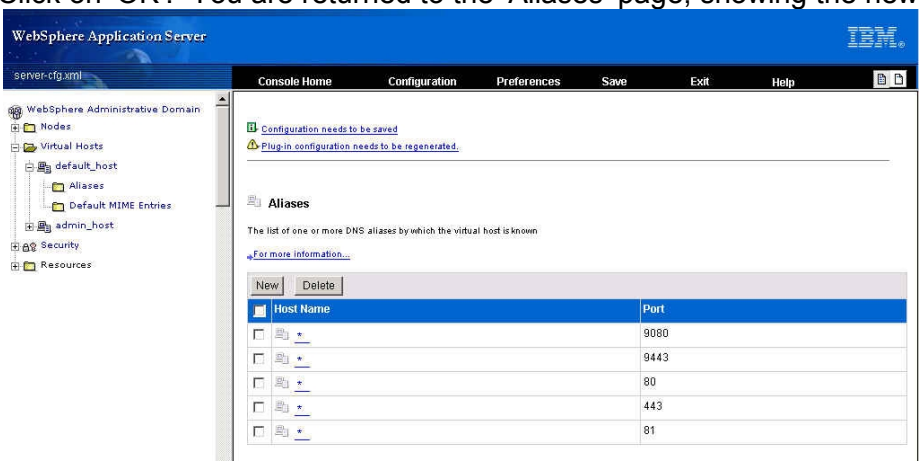
h. In the left-hand panel, click on the '+' sign to the left of Virtual Hosts and then click on the '+' sign to the left of default_host. Then click on 'Aliases'. The panel should look like this:



i. We need to add new aliases, for ports 81 and 4443. First, click on 'New'; a new panel will be displayed. Under 'Properties', add `*` in the 'Host Name' field and `81` in the 'Port' field:

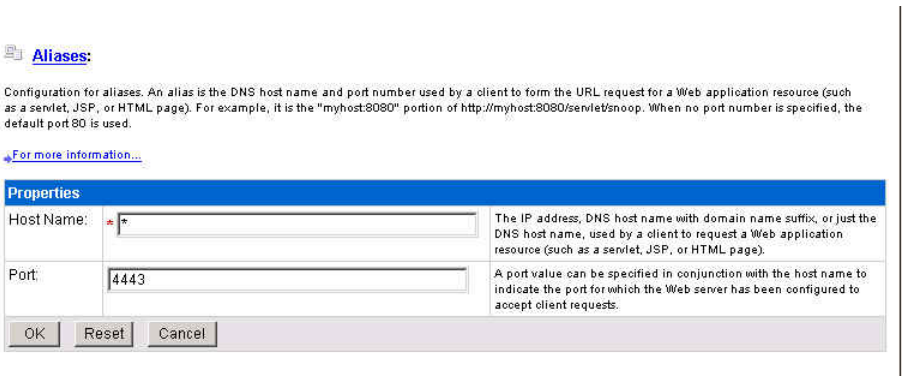


j. Click on ‘OK’. You are returned to the ‘Aliases’ page, showing the new entry:

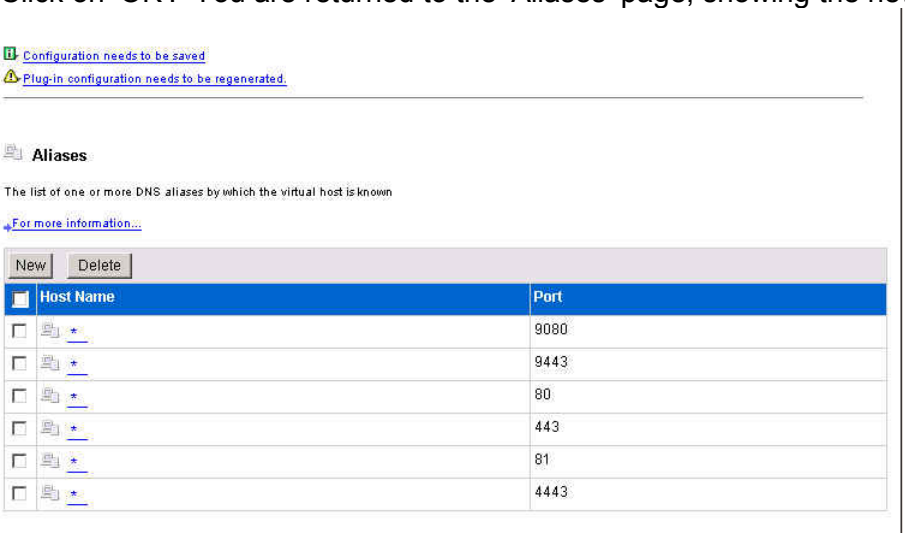


k. Notice the two messages at the top of the right-hand panel. The first says “Configuration needs to be saved” and the second says “Plug-in configuration needs to be regenerated”. These operations can be carried out once the second alias has been added.

l. Click on ‘New’; again, a new panel will be displayed. Under ‘Properties’, add `*` in the ‘Host Name’ field and `4443` in the ‘Port’ field:



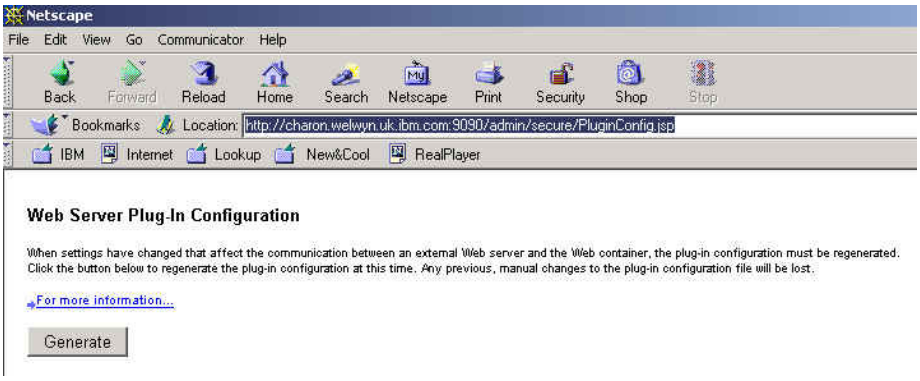
m. Click on 'OK'. You are returned to the 'Aliases' page, showing the new entry:



n. Click on 'Configuration needs to be saved'. A 'Save Configuration' panel is displayed:

o. Click on 'OK'. You are returned to the WebSphere Application Server Welcome screen.

p. You now need to re-generate the Plug-in configuration. In practice the only way that we were able to do this was to point the web browser at `http://hostname:9090/admin/secure/PluginConfig.jsp` (`http://charon.welwyn.uk.ibm.com:9090/admin/secure/PluginConfig.jsp` in our case):



q. Click on 'Generate'. After the operation had completed the browser displayed a message: 'This document contained no data'. However examination of `/usr/WebSphere/AppServer/config/plugin-cfg.xml` indicated that this was not a problem and the file had been updated with the new port numbers:

```
<VirtualHostGroup Name="default_host">
        <VirtualHost Name="*:9080"/>
        <VirtualHost Name="*:9443"/>
        <VirtualHost Name="*:80"/>
        <VirtualHost Name="*:443"/>
        <VirtualHost Name="*:81"/>
        <VirtualHost Name="*:4443"/>
</VirtualHostGroup>
```

r. Stop and start the application server. We did this by using the command prompt:

```
# cd /usr/WebSphere/AppServer/bin
# ./stopServer.sh

WebSphere Application Server, Advanced Single Server Edition V4.0
WebSphere Application Server, Advanced Developer Edition V4.0
WebSphere Application Server, Advanced Edition V4.0
Runtime Utility Program
Copyright (C) IBM Corporation, 1997-2001

WSRU0025I: Loading configuration from file.
WSRU0028I: Using the specified configuration file:
    /usr/WebSphere/AppServer/config/server-cfg.xml
WSRU0029I: The diagnostic host name read as localhost.
WSRU0030I: The diagnostic port was read as 7000.
Stopping server.
The server was successfully stopped.
# /usr/WebSphere/AppServer/bin/startServer.sh -waitAmount 0

WebSphere Application Server, Advanced Single Server Edition V4.0
Application Server Launcher
Copyright (C) IBM Corporation, 2001

The configuration file was defaulted to:
    /usr/WebSphere/AppServer/config/server-cfg.xml
Using the single available node or the localhost node.
Using the single available server.
Will wait indefinitely for launch results.
Initiating server launch.
Loaded domain "WebSphere Administrative Domain".
```

```
Selected node "charon".
Selected server "Default Server".
WSPL0065I: Initiated server launch with process id 19874.
Time mark: Thursday, May 23, 2002 8:51:16 AM CDT
Waiting for the server to be initialized.
Time mark: Thursday, May 23, 2002 8:52:28 AM CDT
Initialized server.
Waiting for applications to be started.
Time mark: Thursday, May 23, 2002 9:09:35 AM CDT
Started applications.
WSPL0057I: The server Default Server is open for e-business.
Please review the server log files for additional information.
Standard output: /usr/WebSphere/AppServer/logs/default_server_stdout.log
Standard error: /usr/WebSphere/AppServer/logs/default_server_stderr.log
#
```

Note the highlighted line: `WSPL0057I: The server Default Server is open for e-business` – this indicates that the application server has started correctly.

Notes on WebSphere Application Server and DB2 Versions

Access Manager is supplied with WebSphere Application Server Advanced Single Server Edition (AEs). Web Portal Manager is supported only with WAS Advanced Single Server Edition, not Advanced Edition (AE). If you try and install WPM with WAS AE the WPM Configuration will fail: you need to use the WAS Console Application Install wizard.

WAS AE Requires DB2 *Enterprise* Edition, whereas DB2 *Personal* Edition is supplied with the version of IBM SecureWay Directory which is shipped with Access Manager.

12.7 Verify Web Portal Manager operation

a. Ensure that the IBM HTTP Server was restarted after making any updates to `httpd.conf`.

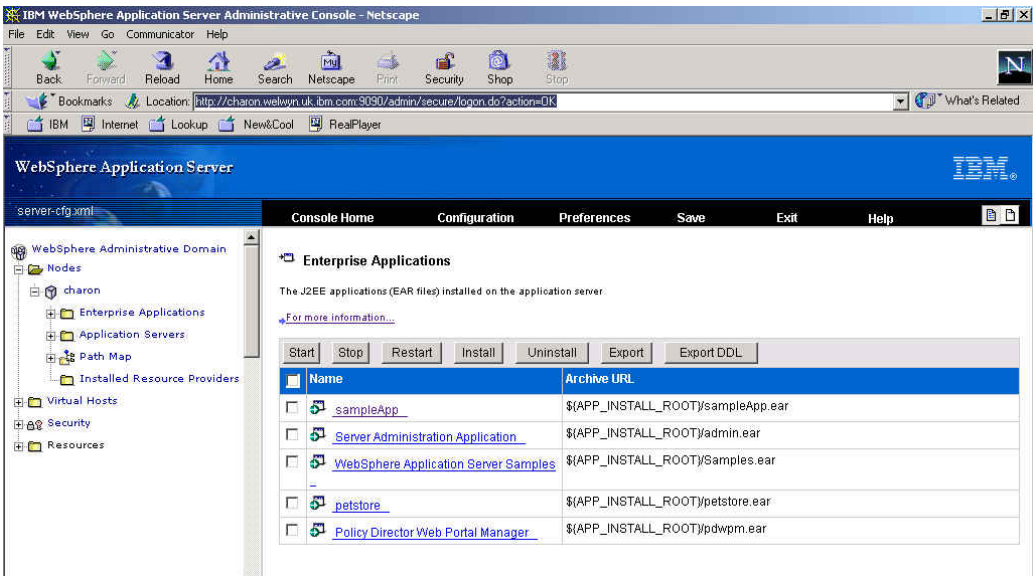
b. Start the IBM SecureWay Directory Server (`/usr/bin/slapd`).

c. Start the Access Manager Servers (`iv start`). (You can then display the status of the Access Manager Servers by issuing `iv status`.)

d. Point a web browser at `http://hostname:9090/admin`. You will again be presented with the WebSphere Application Server Administrative Login page.

e. Enter a userid and click on 'Submit'. You will be presented with the WebSphere Application Server Administrative Console.

f. You can use this console to verify that WPM is running: in the left-hand panel, click on the '+' sign to the left of Nodes and then click on the '+' sign to the left of your node (in our case `charon`). Then click on Enterprise Applications:

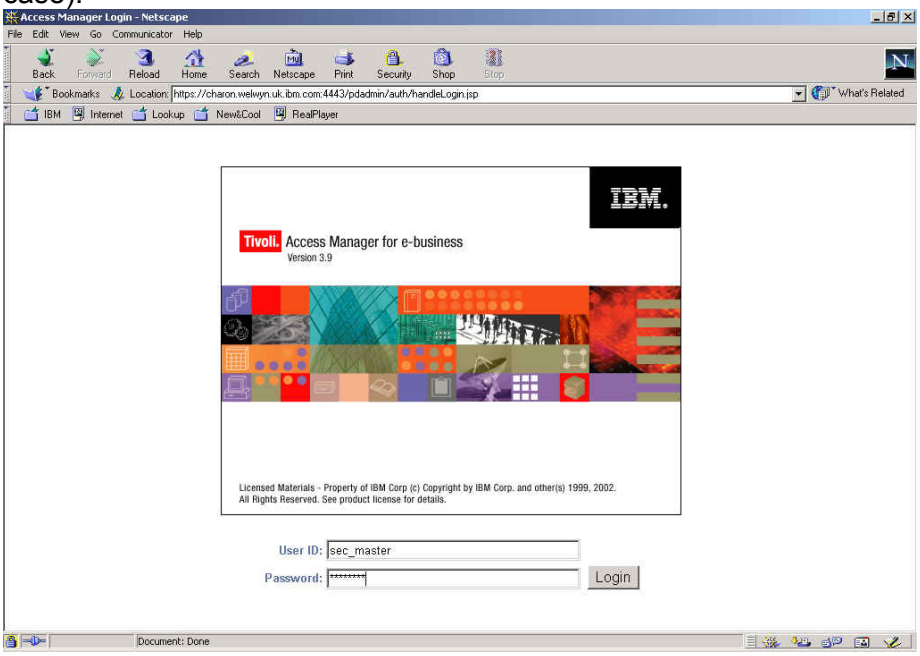


g. The symbol beside Web Portal Manager indicates that the application is running.

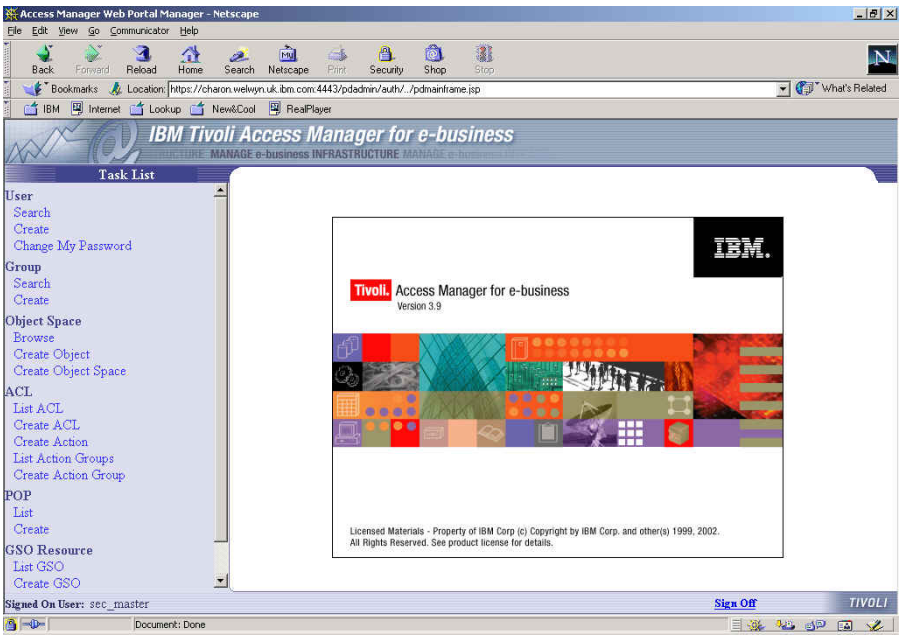
h. Point a web browser at `https://hostname:port number/pdadmin` (`https://charon.welwyn.uk.ibm.com:4443/pdadmin` in our case). (**Note**: you cannot use `localhost` or `*` as the host name – you must enter the specific hostname for your machine.)

i. You will be presented with various 'Name Check' or other security alert windows – accept these warnings. The Web Portal Manager sign-in screen will be displayed.

j. Enter the Access Manager Administrator userid (`sec_master`) and password (`Secure99` in our case):



k. Click on '**Login**':



I. From here you can use the Web Portal Manager to administer Access Manager.

General notes: Refer to the Publications Section on page 240 below for information about where to obtain information about **WebSphere Application Server**.

If you hit problems with IBM HTTP Server try looking at the contents of `/usr/HTTPServer/logs`, particularly `/usr/HTTPServer/logs/error_log`.

13. Useful information for Access Manager in the AIX environment

LDAP commands

a. LDAP can be started from the command line by issuing the command 'slapd'. This should start the associated DB2 processes as well so don't worry about how to start DB2.

b. You can check if LDAP has started by looking for the slapd process (e.g. ps -ef | grep "slapd")

Access Manager commands

a. `iv start` Starts `pdmgrd`, `pdacld` and `webseald`

b. `iv stop` Stops `pdmgrd`, `pdacld` and `webseald`

c. `iv status` Displays status of `pdmgrd`, `pdacld` and `webseald`

d. pdweb start Starts `webseald`

e. pdweb stop Stops `webseald`

f. `pdweb status` Displays status of `webseald`

Note that pdmgrd will not start if the LDAP Server is not running.

Access Manager Processes

If you type `ps –ef |grep PolicyDirector`, the following processes should be listed: pd`mgrd, pdacld` and if you type `ps –ef |grep pdweb` the following process should be listed: `webseald`.

Access Manager log files

a. /var/PolicyDirector/log/*

b. /var/pdweb/log/*

AIX commands

a. `Shutdown -Fr &` will shutdown and restart AIX immediately as a background task.

b. `oslevel` will show the version of AIX

c. `df -k` is useful for showing the state of the file system in 1024 blocks.

Part IV - Solaris Environment

14. Solaris System Preparation and general Solaris Notes

- We try to assume a minimum level of Solaris knowledge in these chapters: we have therefore tried to document most steps, but we may not have mentioned every '**Enter**' etc.
- Ensure that the date and time are set correctly across the environment you are using - this may avoid problems later on.
- Ensure that you have IP connectivity (for example, attempt to 'ping' another machine).
- The steps described here were documented based on Solaris 8, although we have successfully followed the same procedures on other versions of Solaris. Our experience was that in addition to the specific patches required by the Access Manager install (documented in the release notes) that it is advisable to be at a current service level. To this end we applied the latest 'cluster' patch from Sun for Solaris 8 (8_Recommended.zip (71MB)) downloaded from their support site (`http://sunsolve.sun.co.uk`). The version downloaded included the patches mentioned in the Release Notes dated May 28, 2002.
- Please be aware that the graphical screens shown in these chapters may vary slightly depending on your Solaris environment.
- Note also that file and directory names in Solaris are case sensitive.

15. Easy Installation Process for Solaris

Access Manager 3.9 provides a quick installation path using shell scripts for UNIX systems such as Solaris. These scripts make it easy to install Access Manager by automatically installing required software and prerequisites. They let you see what components are currently installed and prompt you for configuration information. Below we will run through a basic install using these scripts, installing all components on a single machine. This is reflected by the components you see reported by each script in turn as we build up the configuration.

15.1 IBM SecureWay Directory and Prerequisite Installation and Configuration

First we will use the **ezinstall_ldap_server** script. This sets up a workstation with the following packages; IBM DB2, GSKit, IBM HTTP Server, IBM SecureWay Directory client and server.

a. Insert the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD.

b. At the command prompt type the following:

```
# cd /cdrom/cdrom0
# ./ezinstall_ldap_server
```

c. This will check for installed components and show the following list:

```
IBM SecureWay Directory Server 3.2
Installation and Configuration
-------------------------------------------------------------

Product                                          Status
IBM DB2 ...................................... Not Installed
IBM Global Security Toolkit 5 ............... Not Installed
IBM SecureWay Directory Client .............. Not Installed
IBM HTTPD Server ............................ Not Installed
IBM SecureWay Directory Server 3.2 .......... Not Installed

Press ENTER to continue...
```

d. The details shown will vary depending on the state of your system. Above you can see the results from our clean system.

e. Press '**Enter**', you will be shown the 'IBM HTTP Server Configuration Options'

```
IBM HTTP Server Configuration Options
-----------------------------------------------------

Option                                           Value
1. Administration ID ........................ root
2. Administration Password .................. ******
3. HTTP Port ................................ 80


Enter the Administration Password:
```

f. Enter a password for the Administrator (we used **Secure99**) and press '**Enter**'. You will be shown a summary of the configuration options and be asked if you want to modify them or begin configuration, as shown below:

```
IBM HTTP Server Configuration Options
-----------------------------------------------------

Option                                           Value
1. Administration ID ........................ root
2. Administration Password .................. ******
```

```
3. HTTP Port ............................... 80

Enter the number to modify, or y to begin configuration:
```

g. At this point I selected (3) to change the HTTP listening port from 80 to **81** in our case. In order to avoid port conflicts with WebSEAL later on, which by default listens on port 80. The results of this change are shown below.

```
IBM HTTP Server Configuration Options
-----------------------------------------------------

Option                                        Value
1. Administration ID ........................ root
2. Administration Password .................. ******
3. HTTP Port ............................... 81

Enter the number to modify, or y to begin configuration:
```

h. Type **'y'** and '**Enter**' to begin configuration. Next the IBM SecureWay Directory Configuration Options will be displayed:

```
IBM SecureWay Directory Server Configuration Options
------------------------------------------------------------

Option                                      Value
 1. LDAP Administrator ID (DN) ............... cn=root
 2. LDAP Administrator Password .............. ******
 3. LDAP Host Name ........................... secureway2
 4. Suffix ................................... Not Specified
 5. LDAP Server Port ......................... 389
 6. LDAP Server SSL Port ..................... 636
 7. LDAP SSL Keyfile ......................... /cdrom/pd_solaris_/common/pd_ldapkey.kdb
 8. LDAP SSL Key File Password ............... ******
 9. SSL Client Certificate Label ............. PDLDAP


Enter the LDAP Administrator Password:
```

i. Enter the LDAP Administrator password as prompted (we used **Secure99**), then re-enter it for confirmation. Next you are the prompted to enter the suffix to be used in the directory, enter the suffix you need for your LDAP entries, for example we entered '**o=ibm,c=gb**'. You will be shown a summary of the configuration values as below. **Note:** the installation script will add **secAuthority=Default** automatically for you.

```
IBM SecureWay Directory Server Configuration Options
------------------------------------------------------------

Option                                      Value
 1. LDAP Administrator ID (DN) ............... cn=root
 2. LDAP Administrator Password .............. ******
 3. LDAP Host Name ........................... secureway2
 4. Suffix ................................... o=ibm,c=gb
 5. LDAP Server Port ......................... 389
 6. LDAP Server SSL Port ..................... 636
 7. LDAP SSL Keyfile ......................... /cdrom/pd_solaris_/common/pd_ldapkey.kdb
 8. LDAP SSL Key File Password ............... ******
 9. SSL Client Certificate Label ............. PDLDAP


Enter the number to modify, or y to begin configuration:
```

j. Type **'y'** and '**Enter**' to begin configuration, you will be informed that the SSL Client Keyfile will be copied. Press '**Enter**' to continue, a summary is shown and the install continues with DB2. Eventually after about 10-15 minutes this phase will complete and you should see the screen below saying that the installation and configuration is complete.

```
IBM SecureWay Directory Server 3.2
Installation and Configuration
-------------------------------------------------------------

Product                                        Status
IBM DB2 ..................................... Configured [7.1.0.55]
IBM Global Security Toolkit 5 ............... Configured [5.0.4.67]
IBM SecureWay Directory Client .............. Configured [3.2.2.0]
IBM HTTPD Server ............................ Configured [1.3.19.0]
IBM SecureWay Directory Server 3.2 .......... Configured [3.2.2.0]

IBM SecureWay Directory Server 3.2
Installation and Configuration is complete.
```

k. This completes the directory and prerequisite installation.

15.2 Access Manager RTE and Policy Server Installation and Configuration

Use the **ezinstall_pdmgr** script to install the AMRTE and AM Policy Server components.This sets up a workstation with the following packages; GSKit, IBM SecureWay Directory client, AMRTE and AM Policy Server.

Before installing the access manager code please ensure you have applied the appropriate Solaris patches for you system as documented to in the latest Access Manager Release Notes (use 'patchadd'). The easy install scripts will check for the presence of these scripts and will fail if they cannot be found.

a. Insert the **Tivoli Access Manager Base for Solaris Version 3.9** CD.

b. At the command prompt type the following:

```
# cd /cdrom/cdrom0
# ./ezinstall_pdmgr
```

c. This will check for any previously installed components and show the following list:

```
IBM Tivoli Access Manager Policy Server
Installation and Configuration
-------------------------------------------------------------

Product                                        Status
IBM Global Security Toolkit 5 ............... Configured [5.0.4.67]
IBM SecureWay Directory Client .............. Configured [3.2.2.0]
Access Manager Runtime ...................... Not Installed
Access Manager Policy Server ................ Not Installed

Press ENTER to continue...
```

d. The script will check to see the status of the components it is designed to install and configure. As you can see above in our case GSKit and the Directory client where already installed by the previous script (ezinstall_ldap_server).

e. Press '**Enter**' to continue. The Access Manager Runtime Configuration options are displayed as shown below

```
IBM Tivoli Access Manager Runtime Configuration Options
--------------------------------------------------------------

Option                                         Value
1. Configure Using This Registry Type ....... ldap
2. LDAP Server Hostname ..................... Not Specified
3. LDAP Server Port ......................... 389

Enter the LDAP Server Hostname:
```

f. Enter the fully qualified LDAP Server Hostname as prompted (in our case **secureway2.pic.uk.ibm.com**) and press '**Enter**'

```
IBM Tivoli Access Manager Runtime Configuration Options
---------------------------------------------------------------

Option                                          Value
1. Configure Using This Registry Type ....... ldap
2. LDAP Server Hostname ..................... secureway2.pic.uk.ibm.com
3. LDAP Server Port ......................... 389

Enter the number to modify, or y to begin configuration:
```

g. The options are updated with the name you entered. Press **'y'** and '**Enter**' to begin the configuration.

```
IBM Tivoli Access Manager Policy Server Configuration Options
-------------------------------------------------------------------------

Option                                          Value
 1. LDAP Server Hostname ..................... secureway2.pic.uk.ibm.com
 2. LDAP Administrator ID (DN) ............... cn=root
 3. LDAP Administrator Password .............. ******
 4. Security Master Password ................. ******
 5. Enable SSL between Policy Server and LDAP  Not Specified
 6. LDAP SSL Client Key File ................. Not Specified
 7. SSL Client Certificate Label .............
 8. SSL Keyfile Password ..................... ******
 9. LDAP Server SSL Port ..................... 636
10. LDAP DN for GSO Database ................. Not Specified
11. SSL Server Port for AM Policy Server...... 7135
12. Policy Server SSL Certificate Lifetime ... 365
13. Enable Download of Certificates .......... Not Specified


Enable SSL with LDAP Server? [Y|N]:
```

h. The screen above is displayed showing a number of options and you are prompted for configuration information. Each time the screen above is updated with the values

i. First decide if you want to enable SSL with the LDAP server. We choose not to and typed **'n'** and '**Enter**'.

j. You are then prompted for the LDAP Administrator Password (**Secure99** in our case)

k. You are then prompted for the Security Master Password (**Secure99** in our case) and asked to reconfirm it.

l. You are prompted to enter the LDAP DN for the GSO database (**o=ibm,c=gb** in our case)

m. You are asked if you want other AM Client machines to download the certificate file (a new feature since 3.8) we answered **'n'**. The summary below is now displayed.

```
IBM Tivoli Access Manager Policy Server Configuration Options
-------------------------------------------------------------------------

Option                                          Value
 1. LDAP Server Hostname ..................... secureway2.pic.uk.ibm.com
 2. LDAP Administrator ID (DN) ............... cn=root
 3. LDAP Administrator Password .............. ******
 4. Security Master Password ................. ******
 5. Enable SSL between Policy Server and LDAP  N
```

```
 6. LDAP SSL Client Key File ................. Not Specified
 7. SSL Client Certificate Label ............
 8. SSL Keyfile Password ..................... ******
 9. LDAP Server SSL Port ..................... 636
10. LDAP DN for GSO Database ................. o=ibm,c=gb
11. SSL Server Port for AM Policy Server...... 7135
12. Policy Server SSL Certificate Lifetime ... 365
13. Enable Download of Certificates .......... N

Enter the number to modify, or y to begin configuration:
```

n. This completes the minimum required information, you now have the chance to make further changes and begin the configuration. Press **'y'** and '**Enter**' to start the configuration. Files will be installed and configured and after a few minutes you will see that the installation and configuration is complete as shown below.

```
IBM Tivoli Access Manager Policy Server
Installation and Configuration
-------------------------------------------------------------

Product                                          Status
IBM Global Security Toolkit 5 ............... Configured [5.0.4.67]
IBM SecureWay Directory Client .............. Configured [3.2.2.0]
Access Manager Runtime ...................... Configured [3.9]
Access Manager Policy Server ................ Configured [3.9]

IBM Tivoli Access Manager Policy Server
Installation and Configuration is complete.
```

o. This completes the **ezinstall_pdmgr** script. The Access Manager management server should now be installed and working. You can test this out by making use of the '**pdadmin**' interface to administer PD.

15.3 WebSEAL Install and Configuration

Use the **ezinstall_pdweb** script to install WebSEAL.This sets up a workstation with the following packages; GSKit, IBM SecureWay Directory client v3.2.2, AMRTE and WebSEAL.

a. Insert the **IBM Tivoli Access Manager Web Security for Solaris Version 3.9** CD.

b. At the command prompt type the following:

```
# cd /cdrom/cdrom0
# ./ezinstall_pdweb
```

c. This will check for installed components and show the following list:

```
IBM Tivoli Access Manager WebSEAL Server
Installation and Configuration
-------------------------------------------------------------

Product                                          Status
IBM Global Security Toolkit 5 ............... Configured [5.0.4.67]
IBM SecureWay Directory Client .............. Configured [3.2.2.0]
```

```
Access Manager Runtime ..................... Configured [3.9]
IBM Tivoli Access Manager WebSEAL Server .... Not Installed

Press ENTER to continue...
```

d. Press '**Enter**' to continue and you will see the configuration screen below.

```
IBM Tivoli Access Manager WebSEAL Server (PDWEB) Options
-------------------------------------------------------

Option                                          Value
 1. Security Master Password ................. ******
 2. Enable SSL between Policy Server and LDAP  Not Specified
 3. LDAP SSL Client Key File ................. Not Specified
 4. LDAP SSL Key File Password ............... ******
 5. LDAP SSL Keyfile DN ......................
 6. LDAP Server SSL Port ..................... 636


Enable SSL with LDAP Server? [Y|N]:
```

e. You are asked if you want to enable SSL with the LDAP server (we choose **'n'** to keep things simple). Press '**n**' and '**Enter**'

f. You are asked for the Security Master password (**Secure99** in our case)

g. You are then shown a summary of the configuration information and asked if you want to begin configuration. Press **'y'** the '**Enter**' and the components are installed and configured.

```
IBM Tivoli Access Manager WebSEAL Server
Installation and Configuration
-------------------------------------------------------------

Product                                         Status
IBM Global Security Toolkit 5 ............... Configured [5.0.4.67]
IBM SecureWay Directory Client .............. Configured [3.2.2.0]
Access Manager Runtime ...................... Configured [3.9]
IBM Tivoli Access Manager WebSEAL Server .... Configured [Version 3 , Revision  9]

IBM Tivoli Access Manager WebSEAL Server
Installation and Configuration is complete.
```

h. WebSEAL should now be installed and configured.

i. You can test that WebSEAL is running by pointing a browser at https://hostname, you should be prompted to authenticate with a username and password. At this stage you should be able to authenticate with the sec_master account and password.

15.4 Web Portal Manager Install & Configuration

Use the **ezinstall_pdwpm** script to install the Web Portal Manager (WPM). This sets up a workstation with the following packages; GSKit, IBM SecureWay Directory client v3.2.2, AMRTE, IBM HTTP Server and the WPM itself. Some components may be installed and configured already from previous steps, the script will detect this.

a. Insert the **IBM Tivoli Access Manager Web Portal Manager for Solaris Version 3.9** CD.

b. At the command prompt type the following:

```
# cd /cdrom/cdrom0
# ./ezinstall_pdwpm
```

c. This will check for installed components and show the following list:

```
IBM Tivoli Access Manager Web Portal Manager
Installation and Configuration
-------------------------------------------------------------

Product                                          Status
IBM WebSphere Application Server ............ Not Installed
IBM Global Security Toolkit 5 ............... Configured [5.0.4.67]
IBM SecureWay Directory Client .............. Configured [3.2.2.0]
IBM HTTPD Server ............................ Configured [1.3.19.0]
Access Manager Runtime ...................... Configured [3.9]
Access Manager Web Portal Manager ........... Not Installed


Press ENTER to continue...
```

d. Press ‘Enter’ to continue; installation of WebSphere Application Server will begin.

During this process we had a number of problems with the easy install script installing WebSphere and then the WebSphere Fixpak.

The initial WebSphere install problem was resolved by reverting to the native installation process. During the native install of WebSphere the install GUI notified us that additional service levels were advised. These were fixes 108940 (which pre-reqs 108714), 108652 &10921 – these were once again downloaded from the SUN support site and applied. We then resumed the easy install script and the install proceeded further. The initial WebSphere install completed ok, the script then failed again during the install of the WebSphere fixpak. We suspect that more fixes may be required to the base Solaris system to proceed further. Unfortunately we did not have time to investigate further for this version of the Cookbook.

16. Access Manager Component Configuration & Unconfiguration (Solaris)

If you need to manually configure or unconfigure any of the PD components (ie, PDRTE, PDMgr,WebSEAL) then you can use the pdconfig tool.

a. Change to the /opt/PolicyDirector/bin directory and run 'pdconfig', i.e.

```
# cd /opt/PolicyDirector/bin
# pdconfig
```

b. You will be presented with the Access Manager Setup Menu as shown below. Follow the menu options you require.

```
Policy Director Setup Menu

        1. Configure Package
        2. Unconfigure Package
        3. Display Configuration Status
        x. Exit

Please select the menu item [x]:
```

17. Solaris – Native installation

Note: As described above, easy install scripts are provided for Solaris - these scripts make it easy to install Access Manager by automatically installing required software and prerequisites. The following sections describe the *native* installation processes for Solaris, as there may be situations where the Easy Install scripts are not appropriate or do not work.

17.1 LDAP Server installation/configuration (Solaris)

Note: It is strongly recommended that you read this in conjunction with the *IBM SecureWay Directory Version 3.2.2 for the Solaris Operating Environment Software Installation and Configuration Guide* – this is on the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD at `/doc/Directory/sparent.pdf`. There are other SecureWay Directory product manuals in the same directory.

You should also refer to the latest version of the Access Manager Release Notes.

17.2 Operating system pre-requisites

- Apply the latest 'cluster' patch from Sun for Solaris 8 (8_Recommended.zip (71MB)) from their support site (`http://sunsolve.sun.co.uk`). Ensure that this includes all the patches mentioned in the latest version of the Release Notes.
- Download IBM SecureWay Directory Version 3.2 e-fix 2 (eFix 3.2.2-SWD-002) from http://www.ibm.com/software/network/directory/support/fixes/
- Uninstall any previous LDAP Server or LDAP Client.

17.3 Install DB2

a. Insert the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD.

b. At a command line, type

```
pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault \
db2cliv71  db2cucs71  db2rte71  db2crte71  db2engn71 \
db2das71  db2cnvt71  db2cnvk71  db2cnvj71  db2cnvc71 \
db2smpl71  db2conn71  db2cipx71  db2csna71  db2cdrd71 \
db2tspf71  db2elic71
```

(To avoid typing, you can find this list in /cdrom/cdrom0/ezinstall_ldap_server against

DB2_INST_LIST.)

c. This should look similar to the following:

```
# pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault \
> db2cliv71  db2cucs71  db2rte71  db2crte71  db2engn71 \
> db2das71  db2cnvt71  db2cnvk71  db2cnvj71  db2cnvc71 \
> db2smpl71  db2conn71  db2cipx71  db2csna71  db2cdrd71 \
> db2tspf71  db2elic71

Processing package instance <db2cliv71> from </cdrom/pd_solaris_/solaris>

Client Application Enabler
(sparc) 7.1.0.40


Licensed Materials - Property of IBM

5648-B90
(C) COPYRIGHT International Business Machines Corp. 1993, 1999

....

## Executing postinstall script.

Installation of <db2elic71> was successful.
#
```

17.4 Install DB2 Fix Pack 5

a. Still using the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD.

b. At a command line, type

 # cd /cdrom/pd_solaris_/solaris/patches/db2_fixpack_5/delta_install

 # /cdrom/pd_solaris_/solaris/patches/db2_fixpack_5/delta_install/installallpatch

This should look similar to the following:

```
# cd /cdrom/pd_solaris_/solaris/patches/db2_fixpack_5/delta_install
# /cdrom/pd_solaris_/solaris/patches/db2_fixpack_5/delta_install/installallpatch

INFO:   Do NOT interrupt while installing patch 1720500-005...

Installation of <db2cliv71> was successful.

INFO:   Do NOT interrupt while installing patch 1720500-006...

Installation of <db2conn71> was successful.

INFO:   Do NOT interrupt while installing patch 1720500-007...

Installation of <db2cdrd71> was successful.

INFO:   Do NOT interrupt while installing patch 1720500-008...

Installation of <db2cipx71> was successful.

INFO:   Do NOT interrupt while installing patch 1720500-009...

Installation of <db2crte71> was successful.

INFO:   Do NOT interrupt while installing patch 1720500-010...

Installation of <db2csna71> was successful.

INFO:   Do NOT interrupt while installing patch 1720500-012...
```

```
Installation of <db2das71> was successful.

INFO:   Do NOT interrupt while installing patch 1720500-013...

Installation of <db2engn71> was successful.

INFO:   Do NOT interrupt while installing patch 1720500-014...

Installation of <db2rte71> was successful.

INFO:   Do NOT interrupt while installing patch 1720500-025...

Installation of <db2elic71> was successful.

INFO:   Do NOT interrupt while installing patch 1720500-059...

Installation of <db2tspf71> was successful.

=========================================================
Summary
=========================================================
Package         Patch ID        Patch Level     Result
---------------------------------------------------------
db2tspf71       1720500-059     7.1.0.55        SUCCESS
db2elic71       1720500-025     7.1.0.55        SUCCESS
db2rte71        1720500-014     7.1.0.55        SUCCESS
db2engn71       1720500-013     7.1.0.55        SUCCESS
db2das71        1720500-012     7.1.0.55        SUCCESS
db2csna71       1720500-010     7.1.0.55        SUCCESS
db2crte71       1720500-009     7.1.0.55        SUCCESS
db2cipx71       1720500-008     7.1.0.55        SUCCESS
db2cdrd71       1720500-007     7.1.0.55        SUCCESS
db2conn71       1720500-006     7.1.0.55        SUCCESS
db2cliv71       1720500-005     7.1.0.55        SUCCESS

Log saved in /tmp/db2installallpatch.log.7.1.0.55

#
```

c. If there is not enough disk space available on `/var/sadm/patch` to save the files to be patched you may need to either free up disk space on `/var/sadm/patch` or issue the command:
`/usr/bin/touch /var/sadm/patch/PATCH_NOSAVE`
and re-issue the command to install the patches.

17.5 Update the DB2 License key

a. Still using the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD.

b. At a command line, type
`/opt/IBMdb2/V7.1/adm/db2licm /cdrom/cdrom0/common/db2udbee.lic`

c. This should look similar to the following:

```
# /opt/IBMdb2/V7.1/adm/db2licm /cdrom/cdrom0/common/db2udbee.lic
DBI1402I License added successfully.

#
```

17.6 Install GSKit

a. Still using the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD.

b. At a command line, type
 # pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault gsk5bas

c. This should look similar to the following:

```
# pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault gsk5bas

Processing package instance <gsk5bas> from </cdrom/pd_solaris_/solaris>

Certificate and SSL Base Runtime (gsk5bas)
(sparc) 5.0.4.67
IBM
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
   2 package pathnames are already properly installed.
## Verifying package dependencies.
## Verifying disk space requirements.

Installing Certificate and SSL Base Runtime (gsk5bas) as <gsk5bas>

## Installing part 1 of 1.
/opt/ibm/gsk5/bin/gsk5cmd
/opt/ibm/gsk5/bin/gsk5ikm
/opt/ibm/gsk5/bin/gsk5ver
. . .
/usr/lib/libgsk5sys.so <symbolic link>
/usr/lib/libgsk5valn.so <symbolic link>
[ verifying class <none> ]
## Executing postinstall script.
This is an Ultra Series machine.
We are moving appropriate library into place.

Installation of <gsk5bas> was successful.
#
```

17.7 Install the LDAP Client

a. Still using the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD.

b. At a command line, type
pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault IBMldapc

c. This should look similar to the following:

```
# pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault IBMldapc

Processing package instance <IBMldapc> from </cdrom/pd_solaris_/solaris>

IBM SecureWay Directory Client
(sparc) 3.2.2.0


    5648D1300
    IBM SecureWay Directory for Solaris, Version 3.2.2.0
    (C) Copyright International Business Machines Corp. 1997,2001.

    Copyright (c) 1995,1996 Regents of the University of Michigan.
    All rights reserved.

    Redistribution and use in source and binary forms are permitted
    provided that this notice is preserved and that due credit is given
    to the University of Michigan at Ann Arbor. The name of the University
    may not be used to endorse or promote products derived from this
```

```
     software without specific prior written permission. This software
     is provided ``as is'' without express or implied warranty.

 IBM SecureWay Directory client installation directory? (/opt)  [?,q]

 A non-IBM version of LDAP has been located on your system.
 In order to use the command line version of the IBM supplied files,
 the existing files (ldapadd, ldapdelete, ldaplist, ldapmodify, ldapmodrdn, ldapsearch
 ) must be relocated.

 Specify the new directory in which to move the files. (/usr/bin/ldapsparc)
  [?,q]
 Files will moved to /usr/bin/ldapsparc
 ## Executing checkinstall script.
 Using </opt> as the package base directory.
 ## Processing package information.
 ## Processing system information.
 WARNING: /usr/bin/ldapadd <no longer a linked file>
 WARNING: /usr/bin/ldapdelete <no longer a regular file>
 WARNING: /usr/bin/ldapmodify <no longer a regular file>
 WARNING: /usr/bin/ldapmodrdn <no longer a regular file>
 WARNING: /usr/bin/ldapsearch <no longer a regular file>
 ## Verifying package dependencies.
 ## Verifying disk space requirements.

 Installing IBM SecureWay Directory Client as <IBMldapc>

 ## Executing preinstall script.
 Adding user ldap
 ## Installing part 1 of 1.
 /etc/dmt.conf <symbolic link>
 /etc/ldap.conf
 /opt/IBMldapc/bin/dmt
 . . .
 /usr/lib/libldapstatic.a <symbolic link>
 /usr/lib/libldif.a <symbolic link>
 [ verifying class <none> ]
 ## Executing postinstall script.

 Installation of <IBMldapc> was successful.
 #
```

17.8 Install the HTTP Server

Note: The web server is used to enable browser based administration of the LDAP server. If this is not possible or not desired, see the section entitled *If you are unable to run the LDAP Administrative web server or add the Suffixes using the web browser interface…* on page 161 below.

a. Still using the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD.

b. At a command line, type

```
# pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault
IBMHTTPD IBMHTTPA IBMHSENU IBMHAENU IBMHSLDP IBMHL128 IBMHSSEN
```

c. This should look similar to the following:

```
# pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault IBMHTTPD
IBMHTTPA IBMHSENU IBMHAENU IBMHSLDP IBMHL128 IBMHSSEN

Processing package instance <IBMHTTPD> from </cdrom/pd_solaris_/solaris>

HTTP Server Base Run-Time
(sparc) 1.3.19.0
```

```
Licensed Materials - Property of IBM
5648-B78
. . .
. . .

Installation of <IBMHSSEN> was successful.
#
```

d. By default the IBM HTTP Server listens to port 80, the same as WebSEAL. If you are going to install WebSEAL on the same machine, to avoid port conflicts edit the HTTP configuration file `/opt/IBMHTTPD/conf/httpd.conf`. Locate the Port value and change it from `Port 80` to a different port number – we used `Port 81`.

e. Start the server by entering the following command:
`/opt/IBMHTTPD/bin/apachectl start`

(If the server is already running first issue **`/opt/IBMHTTPD/bin/apachectl stop`**, or else issue **`ps -ef`**|**`grep httpd`** to determine the PID and then issue **`kill`** ***`process id`*** to stop it; then re-attempt to start it.)

If you get an error message similar to the following:
`[alert] httpd: Could not determine the server's fully qualified domain name, using 146.84.122.224 for ServerName`

you can correct this by editing `/opt/IBMHTTPD/conf/httpd.conf` and specifying the fully qualified domain name against the `ServerName` entry.

f. You can verify that the web server is working by pointing a web browser at `http://`*`hostname`*`:`*`port number`* (`http://cross-site-1.uk.tivoli.com:81` in our case) – this should result in the IBM HTTP Server splash screen being displayed.

17.9 Install the LDAP Server

a. Still using the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD.

b. At a command line, type
`pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault IBMldaps`

c. This should look similar to the following:

```
# pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault
IBMldaps

Processing package instance <IBMldaps> from
</cdrom/pd_solaris_/solaris>

IBM SecureWay Directory Server
(sparc) 3.2.2.0


    5648D1300
    IBM SecureWay Directory for Solaris, Version 3.2.2.0
    (C) Copyright International Business Machines Corp. 1997,2001.

    Copyright (c) 1995,1996 Regents of the University of Michigan.
    All rights reserved.
```

```
    Redistribution and use in source and binary forms are permitted
    provided that this notice is preserved and that due credit is
given
    to the University of Michigan at Ann Arbor. The name of the
University
    may not be used to endorse or promote products derived from this
    software without specific prior written permission. This
software
    is provided ``as is'' without express or implied warranty.

IBM SecureWay Directory server installation directory? (/opt)  [?,q]
## Executing checkinstall script.
Using </opt> as the package base directory.
## Processing package information.
## Processing system information.
   25 package pathnames are already properly installed.
## Verifying package dependencies.
## Verifying disk space requirements.

Installing IBM SecureWay Directory Server as <IBMldaps>

## Executing preinstall script.
## Installing part 1 of 1.
/etc/ldapschema <symbolic link>
/etc/slapd.conf <symbolic link>
. . .
/var/ldap/SvrStarting.out
/var/ldap/SvrStopping.out
[ verifying class <none> ]
## Executing postinstall script.

Installation of <IBMldaps> was successful.
#
```

17.10 Download and Install the LDAP e-fix 2

a. Download IBM SecureWay Directory Version 3.2 e-fix 2 (eFix 3.2.2-SWD-002) from http://www.ibm.com/software/network/directory/support/fixes/

b. Install the fix as described in the README.

17.11 Check/set the Solaris kernel configuration parameters

a. Set the Solaris kernel configuration parameters, as described in the **Troubleshooting** chapter in the *IBM SecureWay Directory Version 3.2.2 for the Solaris Operating Environment Software Installation and Configuration Guide* – this is on the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD at `/doc/Directory/sparent.pdf`. (You can determine the amount of physical memory by issuing **`prtconf |grep "Memory size"`**.)

b. Issue the **reboot** command if you changed /etc/system.

17.12 Configure LDAP

a. At this point it is strongly suggested that you run **df** to ensure that you have sufficient space in your /export/home directory. The suggested *minimum* is 32 MB (or 65536 512-blocks). If you have insufficient space, you will get a series of failure messages when you attempt to run ldapcfg, with very little indication as to the cause of the problem.

b. Issue the following commands to create an appropriate directory for the LDAP instance:
If the /export/home directory does not already exist, create it by issuing:
mkdir /export/home/ldapdb2
chmod a+rwx /export/home/ldapdb2
(In a production environment you will want to make permissions less permissive.)

c. Issue the following commands to configure LDAP:
ldapcfg –u "cn=root" –p *password*
(where *password* is the LDAP Administrator password – we used Secure99)
ldapcfg –l /export/home/ldapdb2
ldapcfg –s ibmhttp –f /opt/IBMHTTPD/conf/httpd.conf

d. Restart the IBM HTTP Server:
/opt/IBMHTTPD/bin/apachectl stop
/opt/IBMHTTPD/bin/apachectl start

e. The output should look similar to the following: [sol29-ldapconfig.op] + [sol30-ldapconfig2.op]

```
# mkdir /home/ldapdb2
# chmod a+rwx /home/ldapdb2
# ldapcfg -u "cn=root" -p Secure99
 Password for administrator DN cn=root has been set.

IBM Directory Configuration complete.
# ldapcfg -l /home/ldapdb2
 Creating the directory DB2 default database.
 This operation may take a few minutes.

Cannot open message catalog file ldapadm.cat.
Configuring the database.
Creating database instance: ldapdb2.
Created database instance: ldapdb2.
Starting database manager for instance: ldapdb2.
Started database manager for instance: ldapdb2.
Creating database: ldapdb2.
Created database: ldapdb2.
Updating configuration for database: ldapdb2.
Updated configuration for database: ldapdb2.
Completed configuration of the database.

IBM SecureWay Directory Configuration complete.
# ldapcfg -s ibmhttp -f /usr/HTTPServer/conf/httpd.conf

IBM SecureWay Directory Configuration complete.
The web server must be restarted for changes to take effect.
# /usr/HTTPServer/bin/apachectl stop
/usr/HTTPServer/bin/apachectl stop: httpd stopped
# /usr/HTTPServer/bin/apachectl start
/usr/HTTPServer/bin/apachectl start: httpd started
#
```

f. Before starting the IBM SecureWay Directory server as root, verify that the user `root` is in the `dbsysadm` group. Verify that the file `/etc/group` contains an entry similar to the following:
`dbsysadm::400:root,ldapdb2`

g. Start the IBM SecureWay Directory Server:
`/usr/bin/slapd`

h. The output should look similar to the following:

```
# /usr/bin/slapd
Plugin of type EXTENDEDOP is successfully loaded from libevent.so.
Plugin of type EXTENDEDOP is successfully loaded from libtranext.so.
Plugin of type PREOPERATION is successfully loaded from libDSP.so.
Plugin of type EXTENDEDOP is successfully loaded from libevent.so.
Plugin of type EXTENDEDOP is successfully loaded from libtranext.so.
Plugin of type AUDIT is successfully loaded from /lib/libldapaudit.so.
Plugin of type EXTENDEDOP is successfully loaded from libevent.so.
Plugin of type EXTENDEDOP is successfully loaded from libtranext.so.
Plugin of type DATABASE is successfully loaded from /lib/libback-rdbm.so.

Non-SSL port initialized to 389.
Local UNIX socket name initialized to /tmp/s.slapd.
#
```

i. (This step is likely to take several minutes to run.)

j. To configure the IBM SecureWay Directory server to start automatically upon system boot, add the following line to `/etc/inittab`:
`ldapd:2:once:/usr/bin/slapd >/dev/console 2>&1 #Autostart LDAP/DB2 Services`

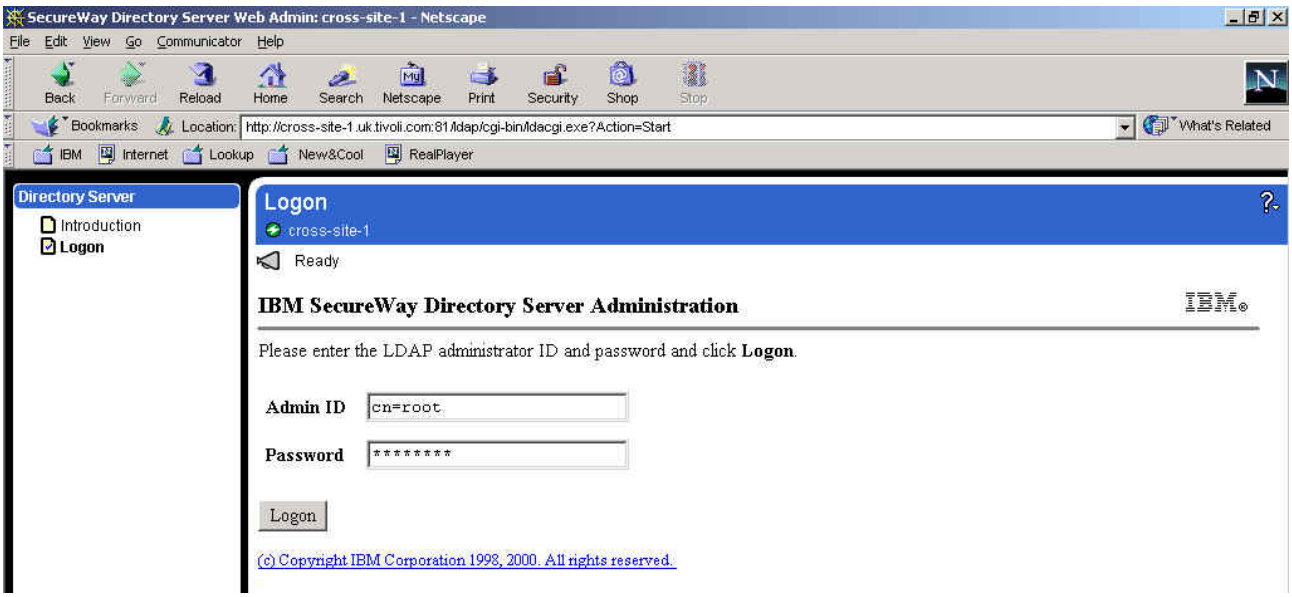
Alternatively, you can use the startup script `/cdrom/cdrom0/common/rc.pd_slapd`.

k. To determine whether slapd has started, issue:
`ps -ef|grep slapd`

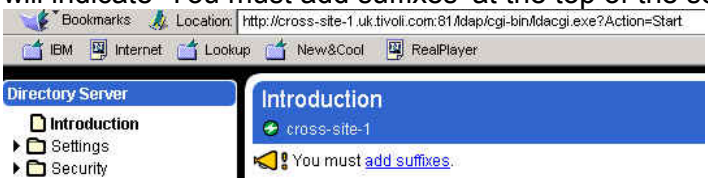
(If `slapd` is not running, `/var/ldap/slapd.errors` might give some further information.)

17.13 Add Access Manager Suffixes

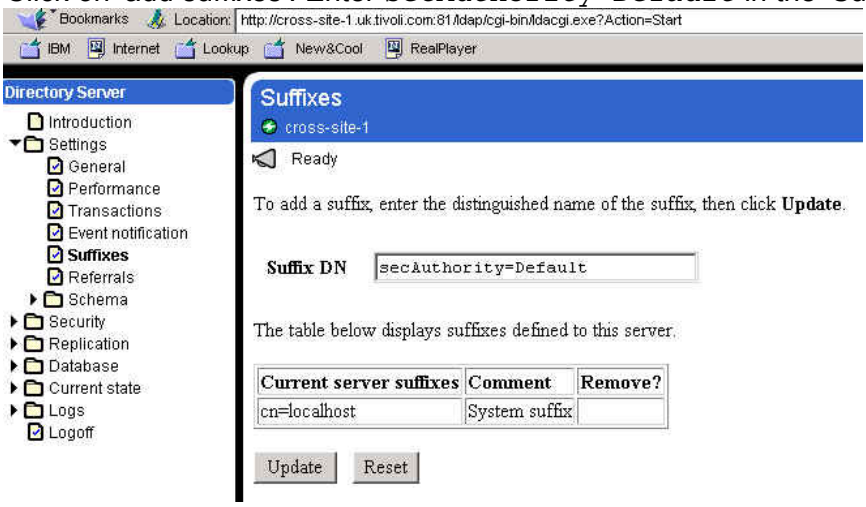
a. Point a web browser at `http://`*`hostname`*`:port number/ldap/index.html` (the port number was `81` in our case). The SecureWay Directory Server Logon panel is displayed. Set the User ID to the LDAP Administrator ID and the password to that which was entered previously (`cn=root` and `Secure99` in our case):



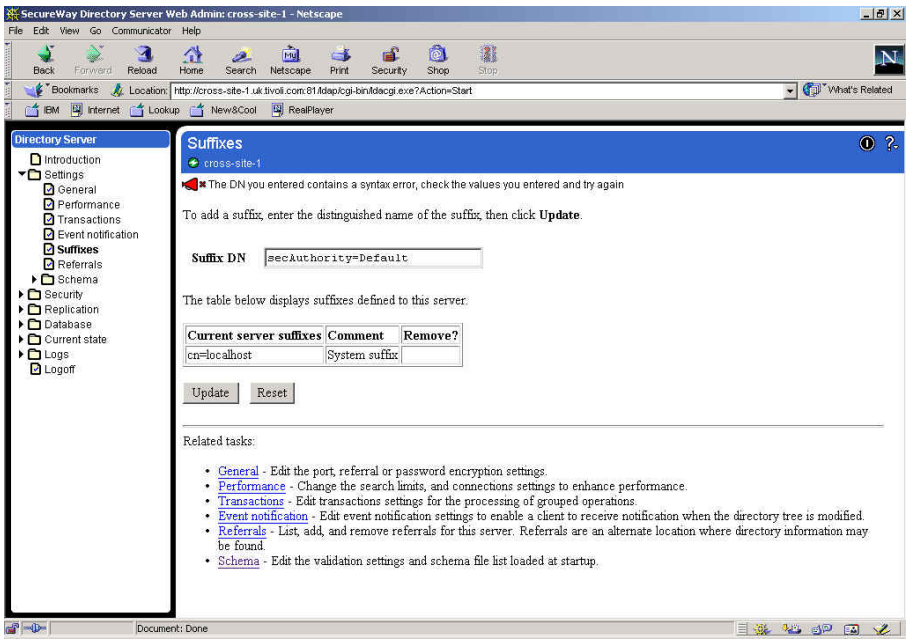
b. Click on 'Logon'. The 'IBM SecureWay Directory Server Administration' panel is displayed. It will indicate 'You must add suffixes' at the top of the screen:



c. Click on 'add suffixes'. Enter `secAuthority=Default` in the 'Suffix DN' box:

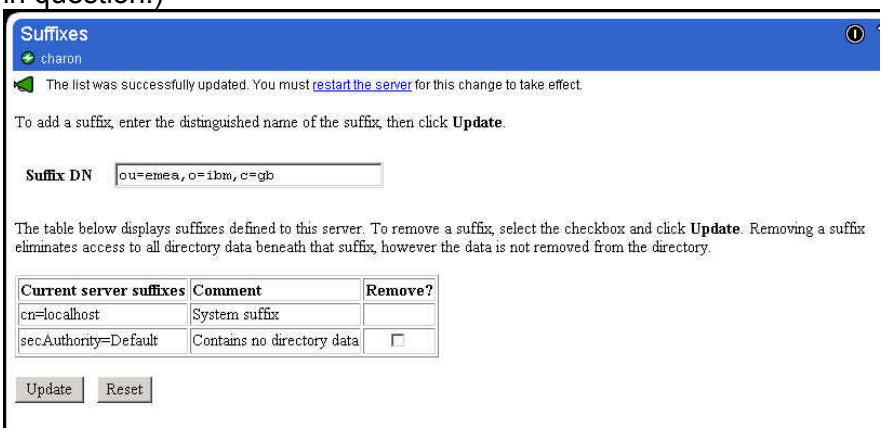


Click on 'Update'. We found, for some reason, that we received a message stating The DN you entered contains a syntax error, check the values you entered and try again. We therefore followed the procedure described in the section entitled *If you are unable to run the LDAP Administrative web server or add the Suffixes using the web browser interface…* on page 161 below.

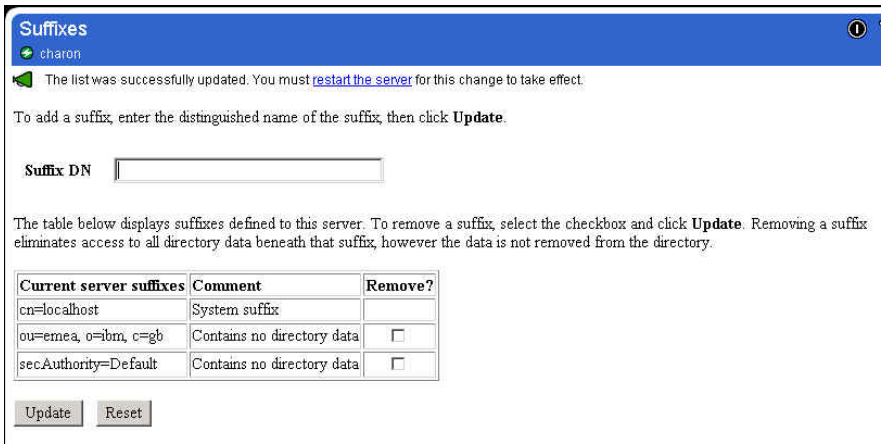


d. Alternatively, the suffix should be added to the list of current server suffixes and a message should be displayed stating 'The suffix was successfully added. You must restart the server for this change to take effect'.

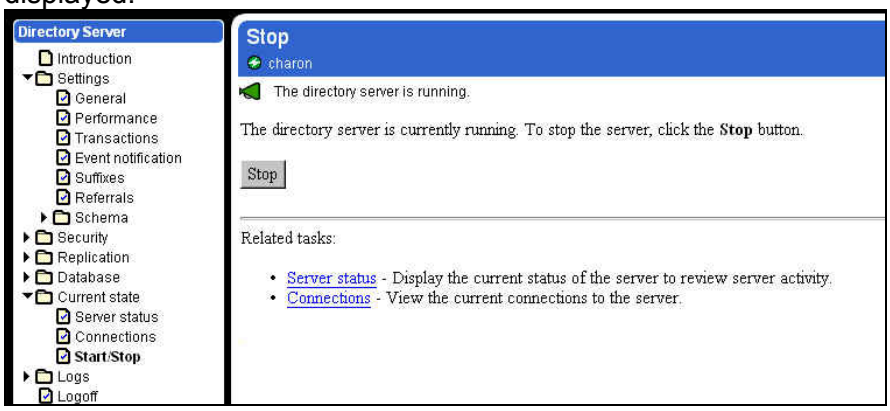
e. Enter a suffix for the Access Manager users and Global Sign-On (GSO) data. For example `ou=emea,o=ibm,c=gb` as shown below. All the Access Manager resources subsequently defined must sit below the suffix defined here - thus if the country, organization and organizational unit are specified here, all PD resources will have to be held within that organizational unit, whereas if just the country is specified here, all PD resources will merely have to be held within that country. Alternatively it would be possible to specify just a country and organization. Clearly this decision will depend on the directory strategy of the organization in question.)



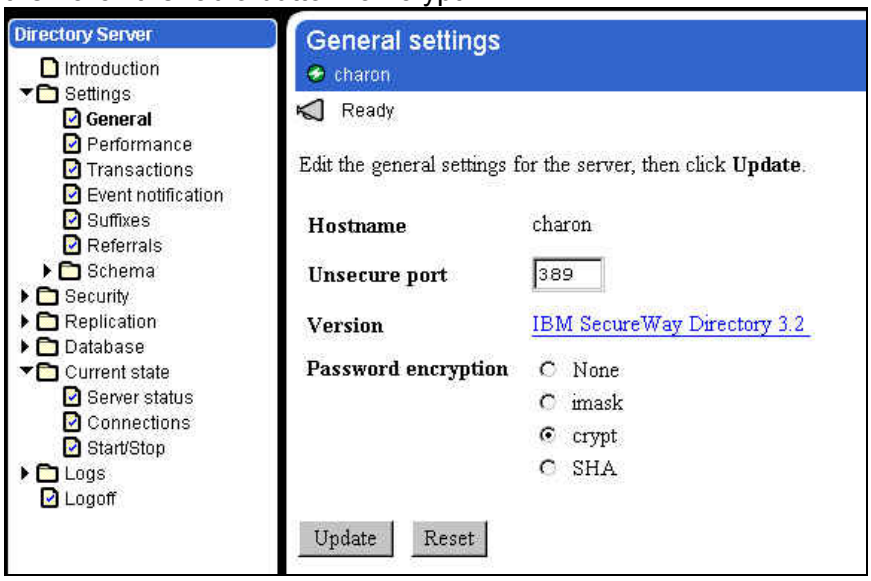
f. Click on 'Update'. A message should be displayed stating 'The list was successfully updated. You must restart the server for this change to take effect', and listing all the suffixes that have been added, as shown:



g. Click on the 'restart the server' link at the top of the page. A message stating `'The directory server is starting'` is displayed. This restart process can take several minutes. Once complete a message stating `'The directory server is running'` will be displayed:



h. You may wish to specify one-way password encryption. To do this, click on Settings → General, then click the radio button for 'crypt':



i. Then click on 'Update'. It will display a message: `'The changes were successfully updated. You must restart the server for these changes to take effect'`. Click on 'restart the server' and wait for the server to restart.

j. The web browser is no longer required and may be closed.

If you are unable to run the LDAP Administrative web server or add the Suffixes using the web browser interface…

There have been installations where (for various reasons) it has not been possible to run a web server to perform the LDAP administrative operations, or else error messages have been received when adding the Suffixes using the web interface. In that case an alternative approach is to edit the configuration file manually. The file in question is:
`/etc/slapd32.conf`

You can add the suffixes we added above by adding the following lines to `slapd32.conf` Beneath the entry `ibm-slapdSuffix: cn=localhost`:

```
ibm-slapdSuffix: secAuthority=Default
ibm-slapdSuffix: ou=emea, o=ibm, c=gb
```

You can specify one-way password encryption by modifying the `ibm-slapdPwEncryption` line to:

```
Ibm-slapdPwEncryption: crypt
```

17.14 Directory Management Tool steps

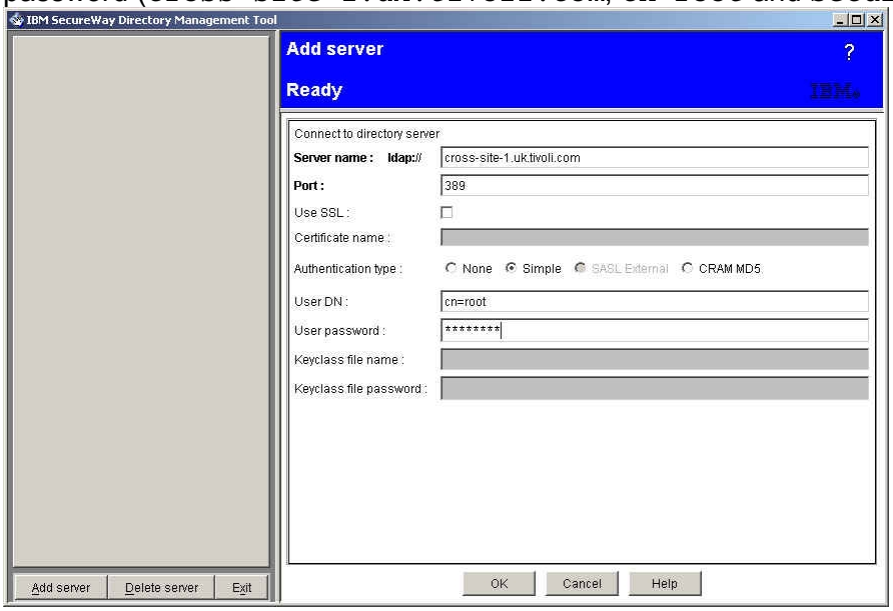
a. Start the Directory Management Tool. You can do one of the following:

- run the Directory Management Tool on the same AIX box as that on which the directory is located;
- run the Directory Management Tool on a remote system and point it at the AIX box on which the directory is located.

b. To start the Directory Management Tool on an AIX XWindows system, type `dmt` on the AIX command line. To start the Directory Management Tool on a PC, use Start -> Programs -> IBM SecureWay Directory -> Directory Management Tool.

c. ***If you are accessing the directory from a remote system***, as the Directory Management Tool is starting an error message may be displayed indicating 'An error occurred connecting to server "ldap://localhost:389"' – if so, click on 'OK' to dismiss the error message.

d. Click on 'Add server' (listed on the bottom left hand corner). An 'Add Server' frame is displayed. Click on `Authentication: Simple`. Enter the Server name, LDAP administrator DN and password (`cross-site-1.uk.tivoli.com`, `cn=root` and `Secure99` in our case):

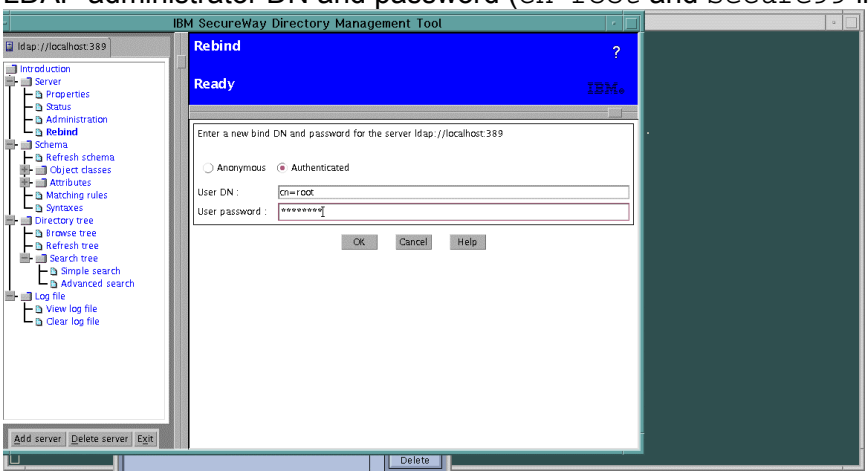


e. Click on 'OK'. A message panel indicating 'Retrieving server schema. Please wait.' may be displayed. The Directory Management Tool will be re-displayed, showing the hostname in the top left hand corner:

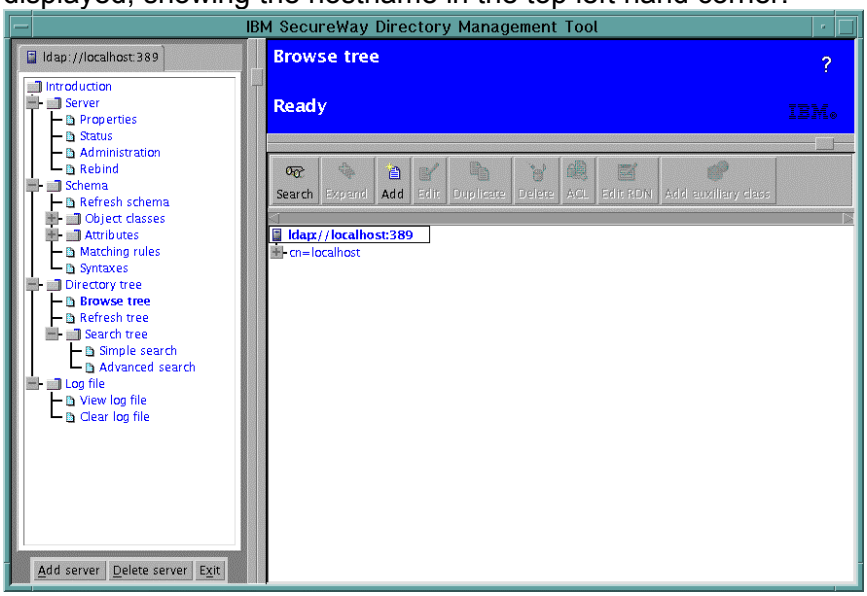
f. Click on the 'Browse tree' entry, on the left hand panel under the 'Directory tree' node. Message panels indicating that certain entries do not contain any data may be displayed; click on 'OK' to

dismiss these dialogues. The 'Browse directory tree' panel will be displayed:

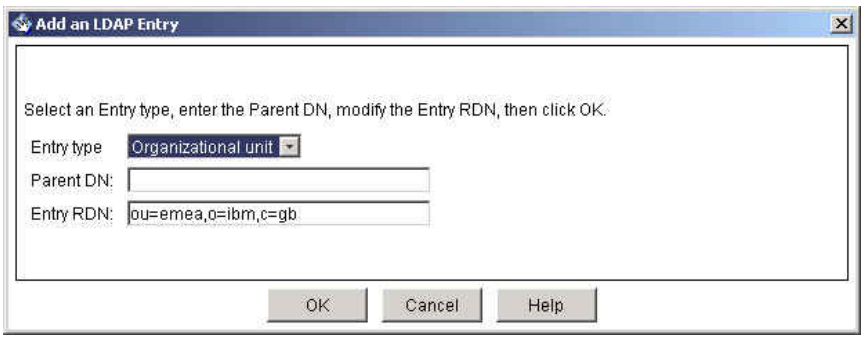
g. ***If you running the Directory Management Tool on the same AIX box as the directory***, click on 'Rebind' (listed under 'Server' in the left hand panel). Click on 'Authenticated' and enter the LDAP administrator DN and password (`cn=root` and `Secure99` in our case):



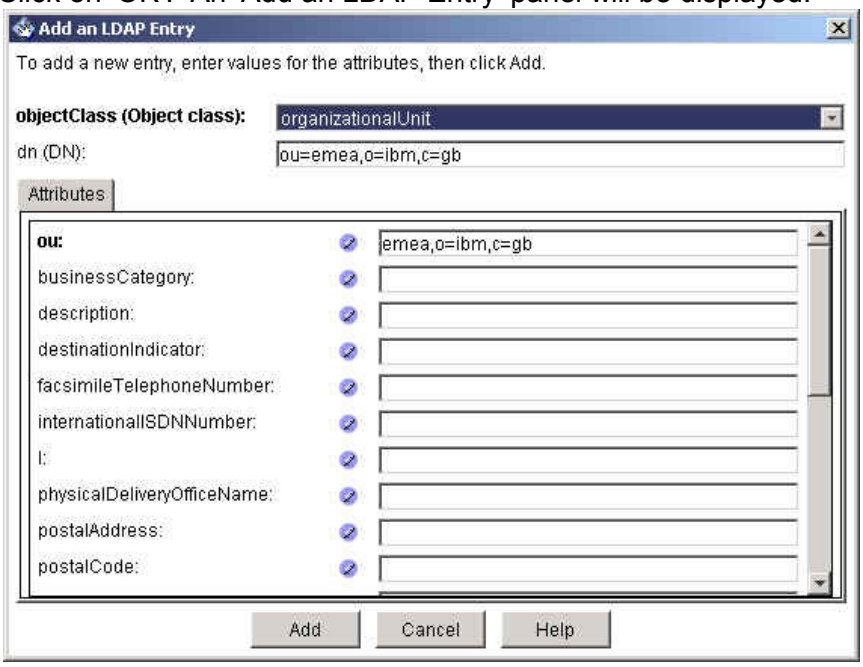
h. Click on 'OK'. Message panels indicating that certain entries do not contain any data may be displayed; click on 'OK' to dismiss these dialogues. The Directory Management Tool will be re-displayed, showing the hostname in the top left hand corner:



i. ***Click on 'Add' in the upper right hand frame***. An 'Add an LDAP Entry' dialogue is displayed. Against 'Entry RDN', enter the suffix previously entered for the Access Manager users and Global Sign-On (GSO) data (`ou=emea,o=ibm,c=gb` in our case). If you have specified an organizational unit (as in our case), select 'Organizational unit' as the entry type in the pull down list. If you have specified an organization (such as `o=ibm,c=gb`), select 'Organization' as the entry type in the pull down list. If you have specified just a country (such as `c=gb`), select 'Country' as the entry type in the pull down list.



j. Click on 'OK'. An 'Add an LDAP Entry' panel will be displayed:



k. If desired you can enter a description, etc. Click on 'Add'. Again, a warning indicating 'Entry "secauthority=default" does not contain any data' may be displayed – click on 'OK' to dismiss this. The entry which has just been added will be displayed:

l. The Directory Management Tool is no longer required and can be closed – click on 'Exit' to close it. The LDAP Configuration is now complete.

18. Access Manager Server installation (Solaris) (Native)

a. Install GSKit (if not already installed) as described in Section 17.6 on page 151 above.

b. Install The LDAP Client (if not already installed) as described in Section 17.7 on page 152 above.

c. Install the Solaris Patches (the latest 'cluster' patch from Sun for Solaris 8 (8_Recommended.zip (71MB)) from their support site (http://sunsolve.sun.co.uk).) Ensure that this includes all the patches mentioned in the latest version of the Release Notes.

d. Still using the **IBM Tivoli Access Manager Base for Solaris Version 3.9** CD.

e. At a command line, type

```
pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault \
PDRTE PDMgr PDAuthADK PDAcld PDJrte
```

19. WebSEAL Installation (Solaris) (Native)

a. Insert the **IBM Tivoli Access Manager Web Security for Solaris Version 3.9** CD.

b. Install GSKit (if not already installed) as described in Section 17.6 on page 151 above.

c. Install the LDAP Client (if not already installed) as described in Section 17.7 on page 152 above.

d. Install the Solaris Patches (the latest 'cluster' patch from Sun for Solaris 8 (8_Recommended.zip (71MB)) from their support site (http://sunsolve.sun.co.uk).) Ensure that this includes all the patches mentioned in the latest version of the Release Notes.

e. If the Policy Director Run Time Environment is not already installed, at a command line, type

```
pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault \
PDRTE
```

f. At a command line, type

```
pkgadd -d /cdrom/cdrom0/solaris -a /cdrom/cdrom0/solaris/pddefault \
PDWeb
```

20. Access Manager Configuration (Solaris) (Native)

a. Ensure that the Directory (and any intervening network) is working correctly. (You can do this by issuing the command **`ldapsearch -h`** ***`ldap_server_hostname`*** **`-D cn=root -w`** ***`ldap_password`*** **`-b "" -s base objectclass=*`**)

b. At the command line, type **`pdconfig`**.

c. The procedure will then be similar to that described in Section 11 - Access Manager Configuration (AIX) on page 115 above.

d. You can now check that Access Manager is working by following the steps described in Section 22 - Initial Access Manager Validation on Page 170 below.

21. Useful commands for Access Manager in the Solaris environment

LDAP

a. LDAP can be started from the command line by issuing the command 'slapd'. This should start the associated DB2 processes as well so don't worry about how to start DB2.

b. You can check if LDAP has started by looking for the slapd process (e.g. ps -ef | grep "slapd")

Directory Management Tool steps

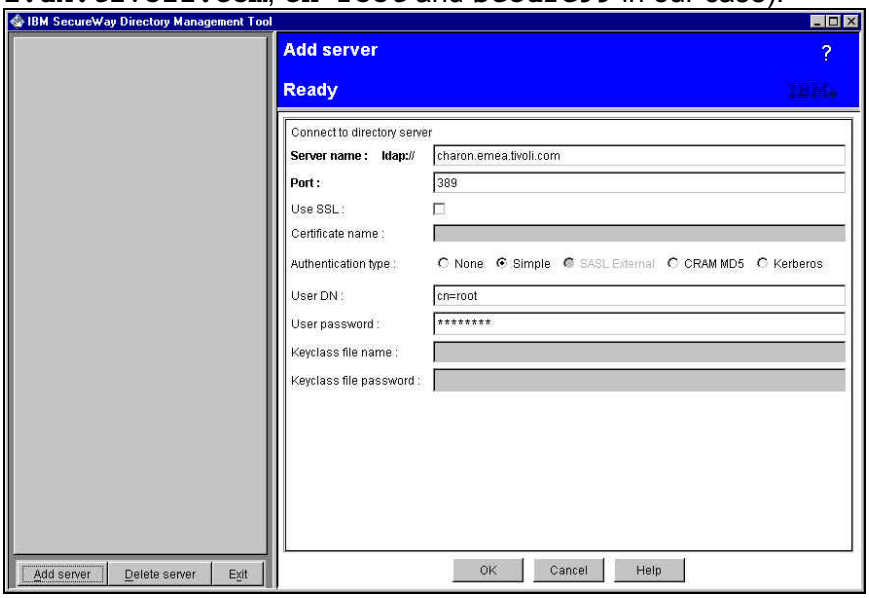
a. Start the Directory Management Tool. You can do one of the following:

- run the Directory Management Tool on the same AIX box as that on which the directory is located;
- run the Directory Management Tool on a remote system and point it at the AIX box on which the directory is located.

b. To start the Directory Management Tool on a Solaris XWindows system, type `dmt&` at the command line.

c. ***If you are accessing the directory from a remote system***, as the Directory Management Tool is starting an error message may be displayed indicating 'An error occurred connecting to server "ldap://localhost:389"' – if so, click on '**OK**' to dismiss the error message.

d. Click on 'Add server' (listed on the bottom left hand corner). An 'Add Server' frame is displayed. Enter the Server name, LDAP administrator DN and password (`cross-site-1.uk.tivoli.com`, `cn=root` and `Secure99` in our case):



PD

a. /etc/iv start	Starts the PD Servers
b. /etc/iv stop	Stops the PD Servers
c. /etc/iv status	Displays status of PD Servers
d. /etc/pdweb start	Starts WebSEAL
e. /etc/pdweb stop	Stops WebSEAL
f. /etc/pdweb status	Displays status of WebSEAL

Solaris

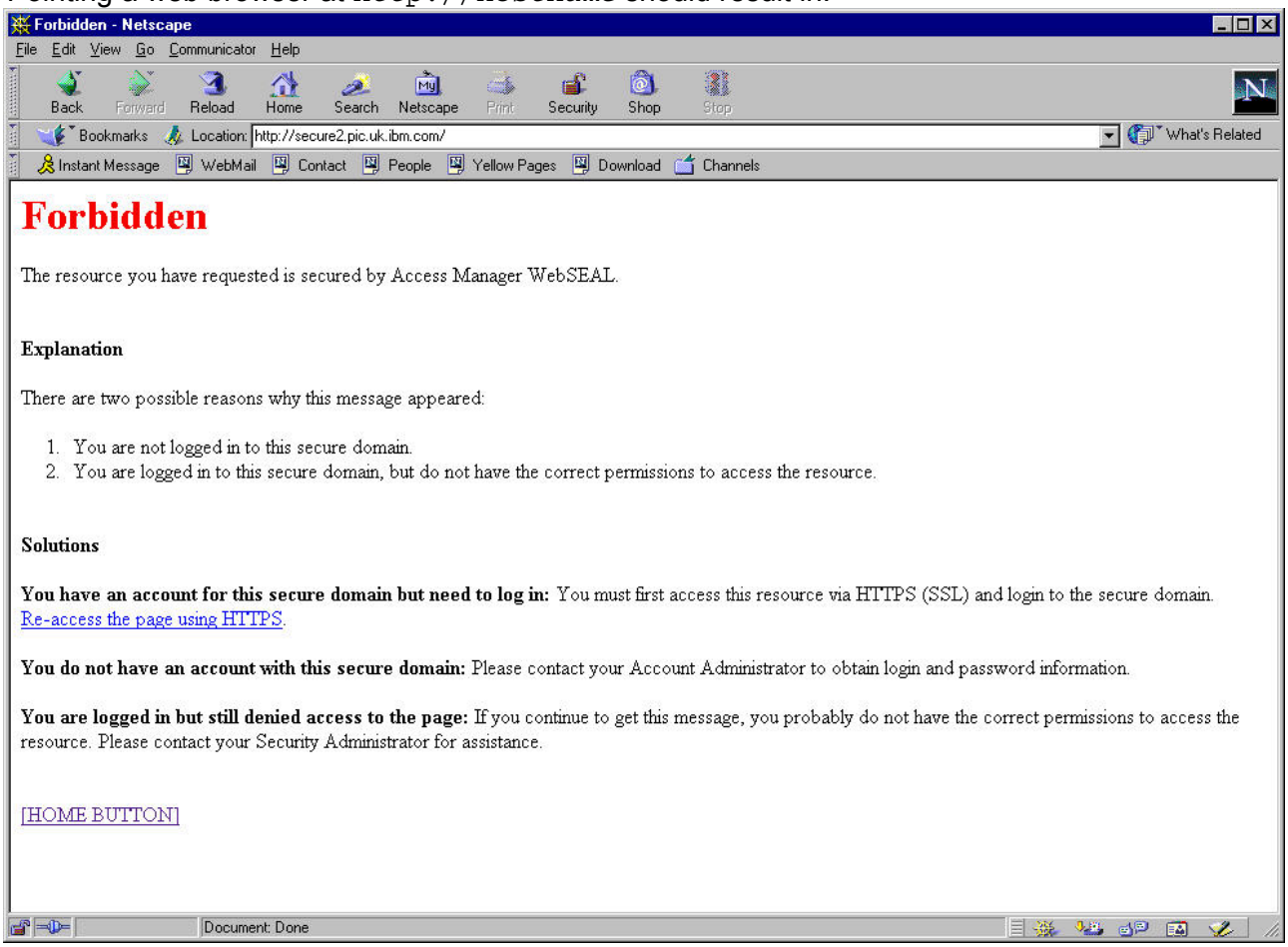
a. **reboot** will shutdown and restart Solaris immediately as a background task.

b. **eject** will eject the CD

Part V - Generic Product Configuration

22. Initial Access Manager Validation

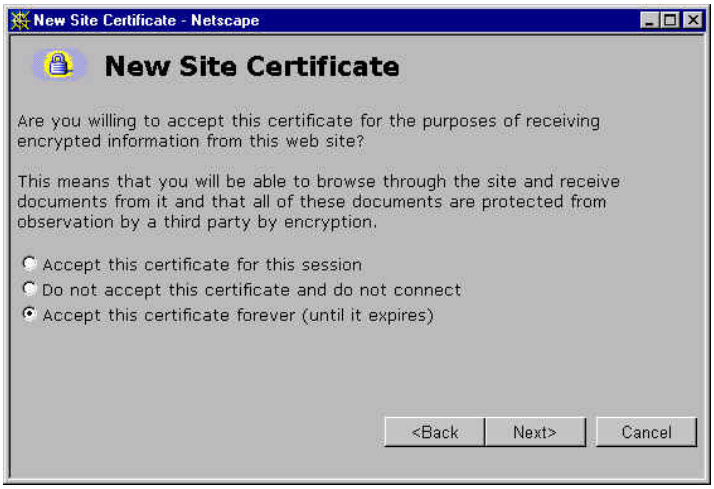
a. Pointing a web browser at `http://hostname` should result in:

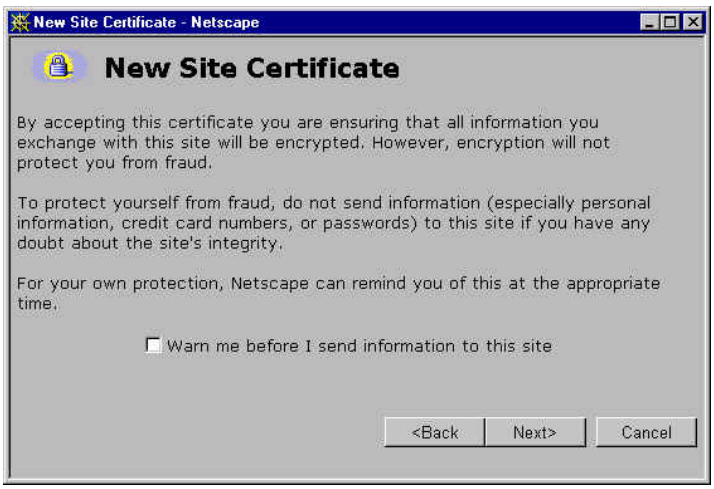


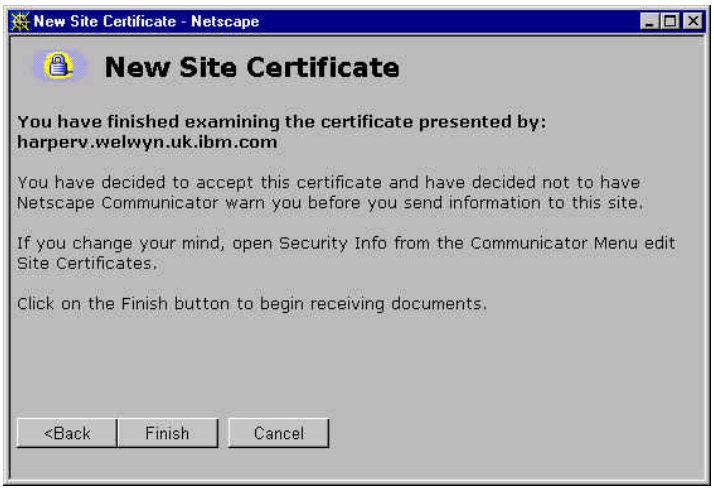
b. Click on the link Re-access the page using HTTPS, or else point a web browser at `https://hostname`. You can then ignore the web browser error messages (because the WebSEAL Server Certificate has not been signed by a recognized Certification Authority and the name in it does not match the WebSEAL domain name):


New Site Certificate - Netscape
New Site Certificate
harperv.welwyn.uk.ibm.com is a site that uses encryption to protect transmitted information. However, Netscape does not recognize the authority who signed its Certificate.
Although Netscape does not recognize the signer of this Certificate, you may decide to accept it anyway so that you can connect to and exchange information with this site.
This assistant will help you decide whether or not you wish to accept this Certificate and to what extent.
Next>
Cancel


New Site Certificate - Netscape
New Site Certificate
Here is the Certificate that is being presented:
Certificate for: Tivoli Systems
Signed by: Tivoli Systems
Encryption: Medium Grade (DES-CBC with 64-bit secret key)
More Info...
The signer of the Certificate promises you that the holder of this Certificate is who they say they are. The encryption level is an indication of how difficult it would be for someone to eavesdrop on any information exchanged between you and this web site.
<Back
Next>
Cancel


New Site Certificate - Netscape
New Site Certificate
Are you willing to accept this certificate for the purposes of receiving encrypted information from this web site?
This means that you will be able to browse through the site and receive documents from it and that all of these documents are protected from observation by a third party by encryption.
Accept this certificate for this session
Do not accept this certificate and do not connect
Accept this certificate forever (until it expires)
<Back
Next>
Cancel

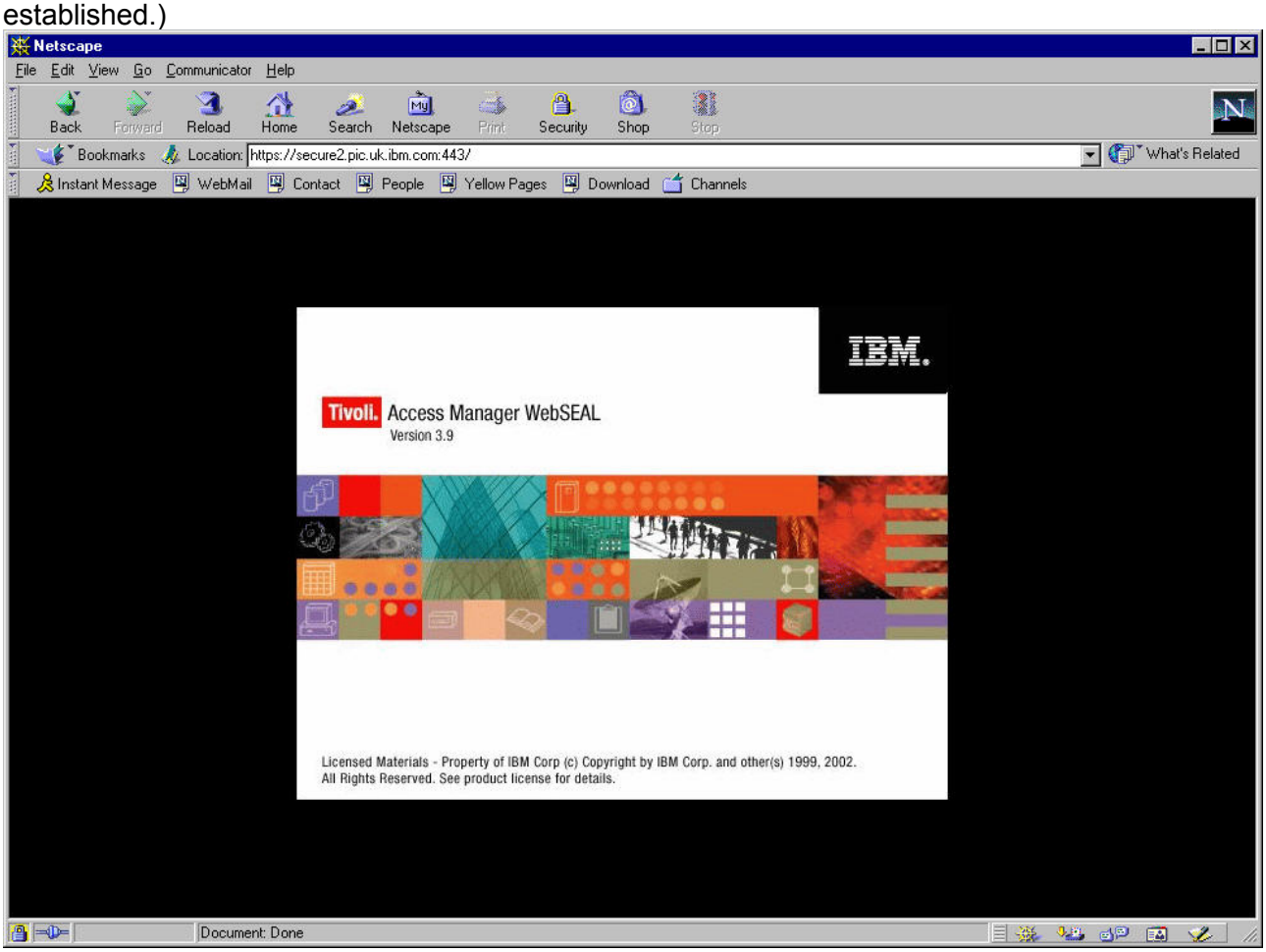




c. You can then log in to the browser Basic Authentication prompt with User Name `sec_master` and the Access Manager Administrator password (**`Secure99`** in our case):

d. (Note that the User Name is not case sensitive, but the Password *is* case sensitive.)

e. Click on '**OK**' – you should then be presented with the Access Manager splash screen. (The padlock in the bottom left hand corner of the screen in the locked position indicates that SSL is established.)



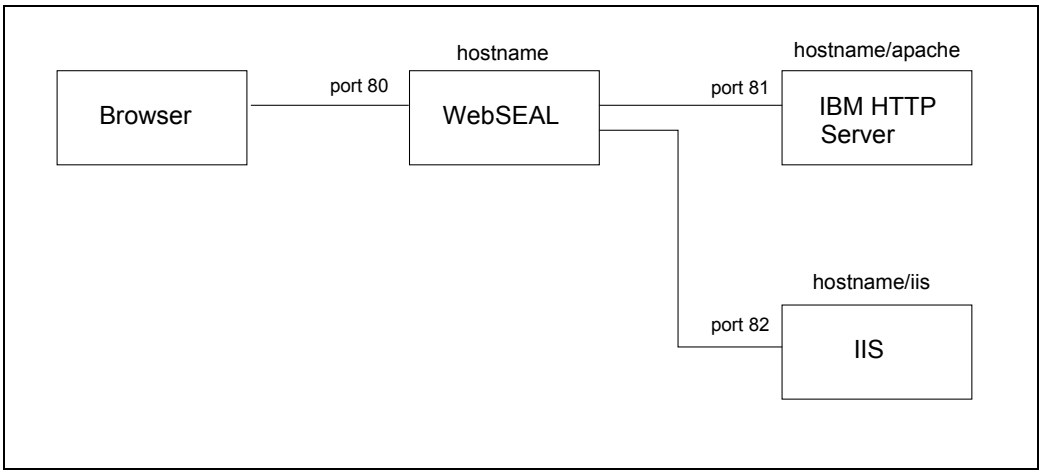
f. If you are using Internet Explorer 5, you will get panels similar to the following:


Security Alert
Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate.
The security certificate was issued by a company you have not chosen to trust. View the certificate to determine whether you want to trust the certifying authority.
The security certificate date is valid.
The name on the security certificate does not match the name of the site.
Do you want to proceed?
Yes
No
View Certificate


Enter Network Password
Please type your user name and password.
Site:
secure2.pic.uk.ibm.com
Realm
Access Manager for e-business
User Name
sec_master
Password
Save this password in your password list
OK
Cancel

23. Further Access Manager Configuration

In order to set up a demonstration configuration similar to this, perform the following steps. (The examples featured here use Netscape Communicator, IBM HTTP Server and IIS; using other browsers and web servers should give similar results.)



a. Set up a web server to listen on port 81 - for example, during the LDAP installation IBM HTTP Server was installed and we edited `\Program Files\IBM HTTP Server\conf\httpd.conf` to change the `Port` directive from 80 to 81 (or some other value).

   If you are using Microsoft Internet Information Server (IIS), the only way we have found of changing its port number is to do the following:

   a) Use Start -> Settings -> Control Panel -> Services to stop Policy Director WebSEAL (as this is listening on port 80).
   b) Use Start -> Programs -> Microsoft Internet Server (Common) -> Internet Service Manager to start Microsoft Internet Service Manager.
   c) Click on Properties -> Start Service in Internet Service Manager to start IIS (which by default will listen on port 80).
   d) Double-click on the computer name (on the same line as the reference to 'WWW'). This displays the 'WWW Service Properties' dialogue, including a 'TCP Port' field which you can change (to, say, 82). Click on '**OK**'.
   e) In Internet Service Manager, click on Properties -> Stop Service to stop IIS.
   f) Click on Properties -> Start Service to re-start IIS.

b. Verify that pointing the browser at `http://hostname:80/` results in the WebSEAL responding with a Access Manager banner as before.

c. Verify that pointing the browser at `http://hostname:81/`and/or `http://hostname:82/` results in the other web server(s) responding.

d. Ensure that the LDAP Server is started.

e. You can use the pdadmin command line interface to create a user as follows:

```
# pdadmin -a sec_master -p Secure99
pdadmin> user create usera cn=usera,ou=emea,o=ibm,c=gb usera usera passw0rd
pdadmin> user modify usera account-valid yes
pdadmin> user show usera
Login ID: usera
LDAP DN: cn=usera,ou=emea,o=ibm,c=gb
LDAP CN: usera
LDAP SN: usera
Description:
Is SecUser: yes
Is GSO user: no
Account valid: yes
Password valid: yes
Authorization mechanism: Default:LDAP
pdadmin>
```

f. Note that the relevant elements of the DN (`ou=emea,o=ibm,c=gb` in our case) must be consistent with the suffixes previously specified. The password must be consistent with the password rules - `passw0rd` and `password1` are consistent with the default password rules, which require at least one numeric character.

g. You can show the characteristics of the WebSEAL server(s) as follows:

```
pdadmin> server list
    webseald-harperv
    ivacld-harperv.welwyn.uk.ibm.com
 pdadmin> server show webseald-harperv
    webseald-harperv
        Description: webseald/harperv
        Hostname: harperv.welwyn.uk.ibm.com
        Principal: webseald/harperv
        Port: 7237
        Listening for authorization database update notifications: yes
        AZN Administration Services:
            webseal-admin-svc
            azn_admin_svc_trace
pdadmin>
```

h. You can set up a smart junction as follows:

```
pdadmin> server task webseald-harperv create -t tcp -h
harperv.welwyn.uk.ibm.com -p 81 -i -w /apache
Created junction at /apache
pdadmin>
```

i. **Note**: as we are junctioning a windows-based web server, we specify the `-i` and `-w` switches to treat URLs as case-insensitive and handle 8.3 format file names correctly.

j. Note also that an error message will be displayed if the junctioned web server is not operating.

k. The junctions and the characteristics of the junctions can be listed as follows:

```
pdadmin> server task webseald-harperv list
/
/apache
pdadmin> server task webseald-harperv show /apache
    Junction point: /apache
    Type: TCP
```

```
    Junction hard limit: 0 - using global value
    Junction soft limit: 0 - using global value
    Active worker threads: 0
    Basic authentication mode: filter
    Authentication HTTP header: do not insert
    Stateful junction: no
    Scripting support: no
    Delegation support: no
    Mutually authenticated: no
        Insert WebSphere LTPA cookies: no
    Insert WebSEAL session cookies: no
    Server 1:
        ID: bfb75898-a845-11d5-adc6-204c4f4f5020
        Server State: running
        Hostname: harperv.welwyn.uk.ibm.com
        Port: 81
        Virtual hostname: harperv.welwyn.uk.ibm.com:81
        Server DN:
        Query_contents URL: /cgi-bin/query_contents
        Query-contents: unknown
        Case insensitive URLs: yes
        Allow Windows-style URLs: no
        Total requests : 1
pdadmin>
```

I. A second junction can be added and verified as follows:

```
pdadmin> server task webseald-harperv create -t tcp -h
harperv.welwyn.uk.ibm.com -p 82 -i -w -q /cgi-bin/query_contents.exe /iis
Created junction at /iis
pdadmin> server task webseald-harperv list
/
/apache
/iis
pdadmin> server task webseald-harperv show /iis
    Junction point: /iis
    Type: TCP
    Junction hard limit: 0 - using global value
    Junction soft limit: 0 - using global value
    Active worker threads: 0
    Basic authentication mode: filter
    Authentication HTTP header: do not insert
    Stateful junction: no
    Scripting support: no
    Delegation support: no
    Mutually authenticated: no
        Insert WebSphere LTPA cookies: no
    Insert WebSEAL session cookies: no
    Server 1:
        ID: d1728480-a84b-11d5-adc6-204c4f4f5020
        Server State: running
        Hostname: harperv.welwyn.uk.ibm.com
        Port: 82
        Virtual hostname: harperv.welwyn.uk.ibm.com:82
        Server DN:
        Query_contents URL: /cgi-bin/query_contents.exe
        Query-contents: unknown
        Case insensitive URLs: yes
```

```
        Allow Windows-style URLs: no
        Total requests : 1
pdadmin>
```

m. **Note**: when using query_contents with IIS, you need to specify `-q /cgi-bin/query_contents.exe` when creating the junction.

n. Verify that pointing the web browser to the junctioned url works - for example pointing the browser at https://harperv.welwyn.uk.ibm.com/apache should result in the same web page being displayed as pointing the browser at http://harperv.welwyn.uk.ibm.com:81.

o. Set up query_contents on the junctioned web server - this is to enable the Access Manager Web Portal Manager to be used for managing web server contents.

For IBM HTTP Server, do the following:

a) In `httpd.conf`, uncomment the line `ScriptAlias /cgi-bin/ "C:/Program Files/IBM HTTP Server/cgi-bin/".`

b) Copy `query_contents.exe` from `C:\Program Files\Tivoli\PDWeb\www\lib\query_contents` to `C:\Program Files\IBM HTTP Server\cgi-bin` (or whatever other directory `ScriptAlias /cgi-bin/` points to).

c) Copy `query_contents.cfg` from `C:\Program Files\Tivoli\PDWeb\www\lib\query_contents` to `C:\Winnt`.

d) Edit `C:\Winnt\query_contents.cfg`, so that the `docroot` line points to whatever subdirectory the `DocumentRoot` line in `httpd.conf` points to.

e) Stop and re-start IBM HTTP Server.

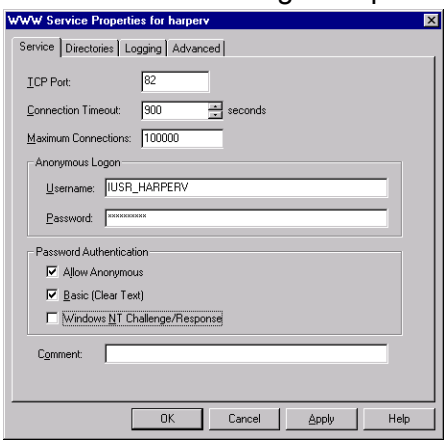
p. For IIS do the following:

a) Create a cgi-bin directory: `md c:\InetPub\wwwroot\cgi-bin`

b) Use Start -> Programs -> Microsoft Internet Server (Common) -> Internet Service Manager to start Microsoft Internet Service Manager.

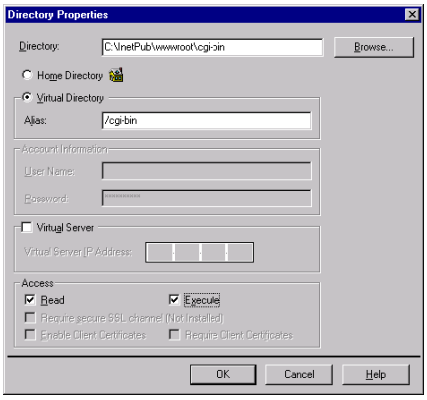
c) Double-click on the computer name (on the same line as the reference to 'WWW'). This displays the 'WWW Service Properties' dialogue, including a 'TCP Port' field which you can change (to, say, 82).

d) Select the 'Allow Anonymous' and 'Basic (Clear Text) boxes and deselect the 'Windows NT Challenge/Response' box.

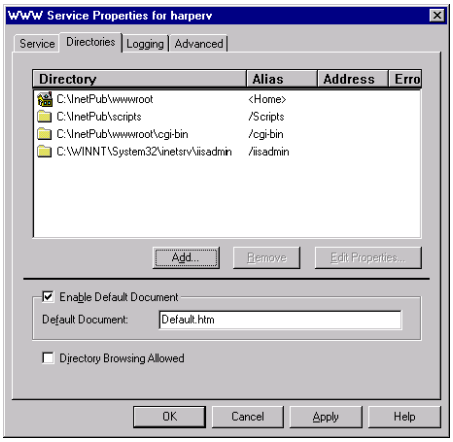


e) Click on the 'Directories' tab.

f) Pull the Alias column to the right so that you can see the full path name.
g) Click on 'Add'.
h) Set 'Directory' to `C:\InetPub\wwwroot\cgi-bin`
i) Set Virtual Directory Alias to `/cgi-bin`
j) Select the Access - 'Read' and 'Execute' boxes:



k) Click on '**OK**':



l) Click on '**OK**.
m) Click on Properties -> Stop Service in Internet Service Manager to stop IIS.
n) Click on Properties -> Start Service to re-start IIS.
o) Ideally obtain a copy of query_contents.exe written specifically to cope with the virtual directories which IIS and Netscape support.
copy `query_contents.exe` to `c:\InetPub\wwwroot\cgi-bin\.`
copy `query_contents.cfg` to `c:\winnt\.;`
edit `query_contents.cfg` to contain the following:

```
[server]
docroot=C:\InetPub\wwwroot

[directories]
/iisadmin=c:\winnt\system32\ietsrv\iisadmin
```

p) Failing that, copy the WebSEAL query_contents.* files from the Access Manager directory to the appropriate directories:
copy `c:\Program Files\Tivoli\PDWeb\www\lib\query_contents\query_contents.exe`

to `c:\InetPub\wwwroot\cgi-bin\`.

copy `c:\Program Files\Tivoli\PDWeb\www\lib\query_contents\query_contents.cfg` to `c:\winnt\.`;

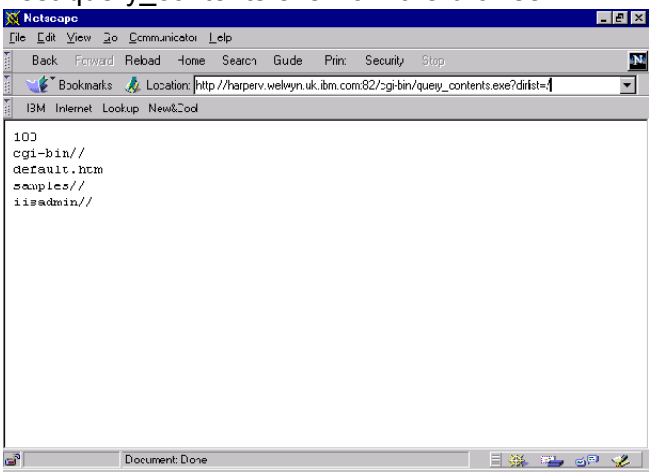
edit `c:\winnt\query_contents.cfg` to specify `docroot=c:\inetpub\wwwroot`

q. Test query_contents.exe from a DOS window:

```
C:\>c:\inetpub\wwwroot\cgi-bin\query_contents.exe dirlist=/
 Content-type: text/plain

 100
 cgi-bin//
 default.htm
 samples//
 iisadmin//

 C:\>
```

r. (The line containing `iisadmin` will not be present when using the default query_contents.exe.)

s. Test query_contents.exe from the browser:



(Again, the line containing `iisadmin` will not be present when using the default query_contents.exe.)

t. **Note**: when using query_contents with IIS, you need to specify `-q /cgi-bin/query_contents.exe` on the `junctioncp create` command.

Directory Management Tool

You can verify the existence of the user account created in the previous section by following the following steps:

- Type `dmt` on the command line to start the Directory Management Tool.
- Either click on `Add Server`, then enter the server name, the LDAP Administrator User DN and password, or else click on `Rebind`, click on `Authenticated`, and enter the LDAP Administrator User DN and password (**`cn=root`**, **`Secure99`** in our case).
- Click on Directory tree -> Browse tree.

- Click on the '+' sign beside your organization entry (`ou=emea,o=ibm,c=gb` in our case).
- The user should be listed (`cn=testuser` in our case).

24. Query_contents – additional notes

Query_contents with Lotus Domino Go Webserver

As the book says, copy `/usr/lpp/IV/www/lib/query_contents.sh` to the `cgi-bin` directory of the web server. For Lotus Domino Go this is `/usr/lpp/internet/server_root/cgi-bin`. Remove the `.sh` extension. You can test the script is working correctly by issuing `http://server/cgi-bin/query_contents?dirlist=/`. You should get `100` followed by a listing of the webserver's document-root directory.

For Lotus Domino Go you need to add the lines in bold to query_contents:

```
CERN*)
    DOCROOTDIR=/home/www/Web
    ADD_TO_ROOT="cgi-bin//"
    ;;
Domino-Go-Webserver*)
    DOCROOTDIR=`pwd`/../pub
    ADD_TO_ROOT="cgi-bin//"
    ;;
```

Query_contents with Netscape Enterprise Server under AIX

Set the default `DOCROOTDIR` definition to `/opt/netscape/suitespot/docs` or `/pkg/netscape/suitespot/docs`.

Note: if you want to test query_contents from the command line under AIX, you cannot supply a parameter to it directly. Instead, you need to set the environment variable `QUERY_STRING`. For example, type the following at a command prompt:

```
 export QUERY_STRING="dirlist=/"
./query_contents
```

25. Setting up a WebSEAL server certificate

If you use the default WebSEAL server certificate, when you set up an SSL session to WebSEAL you will get browser warnings indicating that (a) the browser does not recognize the authority who signed the site's certificate, and (b) the certificate that the site has presented does not contain the correct site name ("Certificate Name Check"). (The exact messages displayed will depend on the web browser which you are using.)

You can prevent these error messages by setting up a WebSEAL server certificate. We have documented three approaches for achieving this:

a. generating a self-signed certificate;

b. sending a Certificate Signing Request to a Tivoli PKI system;

c. sending a Certificate Signing Request to the demonstration Entrust public Certification Authority.

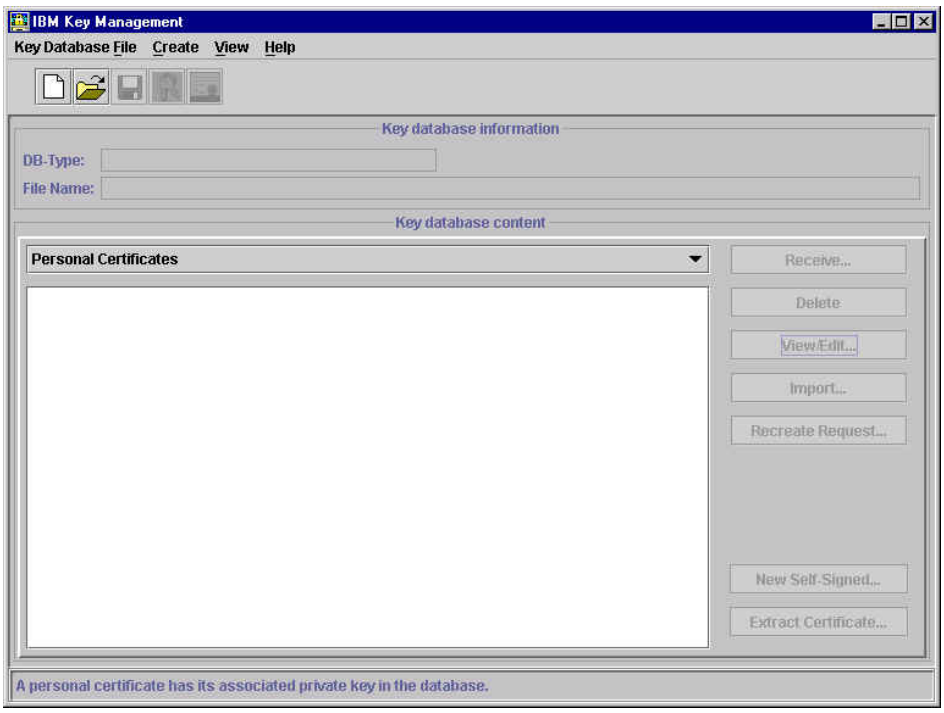
Using a self-signed certificate is adequate for a test system where it is feasible to install the Certificate Authority certificate in the users' browsers; for a production system you would need to send off a Certificate Signing Request (together with appropropriate documentation and payment) to a well known Certificate Authority whose certificate is installed by default in the users' browsers.

Approach (a) - Generating a self-signed certificate

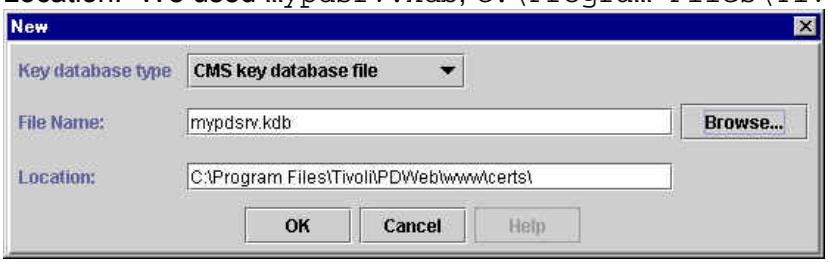
a. First you may like to back up all the files in `C:\Program Files\Tivoli\PDWeb\www\certs` on Windows or `/var/pdweb/www/certs` on UNIX. The default key database and stash file is contained in this directory; we also used this directory to store the key database and stash file which we created.

b. If WebSEAL is currently running, stop it. (In Windows, select Services and stop Access Manager WebSEAL. In UNIX issue `pdweb stop`.)

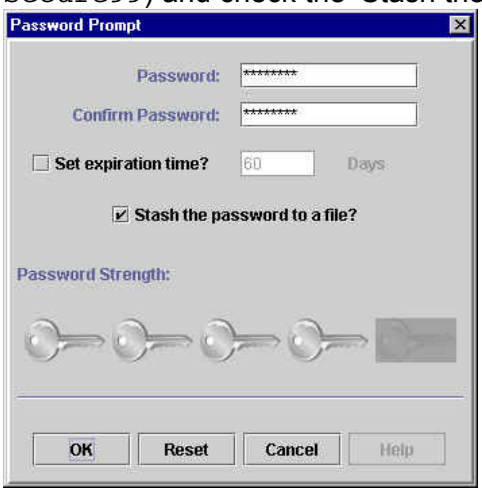
c. Start the iKeyman utility:
In Windows use 'My Computer' or 'Windows Explorer' find the `C:\Program Files\IBM\gsk5\bin` directory and double click on **`gsk5ikm.exe`**.
On UNIX type `/usr/bin/gsk5ikm&`
(You may first need to type `export JAVA_HOME=/usr/jdk_base`)
The IBM Key Management window appears:



d. Create a new Key Database: click on Key Database File -> New, and specify a File Name and Location. We used `mypdsrv.kdb`, `C:\Program Files\Tivoli\PDWeb\www\certs\`:

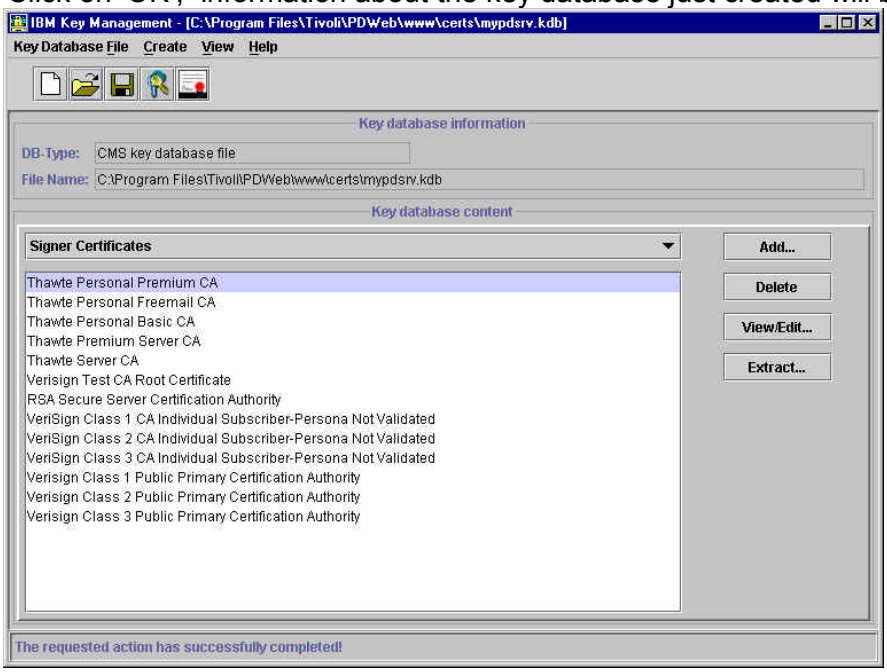


e. Click on 'OK'. A Password Prompt panel will be displayed. Enter a password (twice) (we used `Secure99`) and check the 'Stash the password to a file?' box:

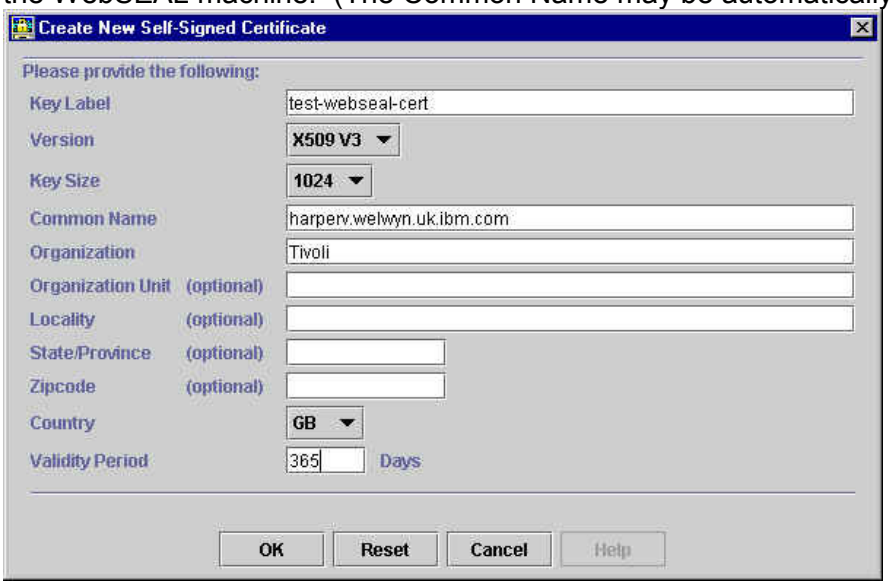


f. Click on 'OK'; an information message will inform you where the password has been saved:

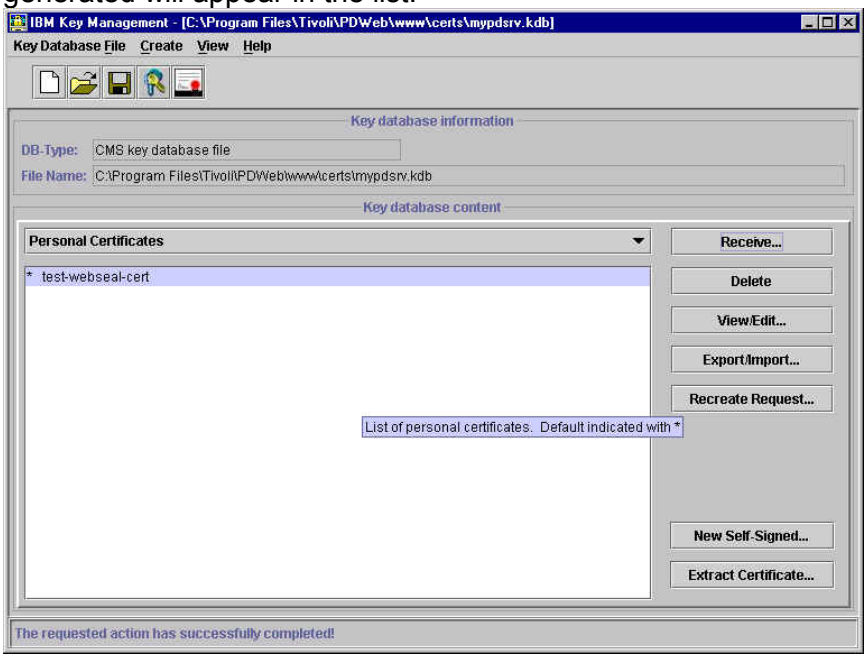
g. Click on 'OK'; information about the key database just created will be displayed:



h. Click on Create -> New Self-Signed Certificate; the 'Create New Self-Signed Certificate' panel will be displayed. Enter a Key Label (we used `test-webseal-cert`), Organization and Country. Ensure that the Common Name is specified which matches the DNS Domain Name of the WebSEAL machine. (The Common Name may be automatically filled in for you.)



i. Click on 'OK'; a public/private key pair and certificate are generated. The certificate just generated will appear in the list:



j. The IBM Key Management utility is no longer required and may be closed.

k. Back up `webseald.conf` (Windows: in `C:\Program Files\Tivoli\PDWeb\etc`; UNIX: in `/opt/pdweb/etc`).

l. Edit `webseald.conf`:
modify the `webseal-cert-keyfile` line to point to the key database file (`mypdsrv.kdb` in our case);
modify the `webseal-cert-keyfile-stash` line to point to the key database password stash file (`mypdsrv.sth` in our case);
specify the key label by introducing a line in the `[ssl]` stanza of the following form:
`webseal-cert-keyfile-label = test-webseal-cert`

m. On UNIX, after creating the key database file, change the file ownership of the key database file and stash file to **ivmgr**. Use the appropriate operating system command for changing file ownership:

```
# chown ivmgr <keyfile>
# chown ivmgr <stashfile>
```

n. Start WebSEAL. (In Windows, start Access Manager WebSEAL. In UNIX issue `pdweb start`)

o. Ensure that all the Access Manager services/process have started. If they do not all start, look in the log for the corresponding service/process.

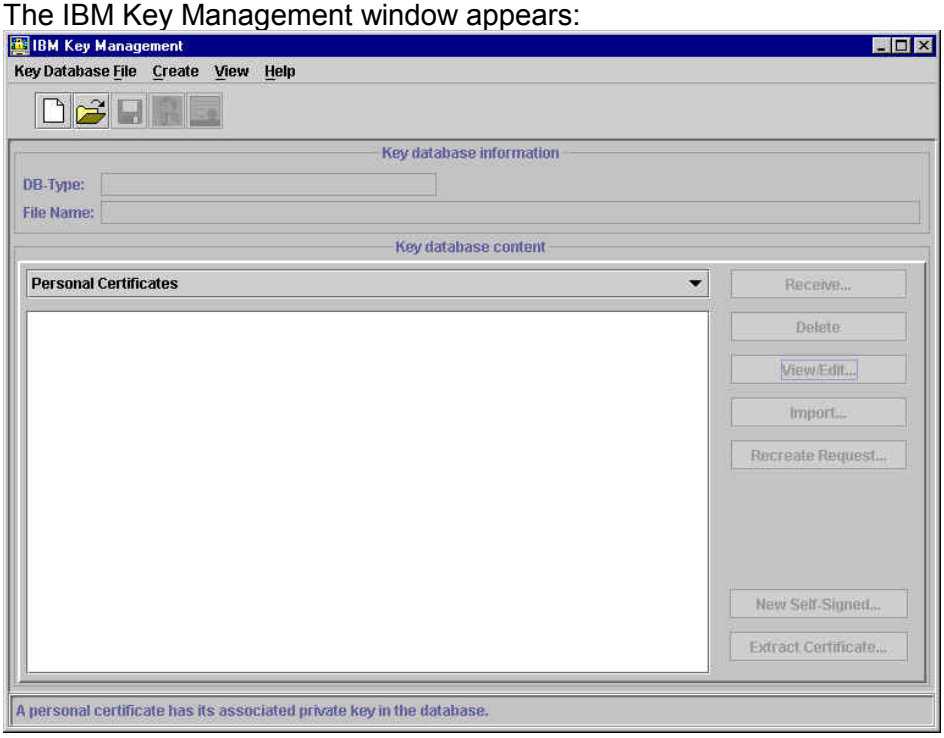
p. Verify that Access Manager is behaving as is now expected by pointing a web browser at WebSEAL using SSL. Note that a message indicating 'New Site Certificate' or 'The security certificate was issued by a company you have not chosen to trust' (or equivalent), as we have merely installed a self-signed certificate, but you can choose accept the certificate (either for this session or until it expires) using the browser panels. You should no longer see the Certificate Name Check message.

Approach (b) - Certificate Signing Request sent to Tivoli PKI

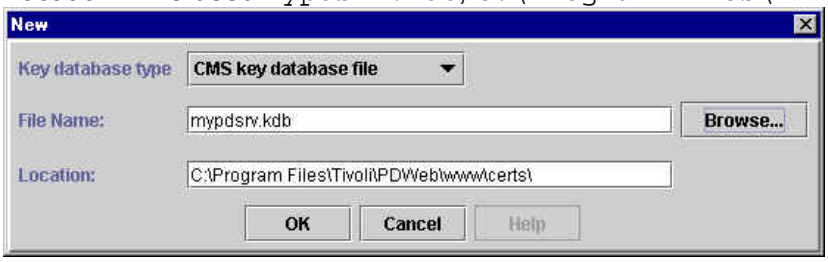
a. First you may like to back up all the files in `C:\Program Files\Tivoli\PDWeb\www\certs` on Windows or `/var/pdweb/www/certs` on UNIX. The default key database and stash file is contained in this directory; we also used this directory to store the key database and stash file which we created.

b. If WebSEAL is currently running, stop it. (In Windows, select Services and stop Access Manager WebSEAL. In UNIX issue `pdweb stop`.)

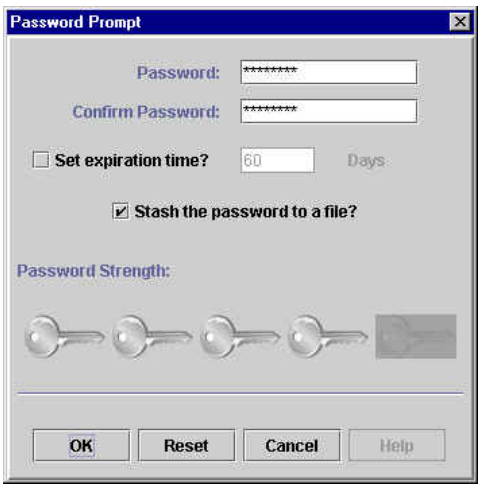
c. Start the iKeyman utility:
In Windows use 'My Computer' or 'Windows Explorer' find the `C:\Program Files\IBM\gsk5\bin` directory and double click on **`gsk5ikm.exe`**.
On UNIX type `/usr/bin/gsk5ikm&`
(You may first need to type `export JAVA_HOME=/usr/jdk_base`)
The IBM Key Management window appears:



d. Create a new Key Database: click on Key Database File -> New, and specify a File Name and Location. We used `mypdsrv.kdb`, `C:\Program Files\Tivoli\PDWeb\www\certs\`:

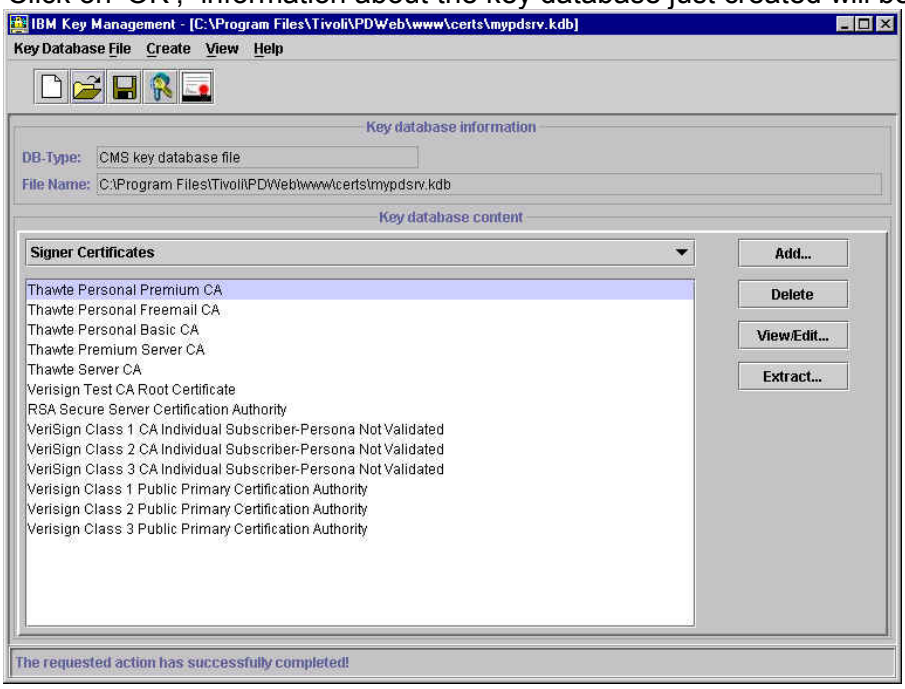


e. Click on 'OK'. A Password Prompt panel will be displayed. Enter a password (twice) (we used `Secure99`) and check the 'Stash the password to a file?' box:

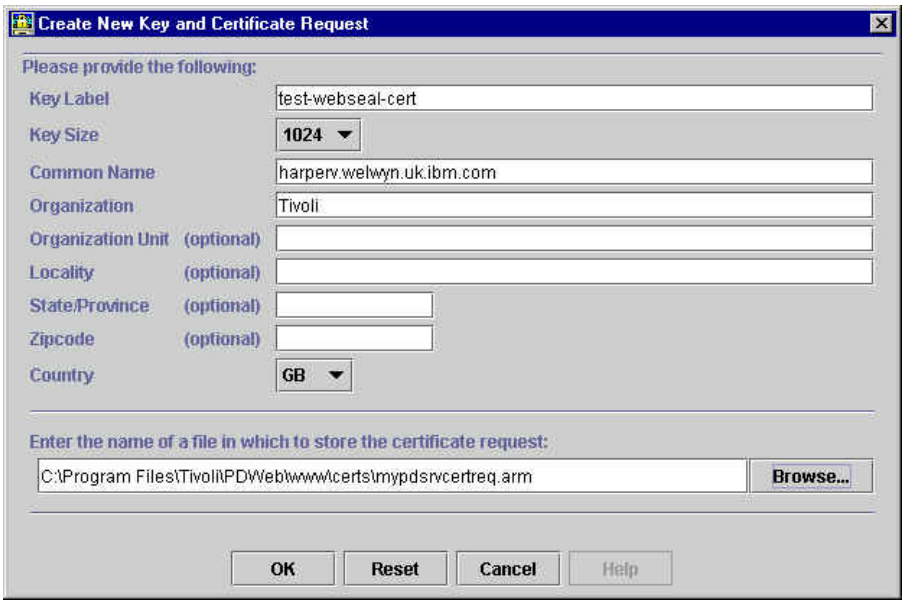


f. Click on 'OK'; an information message will inform you where the password has been saved:

g. Click on 'OK'; information about the key database just created will be displayed:



h. Click on Create -> New Certificate Request; the 'Create New Key and Certificate Request' panel will be displayed. Enter a Key Label (we used `test-webseal-cert`), Organization and Country, and specify the name of a file in which to store the certificate request. Ensure that the Common Name is specified which matches the DNS Domain Name of the WebSEAL machine. (The Common Name may be automatically filled in for you.)

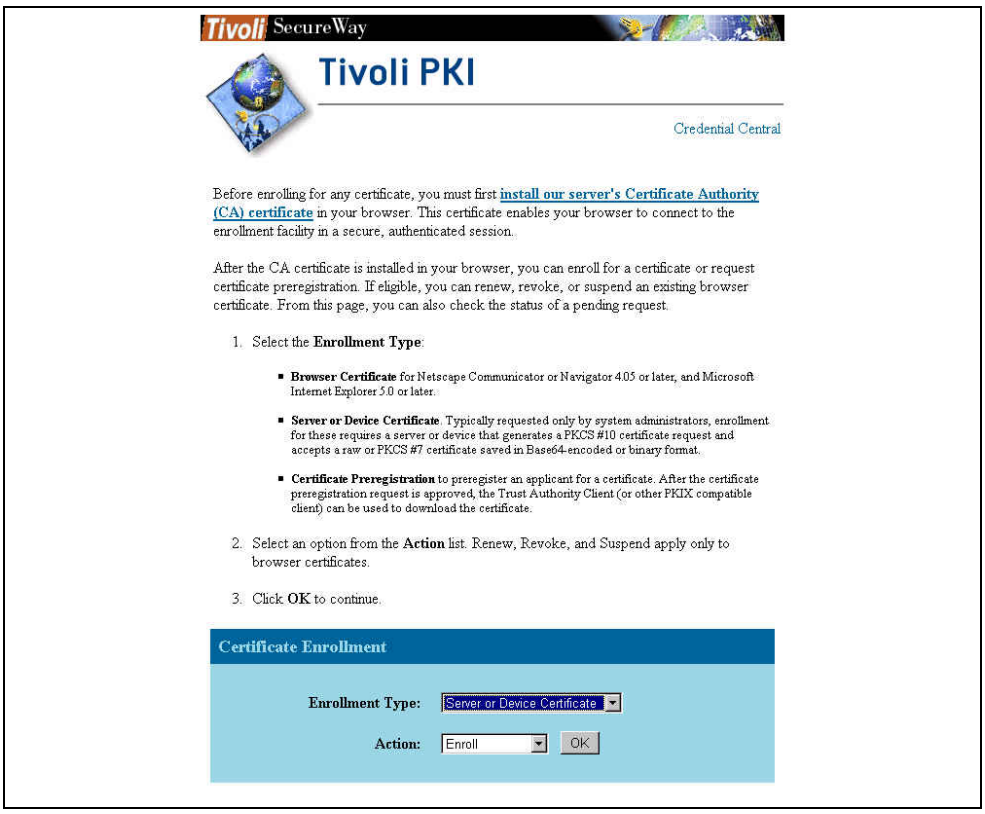


i. Click on 'OK'; an information message will inform you where the certificate request has been stored:

j. Click on 'OK' to dismiss the information message.

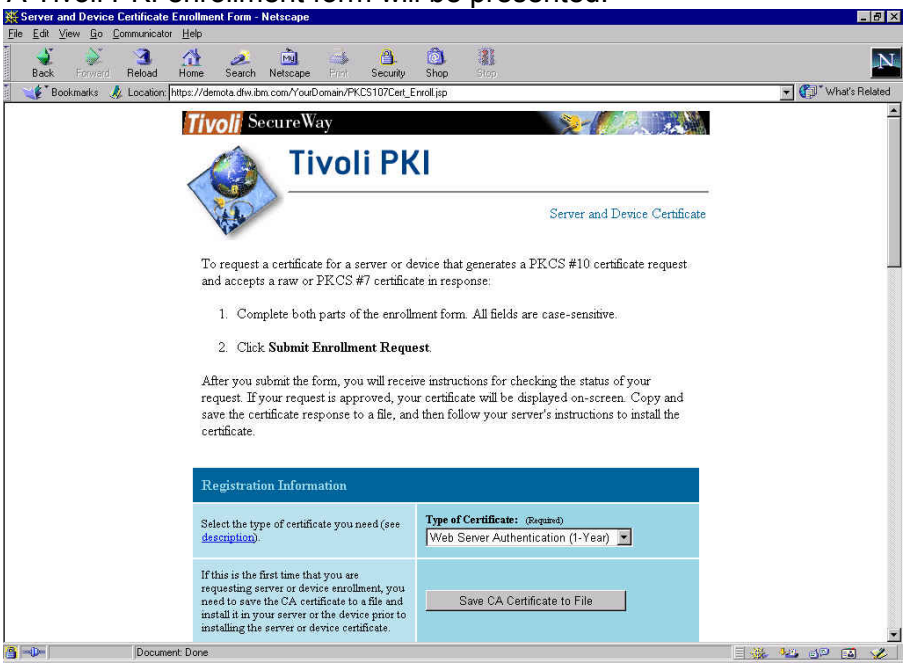
k. Point a web browser at Credential Central on a Tivoli PKI system (such as the demo system at `http://demota.dfw.ibm.com/YourDomain/index.jsp` - this site is accessible over the Internet.)

l. Select Enrolment Type as `Server or Device Certificate` and Action as `Enrol`:



m. Click on 'OK'. You may receive warning messages indicating that the server certificate has been issued by a CA which is not trusted by your browser; accept the Site Certificate (at least for this session) so that SSL can be established.

n. A Tivoli PKI enrollment form will be presented:



o. Click on 'Save CA Certificate to File'. The browser will display a 'Save As…' panel: specify a directory and filename as to where to save the CA Certificate. (We used `C:\Program Files\Tivoli\PDWeb\www\certs\CACertRaw.b64`.)

p. Fill in First Name, Last Name and the Domain Name (which should match the DNS name of the WebSEAL machine).

q. Use Notepad (or equivalent) to open the file containing the certificate signing request (`mypdsrvcertreq.arm` in our case). Copy to the clipboard all the text from `BEGINE NEW CERTIFICATE REQUEST` to `END NEW CERTIFICATE REQUEST`, then copy this to the 'PKCS #10 Certificate Request' area on the browser input form:

Tivoli SecureWay

Tivoli PKI

Server and Device Certificate

To request a certificate for a server or device that generates a PKCS #10 certificate request and accepts a raw or PKCS #7 certificate in response:

1. Complete both parts of the enrollment form. All fields are case-sensitive.
2. Click **Submit Enrollment Request**.

After you submit the form, you will receive instructions for checking the status of your request. If your request is approved, your certificate will be displayed on-screen. Copy and save the certificate response to a file, and then follow your server's instructions to install the certificate.

Registration Information

Select the type of certificate you need (see description).	**Type of Certificate:** (Required) Web Server Authentication (1-Year)
If this is the first time that you are requesting server or device enrollment, you need to save the CA certificate to a file and install it in your server or the device prior to installing the server or device certificate.	Save CA Certificate to File
Type your first name or given name and, optionally, your middle name or initial.	**First Name:** (Required) Vaughan
Type your last name, family name, or surname.	**Last Name:** (Required) Harper
Type your e-mail address, including the at sign (@) and any periods (.). This e-mail address is required by some certificate types, such as those used for secure e-mail.	**E-mail Address:** (Optional)
Select this option to receive an e-mail notification when your request has been finalized.	☐ **E-mail Notification** (Optional)
Type a Challenge Question and a Response that are special to you and easy to remember. If you are asked the same Challenge Question when you check your enrollment status, you must respond with the same Challenge Response.	**Challenge Question:** (Optional) **Challenge Response:** (Optional)

Certificate Request Information

Copy and paste here the content of the PKCS #10 certificate request (see sample) that was generated by the server or device for which you are requesting a certificate. If you saved the certificate request to a file, open the file in a text editor such as Notepad, and then copy and paste the certificate request here.	**PKCS #10 Certificate Request:** (Required)


```
-----BEGIN NEW CERTIFICATE REQUEST-----
MIIBqTCB6wIBADBCMQswCQYDVQQGEwJHQjEPMAOG
VQQDExloYXJwZXU2LndlbHdSbi51ay5pYm0uY29t
A4GNADCBiQKBgQC2IGr21vMbChwNgPH77EQd39R3
CSzKrdgTeWAQs12PlweOtw4DoCsezlMq5EHzor/t
KtVIUR+JxrI8eiFx8voNqbmZKrcCV6BnL8kxRMcB
oAAwDQYJKoZIhvcNAQEEBQADgYEABAoVpxpDC/JD
8NXcOtEuvibKGQvwONMkXcTyRL7U1ESQSFaNRywv
isXNfo5uhrdWqmE+latw+ekiwem54xXI+k984CAN
NZJ1Gp4=
-----END NEW CERTIFICATE REQUEST-----
```


The data you enter below will override the data contained in the PKCS #10 for the same field. Leave the field blank if you already entered the data in your PKCS #10 request and do not wish to override it.

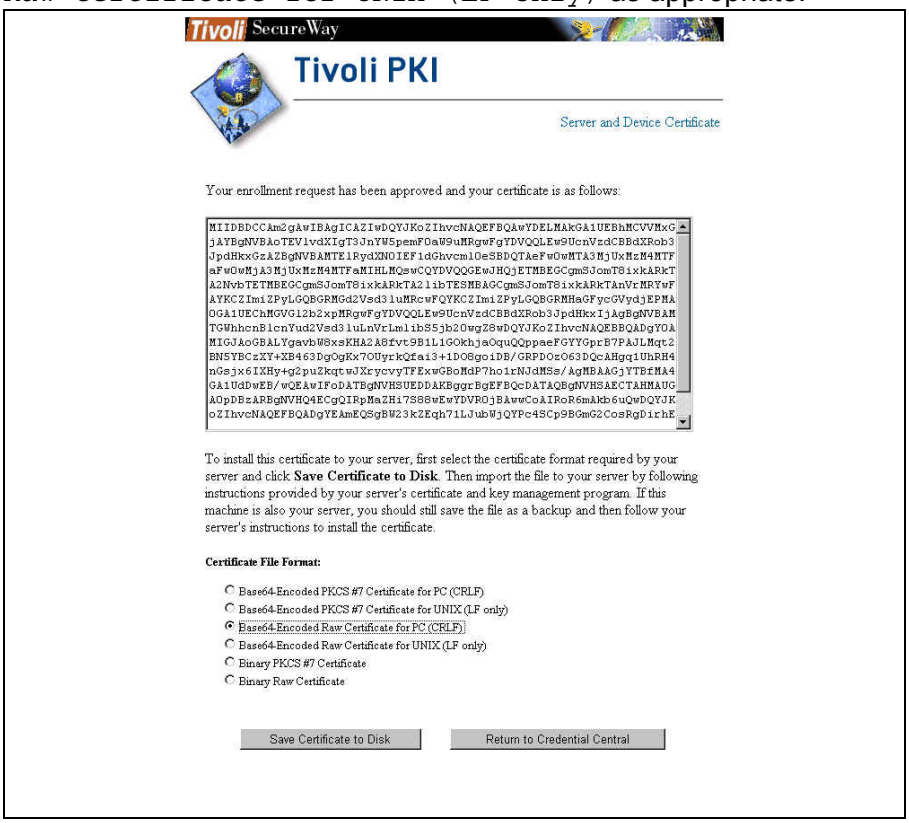
Type a name to identify this certificate. Typically this is the hostname of your server or device. This field is required if the PKCS #10 certificate request does not contain the Common Name.	**Common Name:** (Optional)
Type the legally registered name of your organization.	**Organization Name:** (Optional)
Type the name of your division or department, such as Human Resources or Software Development.	**Organizational Unit:** (Optional)
Type the street address of your organization.	**Street Address:** (Optional)
Type the city or municipality where your organization is located, such as Chicago or Paris.	**Locality:** (Optional)
Type the state or province where your organization is located. Do not abbreviate. For example, use New York instead of NY.	**State or Province:** (Optional)
Select the country where your organization is located.	**Country:** (Optional) Use the one set in PKCS #10
Type the domain name if you were instructed to do so. For example, mypc.mydiv.mycorp.com.	**Domain Name:** (Optional) harperv.welwyn.uk.ibm.com

Submit Enrollment Request

r. Click on ‘Submit Enrolment Request’. Tivoli PKI will display an enrollment status page which it suggests that you bookmark.

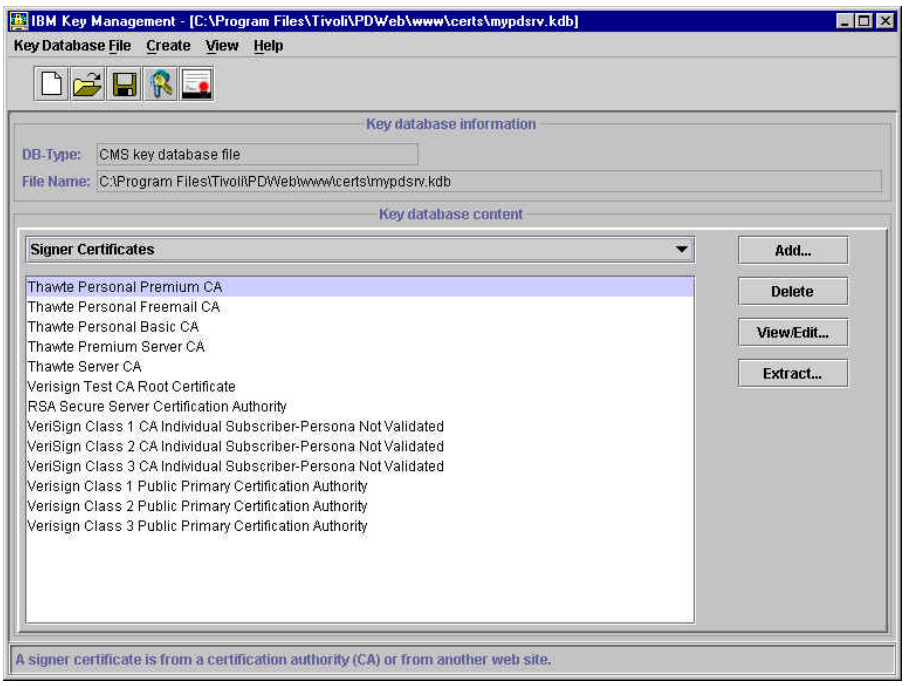
s. If you are operating your own Tivoli PKI system which requires that the request be approved, start the RA Desktop and approve the request that has just been submitted.

t. Click on ‘Check Erollment Status’. Once the enrollment request has been approved and the certificate generated, Tivoli PKI will display a ‘Server and Device Certificate’ page. Select `Base64-Encoded Raw Certificate for PC (CRLF)` or `Select Base64-Encoded Raw Certificate for UNIX (LF only)` as appropriate:

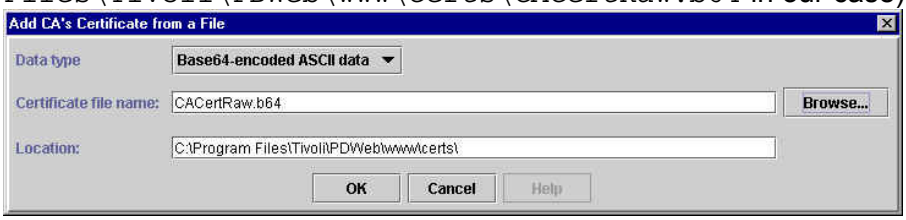


u. Click on ‘Save Certificate to Disk’. Specify a filename and directory and save the file. (The filename will default to `RawCert.b64`.)

v. In the IBM Key Management window, select ‘Signer Certificates’ from the pull-down list:

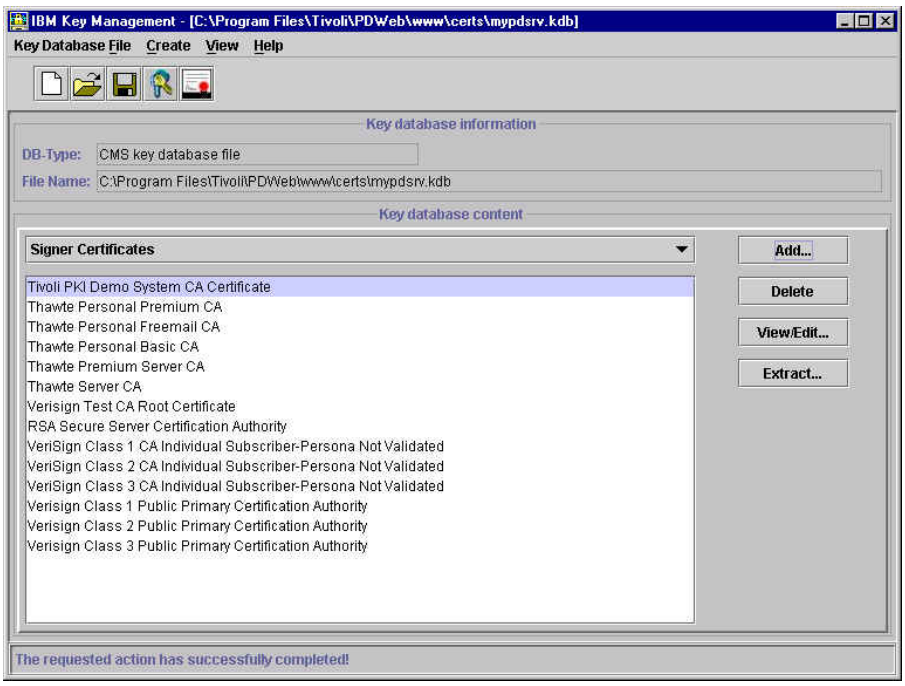


w. Click on 'Add…'. The 'Add CA's Certificate from a File' will be displayed. Specify the file where you saved the **CA** Certificate (`C:\Program Files\Tivoli\PDWeb\www\certs\CACertRaw.b64` in our case):

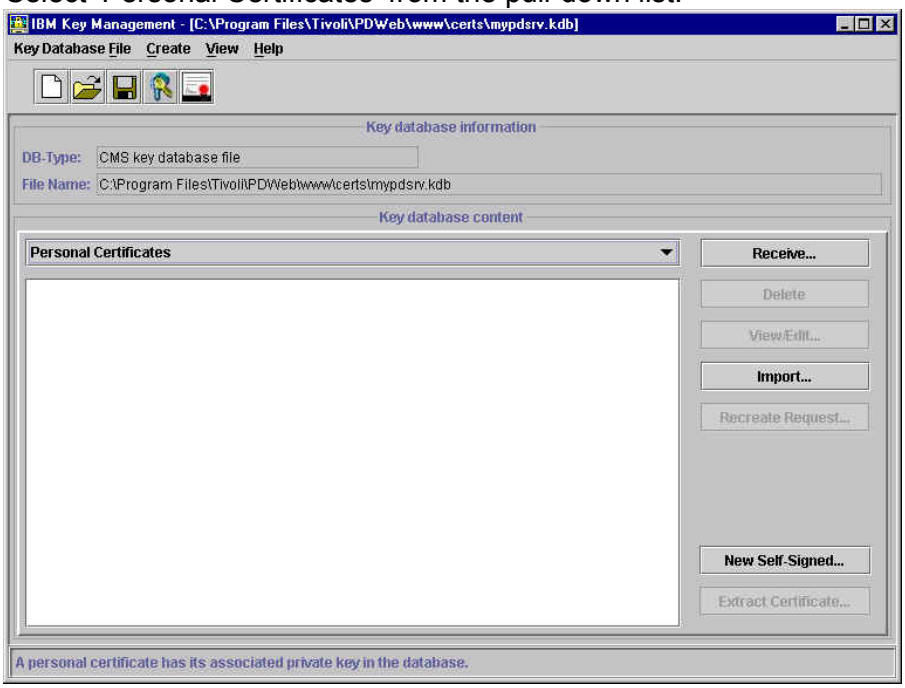


x. Click on 'OK'. The 'Enter a Label' prompt will be displayed. Enter a label to use for the certificate:

y. Click on 'OK'. The CA Certificate will be added to the list of Signer Certificates:

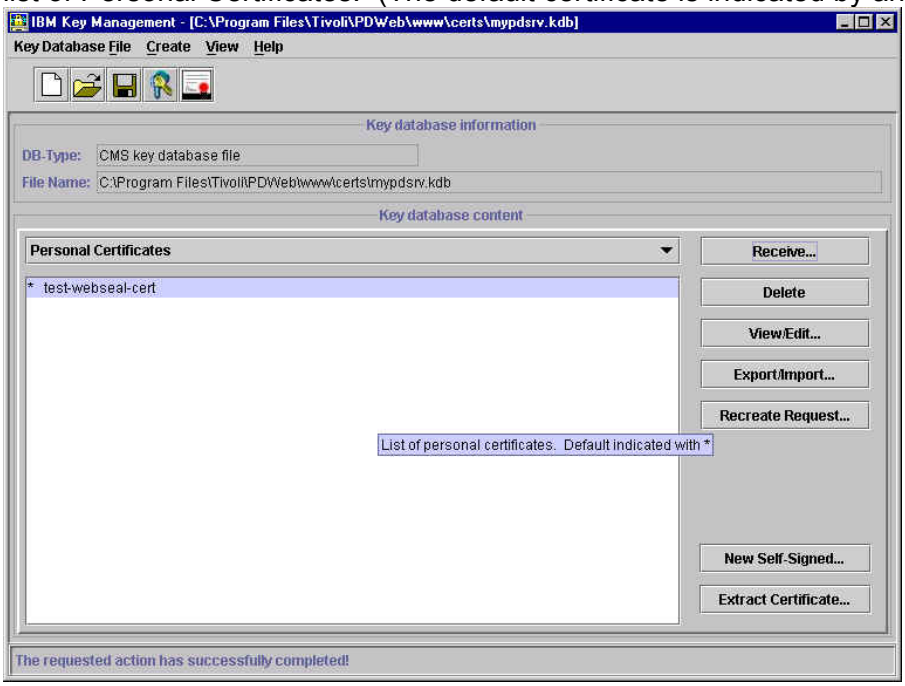


z. Select ‘Personal Certificates’ from the pull-down list:



aa. Click on Receive. The ‘Receive Certificate from a File’ window is displayed. Ensure that the Data type is set to Base64-encoded ASCII data and specify the file in which the certificate you just saved from Tivoli PKI is stored:

bb. Click on 'OK'; the WebSEAL Certificate which has been signed by the CA will be added to the list of Personal Certificates. (The default certificate is indicated by an asterisk (*).)



Note: If you receive an Error Message indicating 'A database validation error occurred', this is likely to be because GSKit will allow the reception only of Personal Certificates which are either self-signed or signed by a CA whose certificate is listed in the list of Signer Certificates. The step described above of receiving the CA Certificate should prevent this error message.

cc. The IBM Key Management utility is no longer required and may be closed.

dd. Back up `webseald.conf` (Windows: in `C:\Program Files\Tivoli\PDWeb\etc`; UNIX: in `/opt/pdweb/etc`).

ee. Edit `webseald.conf`:
modify the `webseal-cert-keyfile` line to point to the key database file (`mypdsrv.kdb` in our case);
modify the `webseal-cert-keyfile-stash` line to point to the key database password stash file (`mypdsrv.sth` in our case);
specify the key label by introducing a line in the `[ssl]` stanza of the following form:
`webseal-cert-keyfile-label = test-webseal-cert`

ff. On UNIX, after creating the key database file, change the file ownership of the key database file and stash file to **ivmgr**. Use the appropriate operating system command for changing file ownership:
`# chown ivmgr <keyfile>`

```
# chown ivmgr <stashfile>
```

gg. Start WebSEAL. (In Windows, start Access Manager WebSEAL. In UNIX issue `pdweb start`)

hh. Ensure that all the Access Manager services/process have started. If they do not all start, look in the log for the corresponding service/process.

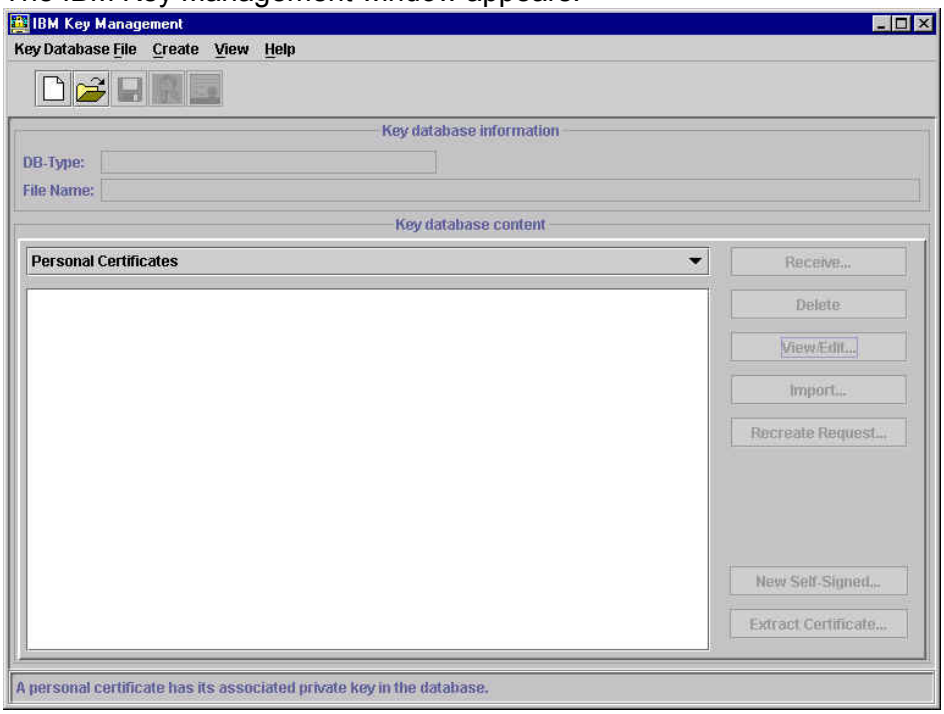
ii. Verify that Access Manager is behaving as is now expected by pointing a web browser at WebSEAL using SSL. Note that a message indicating 'New Site Certificate' or 'The security certificate was issued by a company you have not chosen to trust' (or equivalent), as we have not used a CA whose certificate is installed in the browser by default, but you can choose accept the certificate (either for this session or until it expires) using the browser panels. You should no longer see the Certificate Name Check message.

Approach (c) - Certificate Signing Request sent to Entrust CA

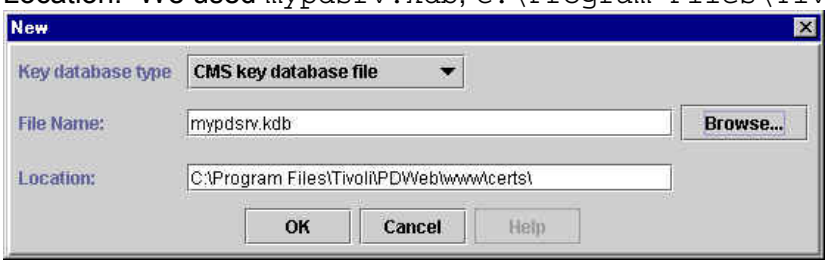
a. First you may like to back up all the files in `C:\Program Files\Tivoli\PDWeb\www\certs` on Windows or `/var/pdweb/www/certs` on UNIX. The default key database and stash file is contained in this directory; we also used this directory to store the key database and stash file which we created.

b. If WebSEAL is currently running, stop it. (In Windows, select Services and stop Access Manager WebSEAL. In UNIX issue `pdweb stop`.)

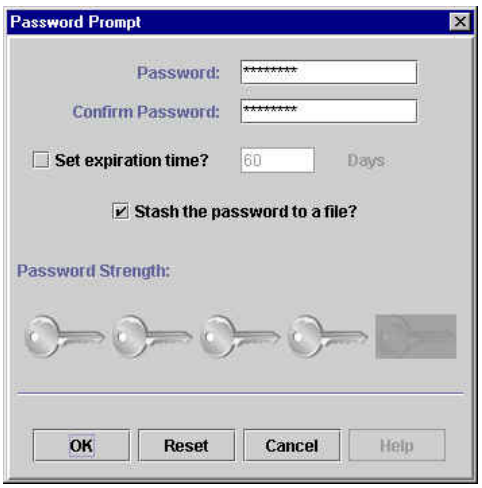
c. Start the iKeyman utility:
In Windows use 'My Computer' or 'Windows Explorer' find the `C:\Program Files\IBM\gsk5\bin` directory and double click on **`gsk5ikm.exe`**.
On UNIX type `/usr/bin/gsk5ikm&`
(You may first need to type `export JAVA_HOME=/usr/jdk_base`)
The IBM Key Management window appears:



d. Create a new Key Database: click on Key Database File -> New, and specify a File Name and Location. We used `mypdsrv.kdb`, `C:\Program Files\Tivoli\PDWeb\www\certs\`:

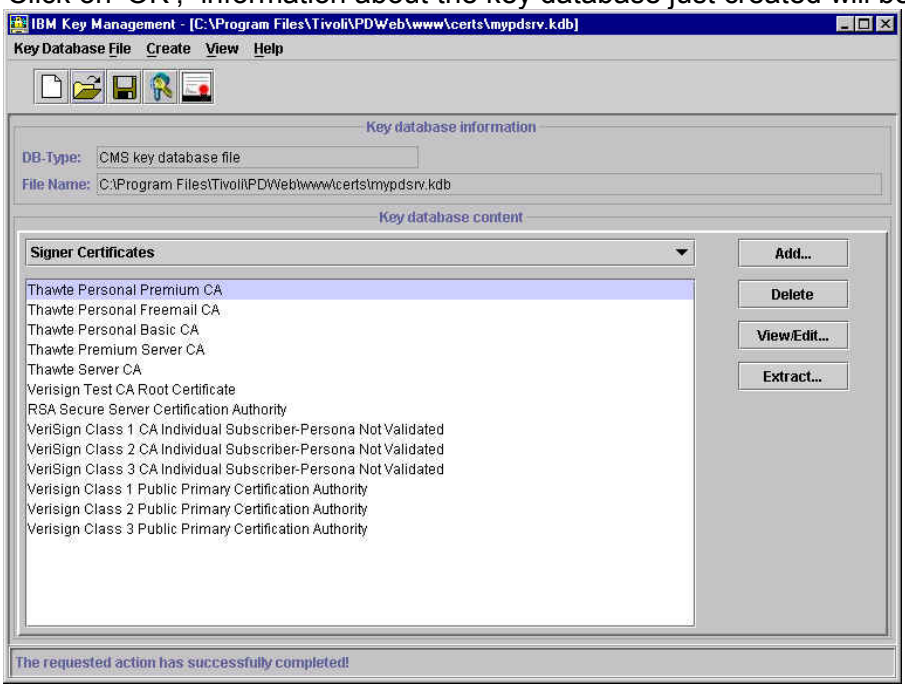


e. Click on 'OK'. A Password Prompt panel will be displayed. Enter a password (twice) (we used `Secure99`) and check the 'Stash the password to a file?' box:

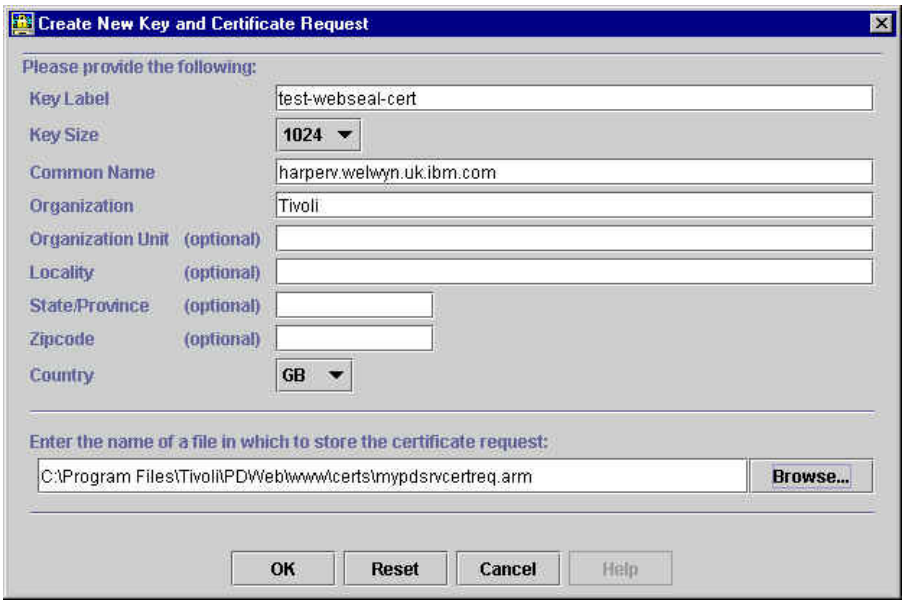


f. Click on 'OK'; an information message will inform you where the password has been saved:

g. Click on 'OK'; information about the key database just created will be displayed:



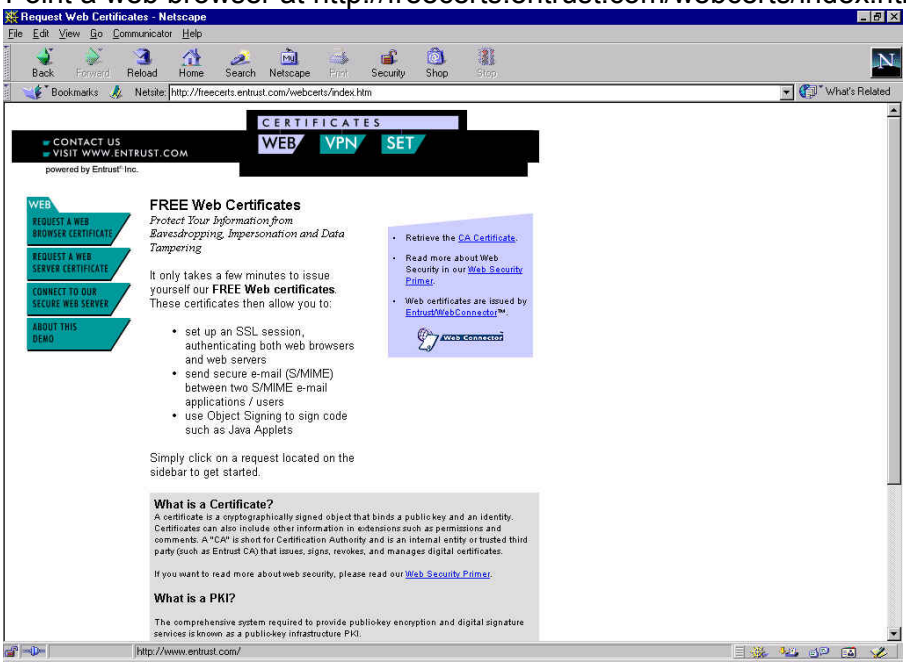
h. Click on Create -> New Certificate Request; the 'Create New Key and Certificate Request' panel will be displayed. Enter a Key Label (we used `test-webseal-cert`), Organization and Country, and specify the name of a file in which to store the certificate request. Ensure that the Common Name is specified which matches the DNS Domain Name of the WebSEAL machine. (The Common Name may be automatically filled in for you.)



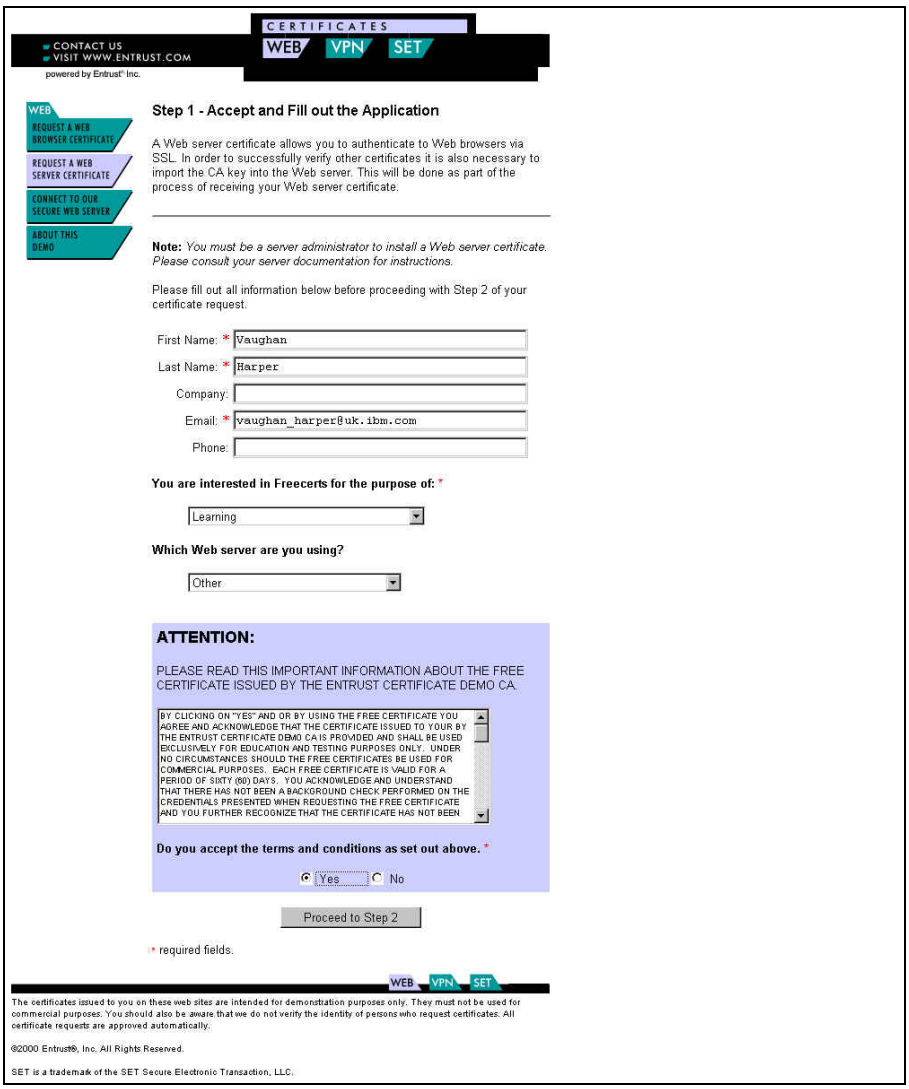
i. Click on 'OK'; an information message will inform you where the certificate request has been stored:

j. Click on 'OK' to dismiss the information message.

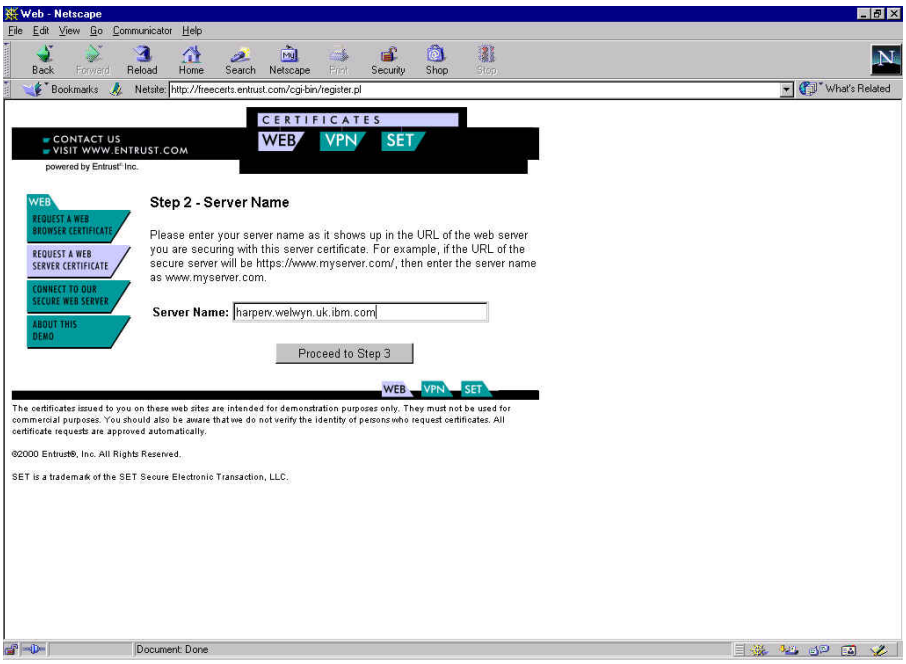
k. Point a web browser at http://freecerts.entrust.com/webcerts/index.htm:



l. Click on 'Request a Web Server Certificate'. Fill in the input fields, specify the purpose for requesting a certificate and the web browser in use, and click on 'Yes' against 'Do you accept the terms and conditions as set out above':

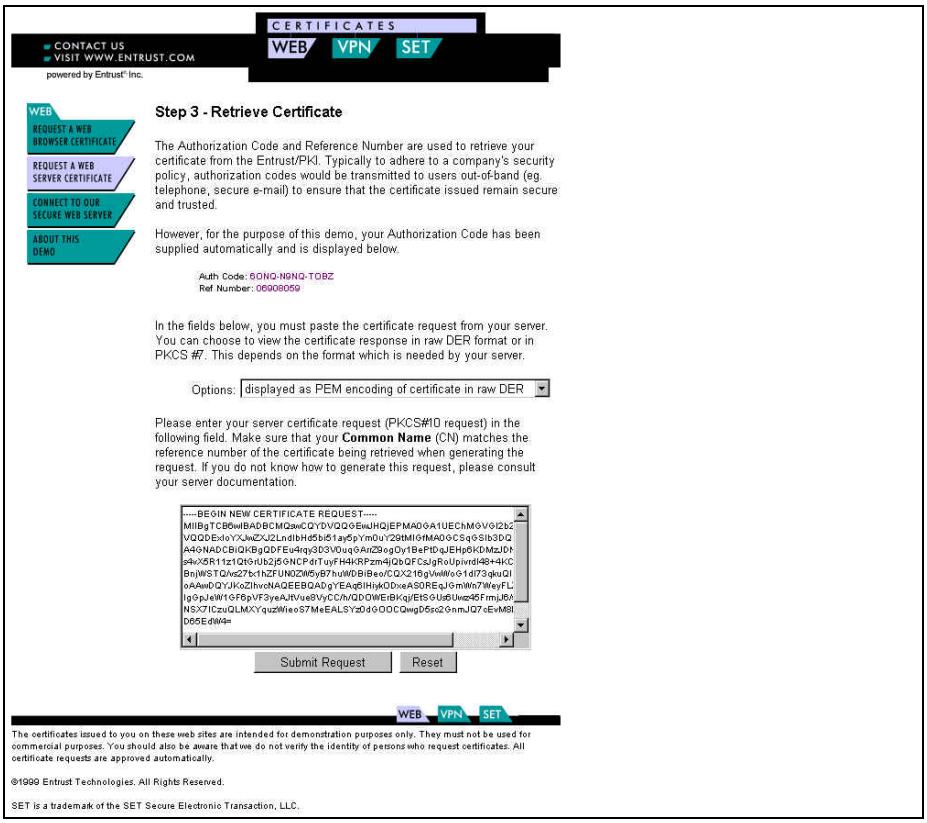


m. Click on 'Proceed to Step 2'. Specify the server name (in other words the DNS name of the WebSEAL machine). **Note**: this must match the name specified above when the Certificate Request was generated.

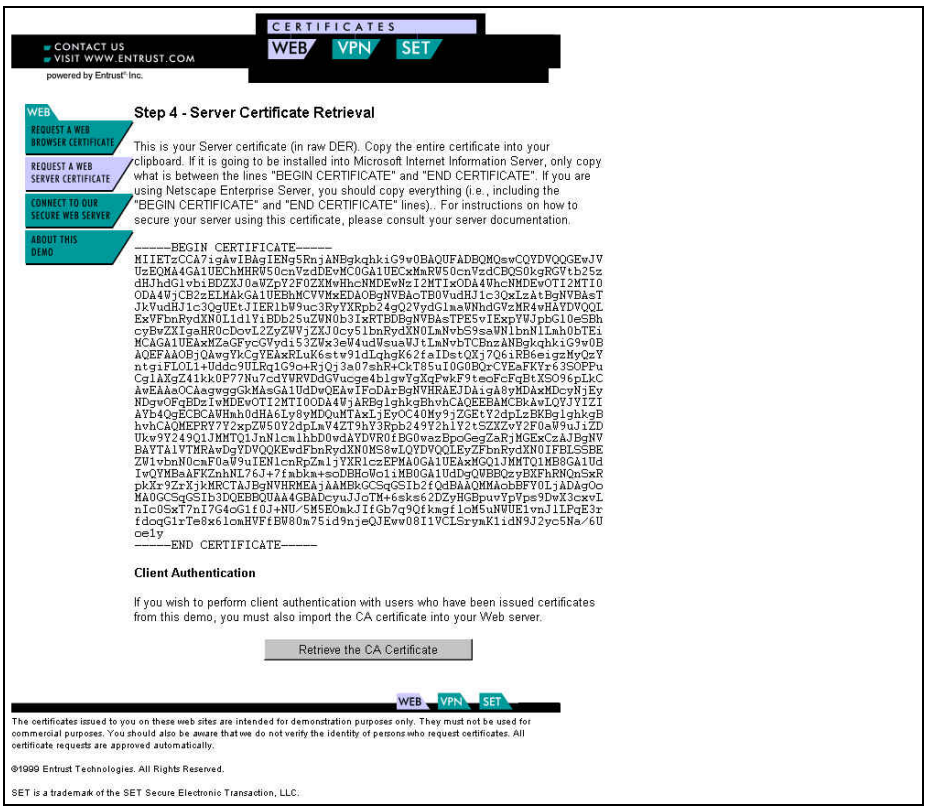


n. Click on ‘Proceed to Step 3’.

o. Use Notepad (or equivalent) to open the file containing the certificate signing request (`mypdsrvcertreq.arm` in our case). Copy to the clipboard all the text from `BEGINE NEW CERTIFICATE REQUEST` to `END NEW CERTIFICATE REQUEST`, then copy this to the Request area on the browser input form. Ensure that Options is set to ‘displayed as PEM encoding of certificates in raw DER’:

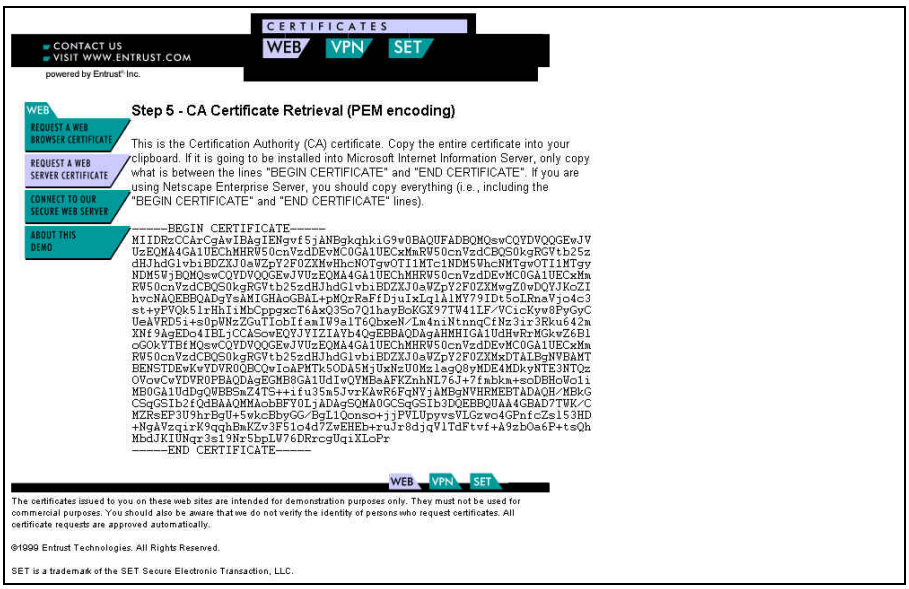


p. Click on ‘Submit Request’. The web site will respond with a Server Certificate (in raw DER):



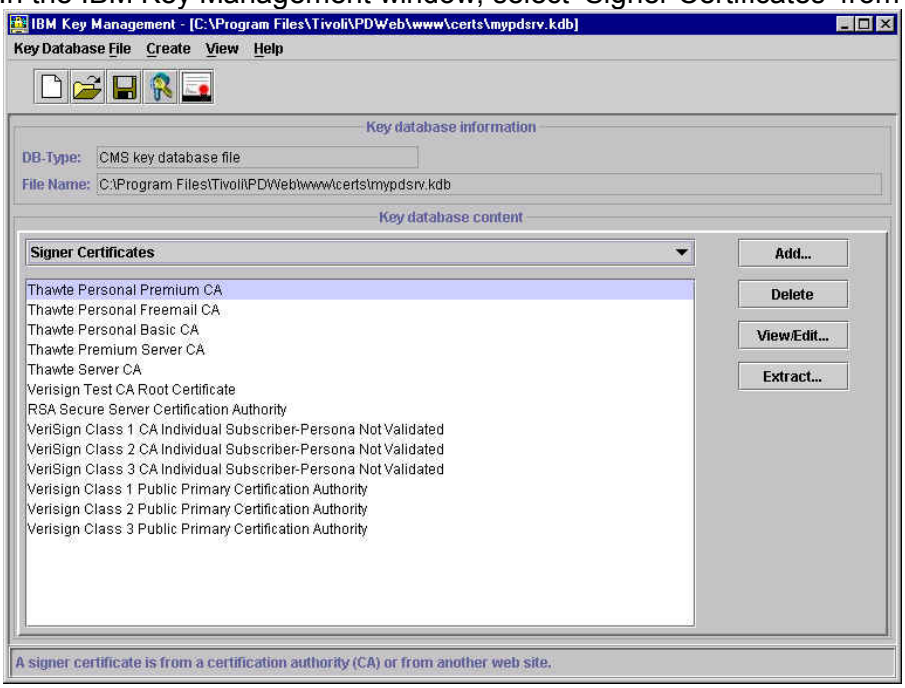
q. Copy all the text from BEGIN CERTIFICATE to END CERTIFICATE to the clipboard, then paste it into a file; we used `C:\Program Files\Tivoli\PDWeb\www\certs\WebsealCert.arm`. You may need to manually edit the file to remove the spaces at the beginning of each line:

r. Click on 'Retrieve the CA Certificate'. The PEM encoding of the CA Certificate will be displayed:



s. Copy all the text from BEGIN CERTIFICATE to END CERTIFICATE to the clipboard, then paste it into a file; we used `C:\Program Files\Tivoli\PDWeb\www\certs\EntrustCACert.arm`. Again, you may need to manually edit the file to remove the spaces at the beginning of each line.

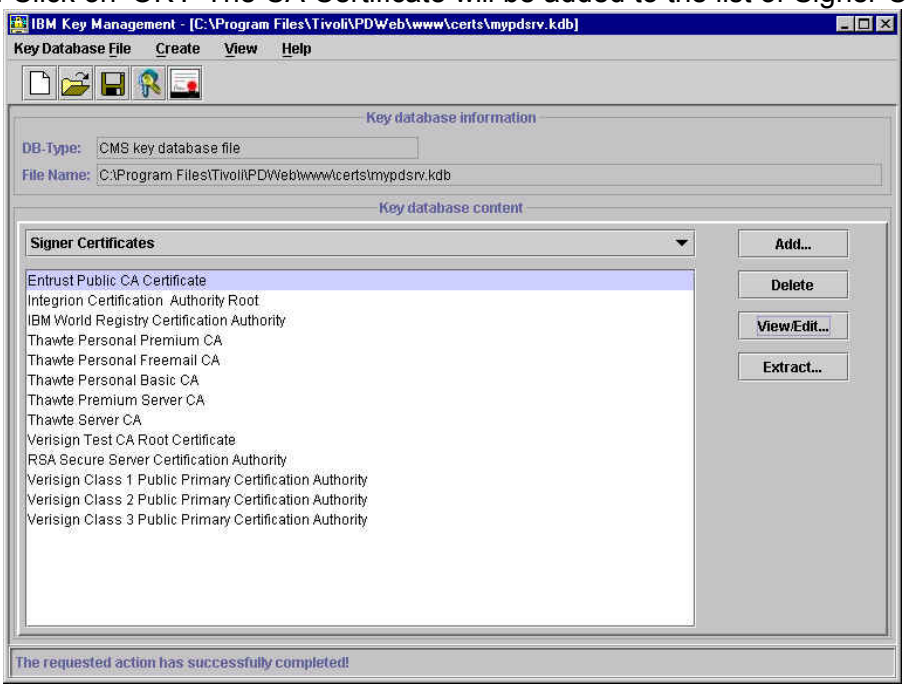
t. In the IBM Key Management window, select 'Signer Certificates' from the pull-down list:



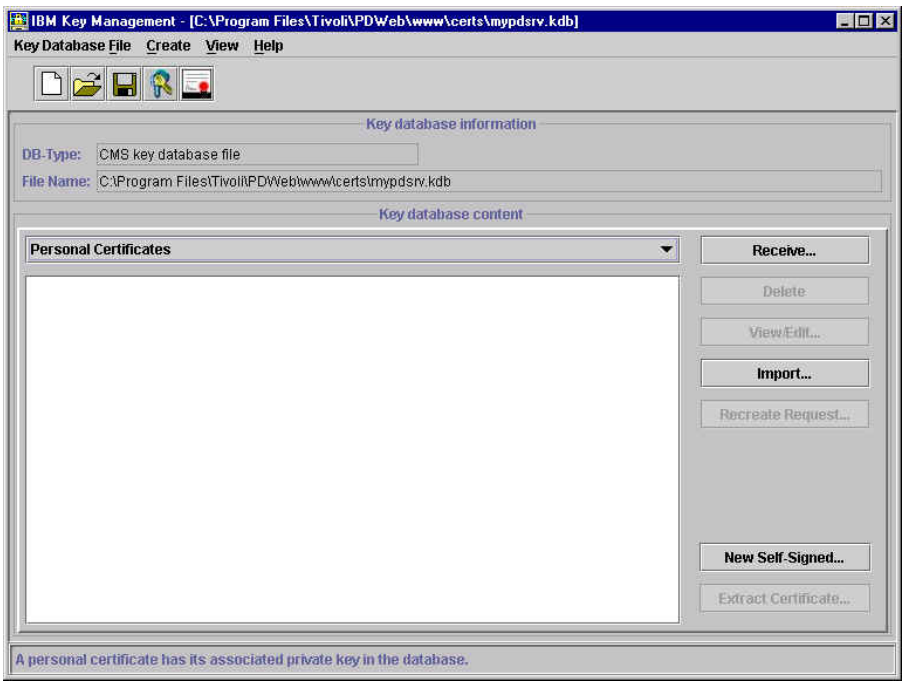
u. Click on 'Add…'. The 'Add CA's Certificate from a File' will be displayed. Specify the file where you saved the **CA** Certificate (`C:\Program Files\Tivoli\PDWeb\www\certs\EntrustCACert.arm` in our case):

v. Click on 'OK'. The 'Enter a Label' prompt will be displayed. Enter a label to use for the certificate:

w. Click on 'OK'. The CA Certificate will be added to the list of Signer Certificates:

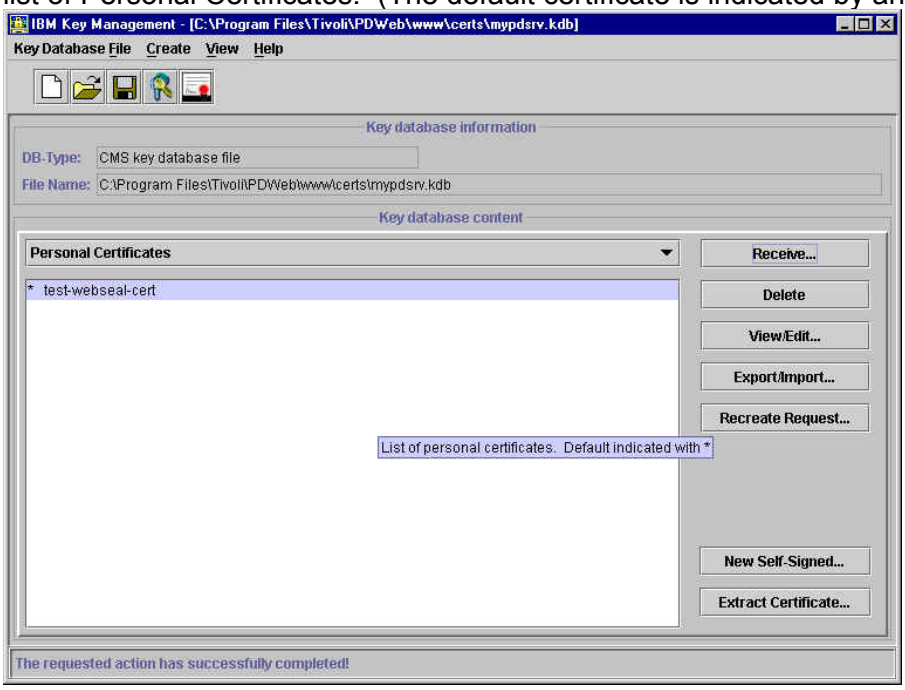


x. Select 'Personal Certificates' from the pull-down list:



y. Click on Receive. The 'Receive Certificate from a File' window is displayed. Ensure that the Data type is set to Base64-encoded ASCII data and specify the file in which the certificate you just saved from the Entrust PKI is stored:

z. Click on 'OK'; the WebSEAL Certificate which has been signed by the CA will be added to the list of Personal Certificates. (The default certificate is indicated by an asterisk (*).)



Note: If you receive an Error Message indicating 'A database validation error occurred', this is likely to be because GSKit will allow the reception only of Personal Certificates which are either self-signed or signed by a CA whose certificate is listed in the list of Signer Certificates. The step described above of receiving the CA Certificate should prevent this error message.

aa.

bb. The IBM Key Management utility is no longer required and may be closed.

cc. Back up `webseald.conf` (Windows: in `C:\Program Files\Tivoli\PDWeb\etc`; UNIX: in `/opt/pdweb/etc`).

dd. Edit `webseald.conf`:
modify the `webseal-cert-keyfile` line to point to the key database file (`mypdsrv.kdb` in our case);
modify the `webseal-cert-keyfile-stash` line to point to the key database password stash file (`mypdsrv.sth` in our case);
specify the key label by introducing a line in the `[ssl]` stanza of the following form:
`webseal-cert-keyfile-label = test-webseal-cert`

ee. On UNIX, after creating the key database file, change the file ownership of the key database file and stash file to **ivmgr**. Use the appropriate operating system command for changing file ownership:

```
# chown ivmgr <keyfile>
# chown ivmgr <stashfile>
```

ff. Start WebSEAL. (In Windows, start Access Manager WebSEAL. In UNIX issue `pdweb start`)

gg. Ensure that all the Access Manager services/process have started. If they do not all start, look in the log for the corresponding service/process.

hh. Verify that Access Manager is behaving as is now expected by pointing a web browser at WebSEAL using SSL. Note that a message indicating 'New Site Certificate' or 'The security certificate was issued by a company you have not chosen to trust' (or equivalent), as we have not used a CA whose certificate is installed in the browser by default, but you can choose accept the certificate (either for this session or until it expires) using the browser panels. You should no longer see the Certificate Name Check message.

Additional notes

If you are using a Global Certificate (or “step-up certificate”) issued by Verisign, the procedure will be broadly the same as the Certificate Signing Request process describe above, with the addition that you need to add the intermediate certificate from Verisign to the list of signers:

a. You can download the intermediate CA certificate for Verisign from http://www.verisign.com/support/tlc/class3_install_docs/ibm/v00g.html or http://www.esign.com.au/custsupport/server/install/intermediate/v00g.shtml

b. Go to the Signer Certificates pulldown menu and click on ‘Add’.

c. Specify the base-64 encoded certificate that you downloaded from the web site.

d. In addition, refer to the section entitled ‘Global Server ID Certificates Do Not Work Correctly’ in the *Tivoli Access Manager Release Notes* regarding changing the ordering of the Cipher list.

26. Setting up client certificate authentication

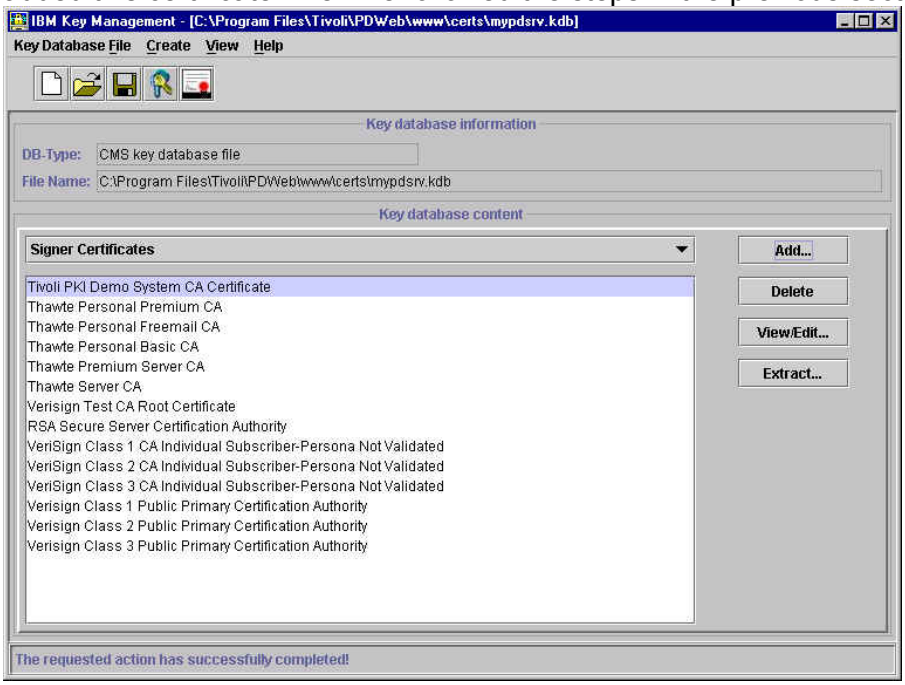
(Client certificates can be obtained **for demonstration use only** from the Tivoli PKI demonstration site at `http://demota.dfw.ibm.com/YourDomain/index.jsp`. This site is accessible over the Internet.)

a. Set up a WebSEAL Server certificate as described in the previous chapter.

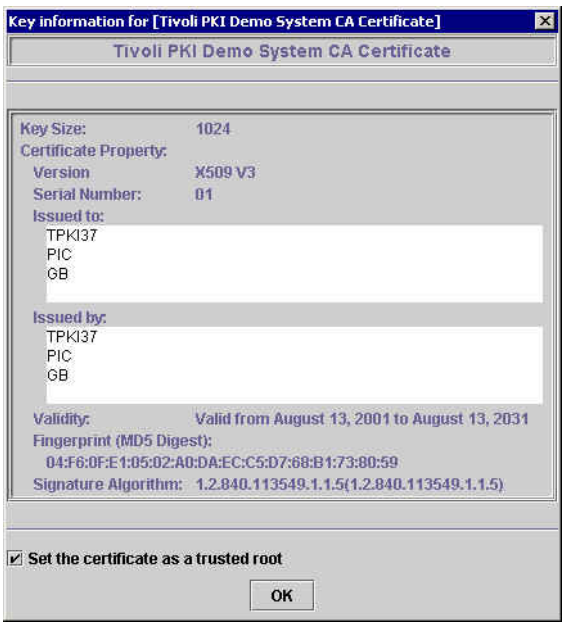
b. Edit **webseald.conf** (in `C:\Program Files\Tivoli\PDWeb\etc\` Windows or `/opt/pdweb/etc/` UNIX): within the `[certificate]` stanza, there is a `statement accept-client-certs = never`
Change it to `accept-client-certs = optional`
or `accept-client-certs = required`

c. Also in the **webseald.conf** , within the `[authentication-mechanisms]` stanza set
`cert-ssl = sslauthn.dll` (Windows)
or `cert-ssl = libsslauthn.a` (AIX)
or `cert-ssl = libsslauthn.so` (Solaris)
as described in the Access Manager WebSEAL Administrator's Guide.

d. Start the iKeyman utility and open the key database which we configured in the previous chapter. Click on 'Signer Certificates' and add the certificates for the Certification Authority(ies) which we are choosing to trust. (If we are using the Entrust Public CA or a Tivoli PKI CA, we added this certificate when we followed the steps in the previous section.)



e. For each Certification Authority listed in the Signer Certificates, you need to specify whether certificates issued by that CA are trusted when used for Client Authentication. Select an entry from the Signer Certificates list and click on 'View/Edit…':



f. If you are going to trust client certificates issued by this CA, set the check mark beside 'Set the certificate as a trusted root'; **if you do not trust certificates issued by this CA, clear the check mark**.

g. Click on '**OK**'.

h. Repeat this procedure for each Signer Certificate in the list.

i. If CRL checking is required, edit the `[ssl]` stanza in `webseald.conf` as described in the Access Manager WebSEAL Administrator's Guide.

j. Ensure that the DN specified within the Client Certificate matches the LDAP DN defined for the corresponding PD user.

k. Re-start WebSEAL to make these changes take effect.

l. Once this is all set up you should now be able to point your browser to a protected resource and use your certificate to authenticate.

27. Setting up an SSL connection to the LDAP Directory

Note: This section needs to be revised for Access Manager 3.9.

This section describes the process for configuring SSL support for the LDAP communication between the LDAP Server an the LDAP Client(s).

- If required, install the SSL Runtime Toolkit at the LDAP Server and the LDAP Client(s)
- Create a key database file at the LDAP Server
- Create a self-signed certificate at the LDAP Server
- Create a key database file at the LDAP Client (Access Manager Server)
- Install LDAP Server certificate at the LDAP Client (Access Manager Server)
- If required, set up SSL support for the Directory Management Tool on the LDAP Client(s)

More information is given on these steps in the following paragraphs.

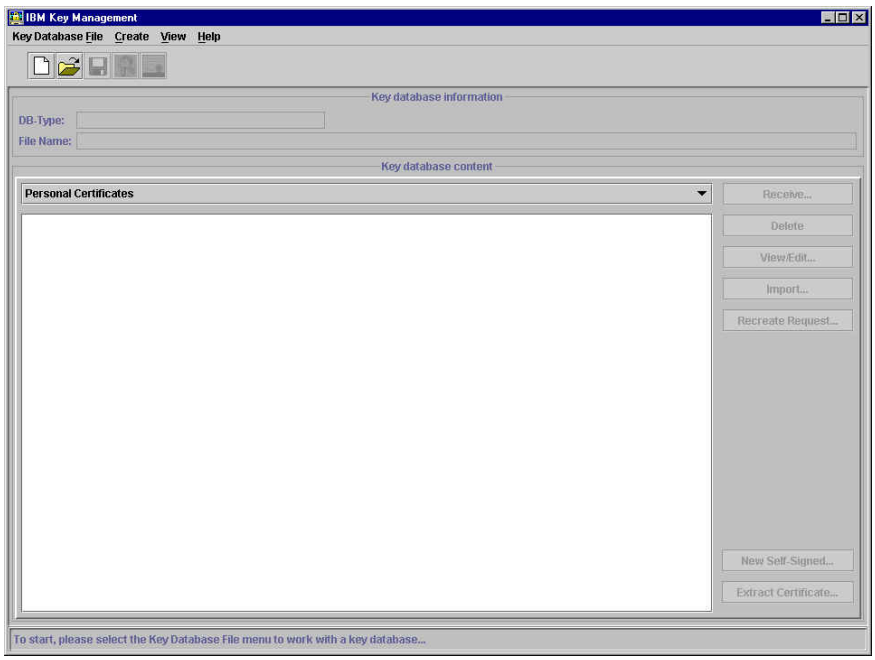
***Note**: It may be advisable to 'start simple' - in other words first to get Access Manager working with an unencrypted connection to the LDAP Directory. Once this is working correctly, you can then follow the steps described in this section, then re-configure the Access Manager Servers to use an SSL connection to the LDAP Directory.*

Ensure that the IBM Global Security Kit (GSKit) SSL Runtime Toolkit is installed on both the LDAP server and any LDAP clients that will be using SSL. This should be the case as it is required by PD's RTE.

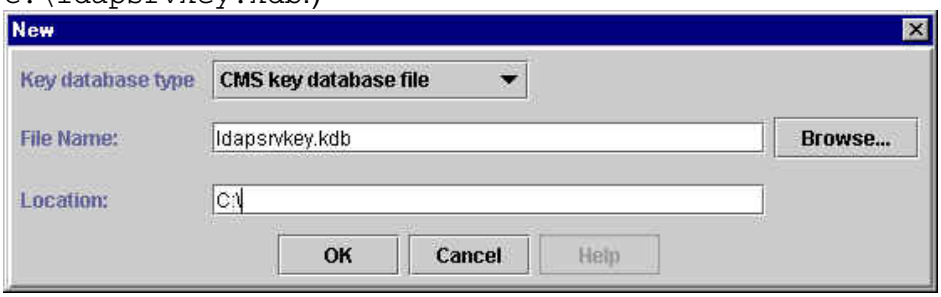
If the SSL Runtime Toolkit is installed you will find `gsk5ikm.exe` in the `C:\Program Files\IBM\gsk5\bin` directory of an NT machine.

LDAP Server - create the key database file

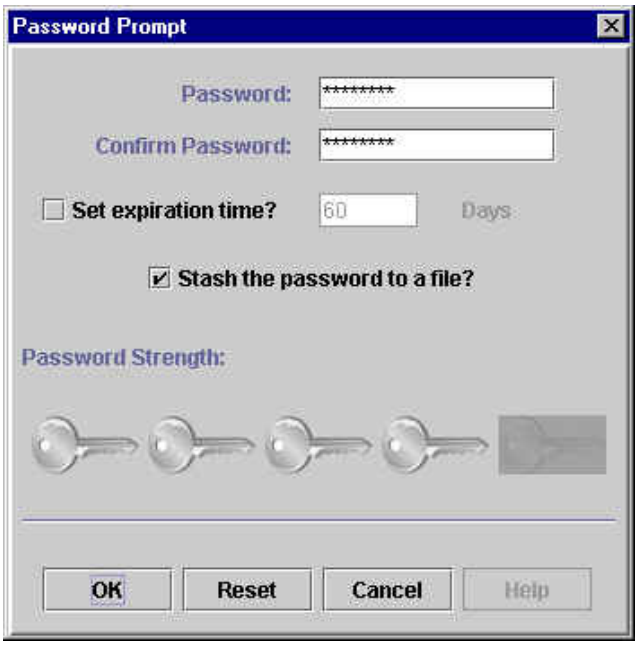
a. On the LDAP Server machine, start the IBM Key Management tool (gsk5ikm):

b. 

c. Click on Key Database File -> New; verify that the 'Key database type' is `CMS key database file`, and specify a filename and path for the CMS Key Database. (We used `C:\ldapsrvkey.kdb`.)

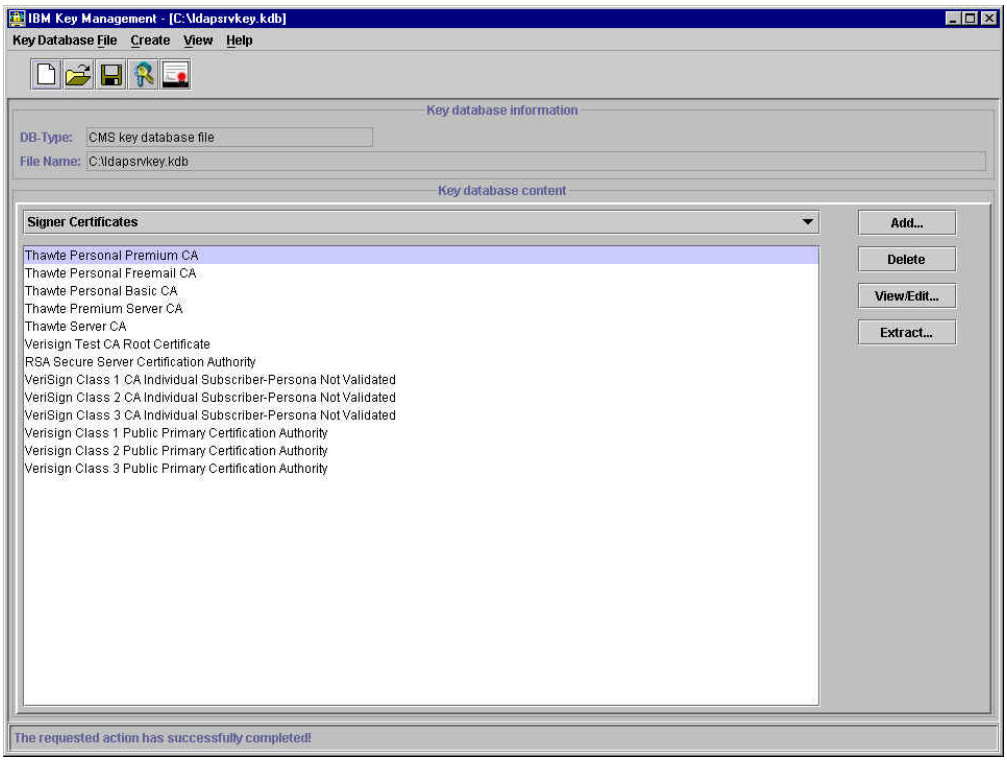


d. Click on '**OK**'. The 'Password Prompt' panel will be displayed. Enter a password (twice) (we used **Secure99**) and check the 'Stash the password to a file?' box:



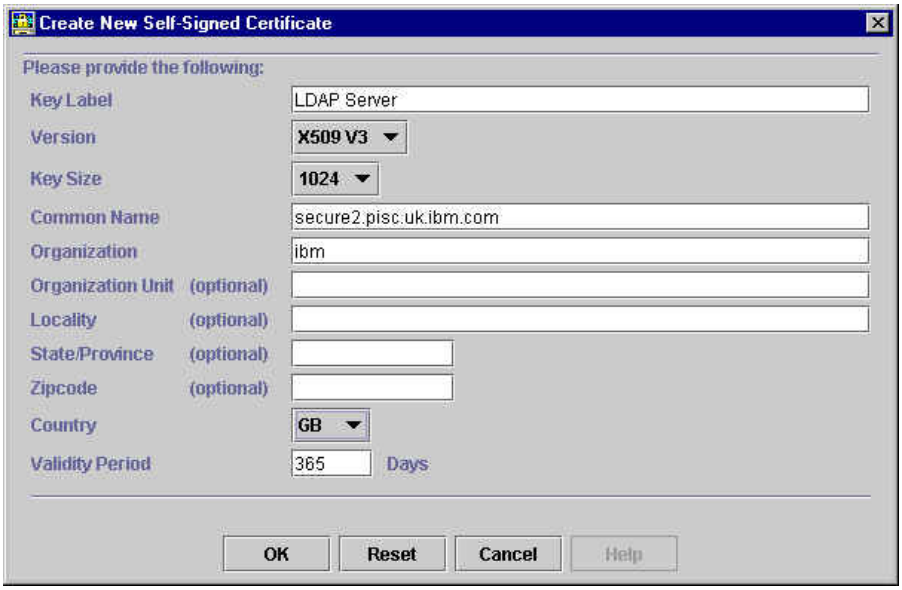
e. Click on '**OK**'; an information message will inform you where the password has been saved:

f. Click on '**OK**'; information about the key database just created will be displayed at the top of the panel:

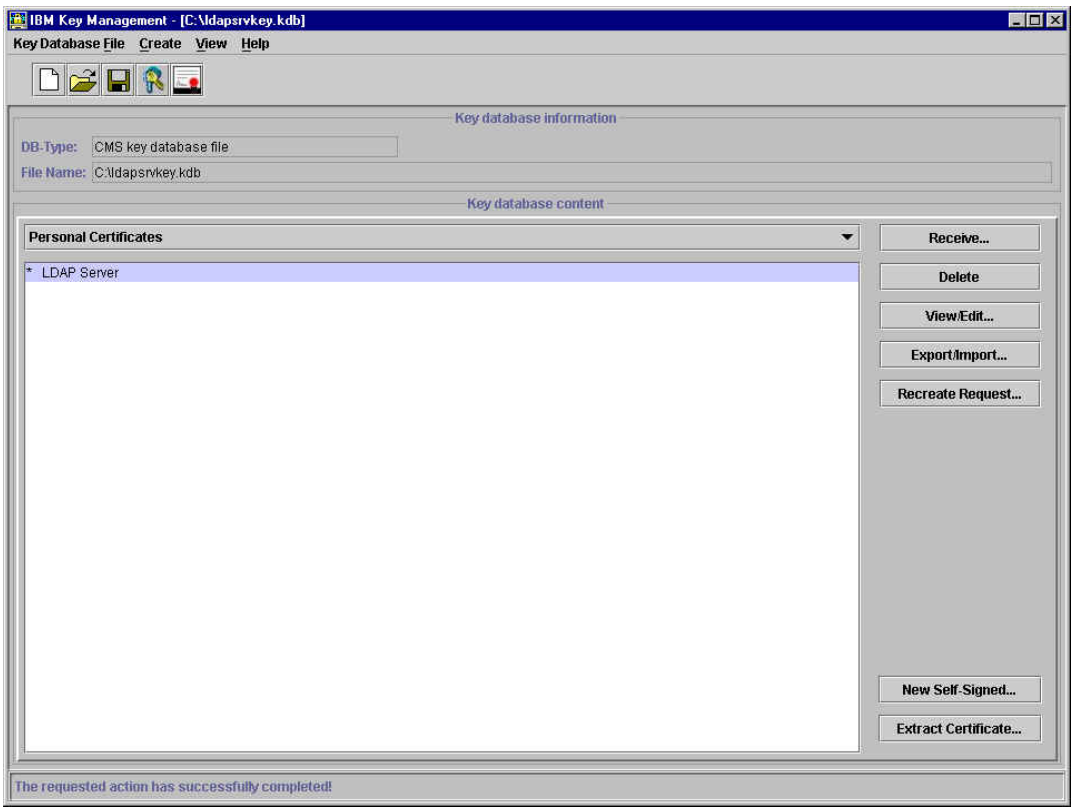


g. Next create a self-signed certificate for the LDAP Server. Click on Create -> New Self-Signed Certificate.

h. The 'Create New Self-Signed Certificate' panel will be displayed. Type a name in the 'Key Label' field that GSKit can use to identify this new certificate in the Key Database (we used `LDAP Server`). Specify a Common Name and Organization (in our case secure2.pisc.uk.ibm.com and ibm) and specify the country (in our case we used GB)

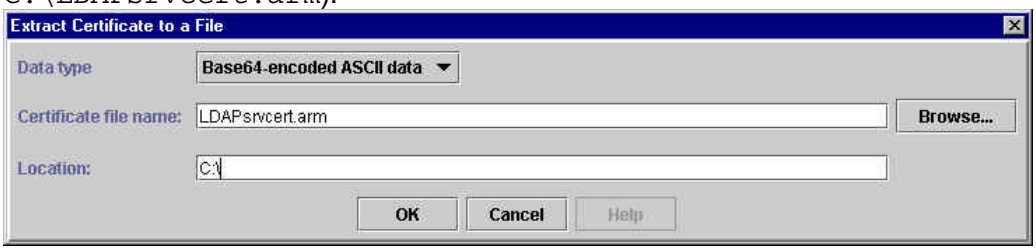


i. Click on '**OK**'. A public/private key pair is generated and certificate created. The certificate just created will appear in the list of 'personal certificates'



j. Next, the LDAP server's certificate needs to be extracted to a Base64-encoded ASCII data file. Highlight the certificate that has just been added to the database and click on 'Extract Certificate...' which is bottom right on the panel.

k. The 'Extract Certificate to a File' panel will be displayed. Specify the 'Data type' as `Base64-encoded ASCII data` and specify a filename and directory (we used `C:\LDAPsrvcert.arm`):

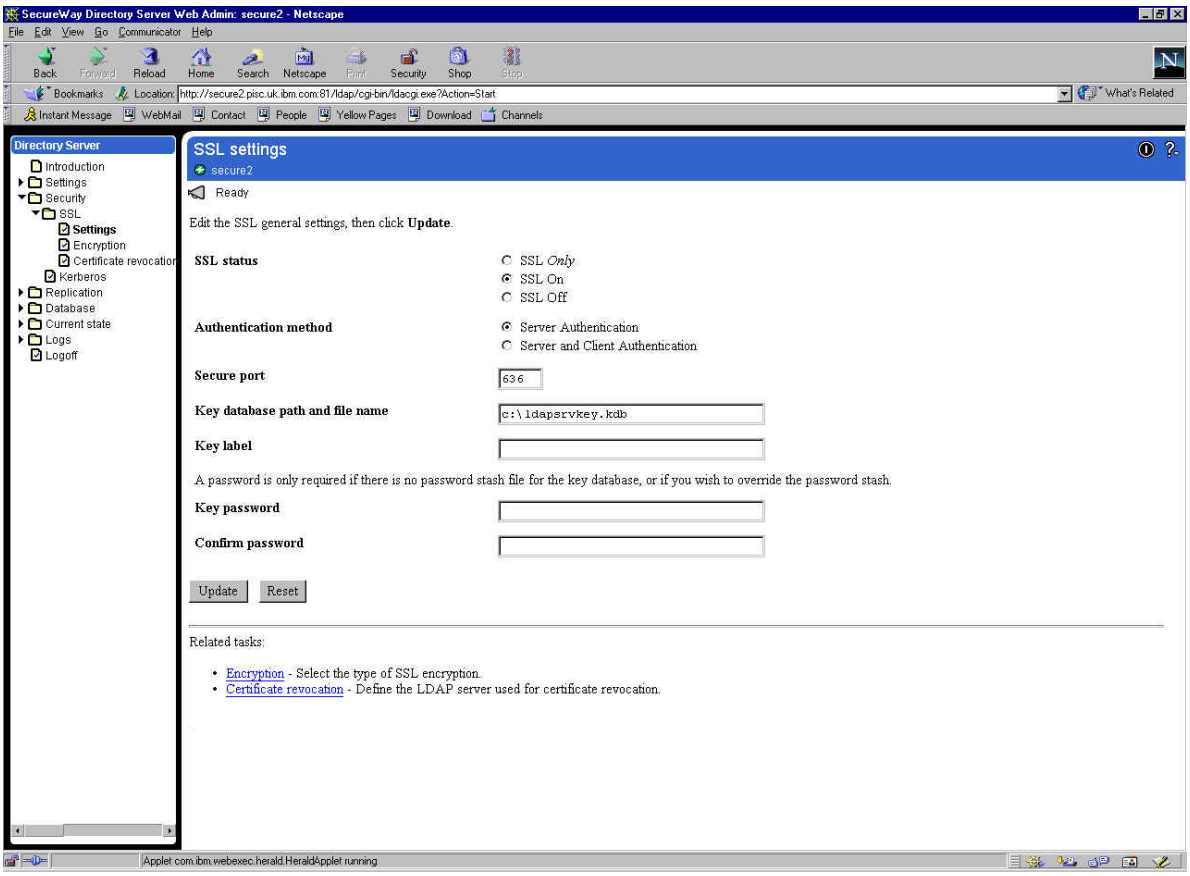


l. Click on '**OK**'.

m. Copy the `.arm` file you have just created to the LDAP Client machine (in other words the Access Manager Server component machine, for instance the WebSEAL machine).

n. On the LDAP server machine, point a web browser at http://servername:port number/ldap and log on as the administrator.

o. Clicking on `Security` → `SSL` → `Settings`, you will be presented with the LDAP SSL options.



p. Click on ‘SSL On’ if you want the LDAP Server to support both SSL and non-SSL access, or ‘SSL Only’ if you want the LDAP Server to support SSL only. Leave ‘Authentication method’ as `Server Authentication` and specify the key database path and file name (`C:\ldapsrvkey.kdb` in our case).

q. Click on ‘Update’.

r. Click on ‘restart the server’ to restart the LDAP server and allow this change to take effect.

s. To test that SSL has been enabled, run the following command from a command line at the LDAP server:

```
ldapsearch -h servername -Z -K keyfile -P password -b "" -s base
objectclass=*
```

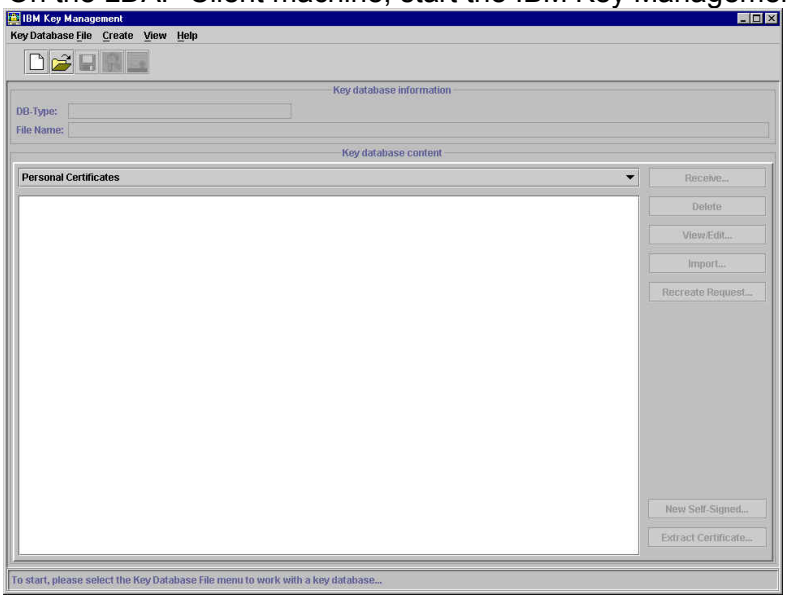
The results should look similar to the following:

```
C:\>ldapsearch -h secure2 -Z -K "c:\ldapsrvkey.kdb" -P Secure99 -b "" -s base
objectclass=*

Namingcontexts=CN=SCHEMA
Namingcontexts=OU=EMEA,O=IBM,C=GB
Namingcontexts=SECAUTHORITY=DEFAULT
Namingcontexts=CN=LOCALHOST
Subschemasubentry=cn=schema
Supportedextension=1.3.18.0.2.12.1
supportedextension=1.3.18.0.2.12.3
supportedextension=1.3.18.0.2.12.5
```

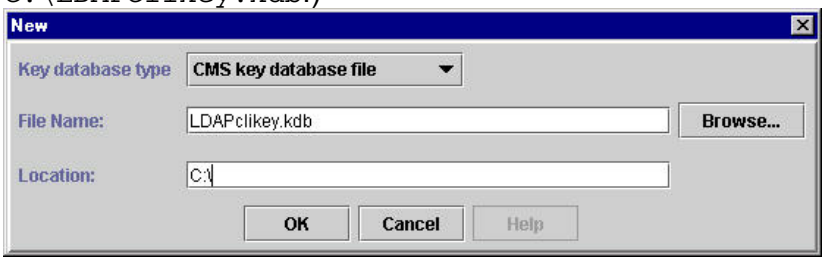
```
supportedextension=1.3.18.0.2.12.6
supportedcontrol=2.16.840.1.113730.3.4.2
supportedcontrol=1.3.18.0.2.10.5
secureport=636
security=ssl
port=389
supportedsaslmechanisms=CRAM-MD5
supportedldapversion=2
supportedldapversion=3
ibmdirectoryversion=3.2.1
ibm-ldapservicename=secure2.pisc.uk.ibm.com
ibm-adminid=CN=ROOT
ibm-servertype=master
ibm-supportedacimechanisms=1.3.18.0.2.26.2
```

LDAP Client (Access Manager Server components) - create the key database file

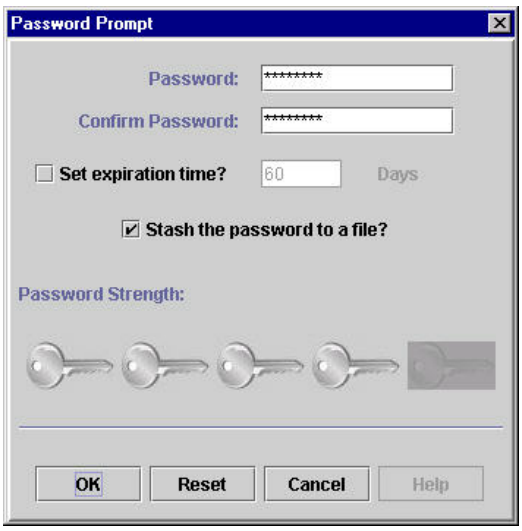
a. On the LDAP Client machine, start the IBM Key Management tool (gsk5ikm):



b. Click on Key Database File -> New; verify that the 'Key database type' is `CMS key database file`, and specify a filename and path for the CMS Key Database. (We used `C:\LDAPclikey.kdb`.)



c. Click on '**OK**'. The 'Password Prompt' panel will be displayed. Enter a password (twice) (we used **`Secure99`**) and check the 'Stash the password to a file?' box:

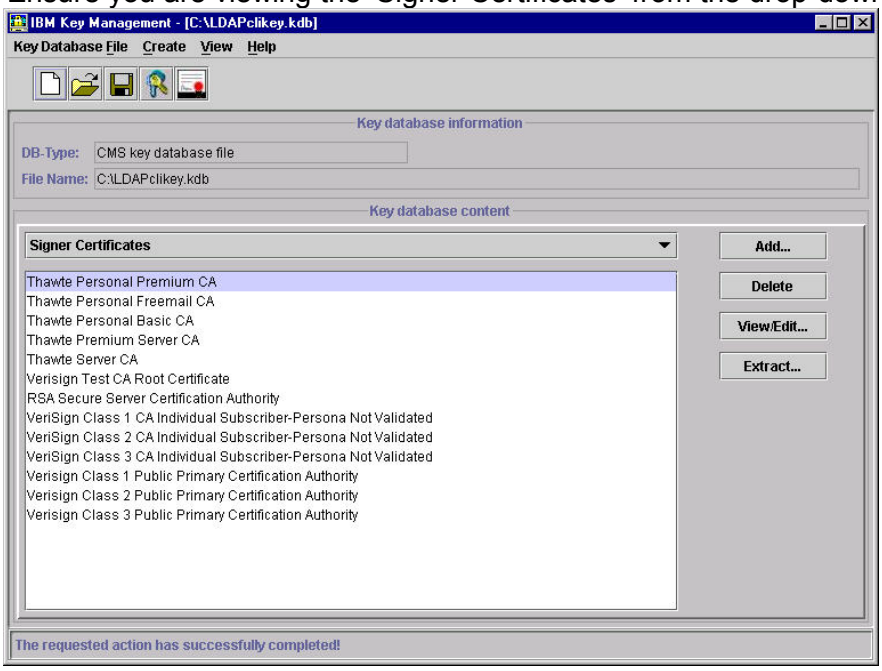


d. Click on '**OK**'; an information message will be inform you where the password has been saved:

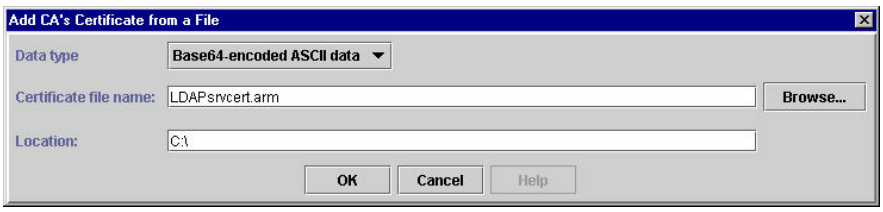
e. Click on '**OK**'.

LDAP Client (Access Manager Server) - install LDAP Server certificate

a. Ensure you are viewing the 'Signer Certificates' from the drop-down menu:

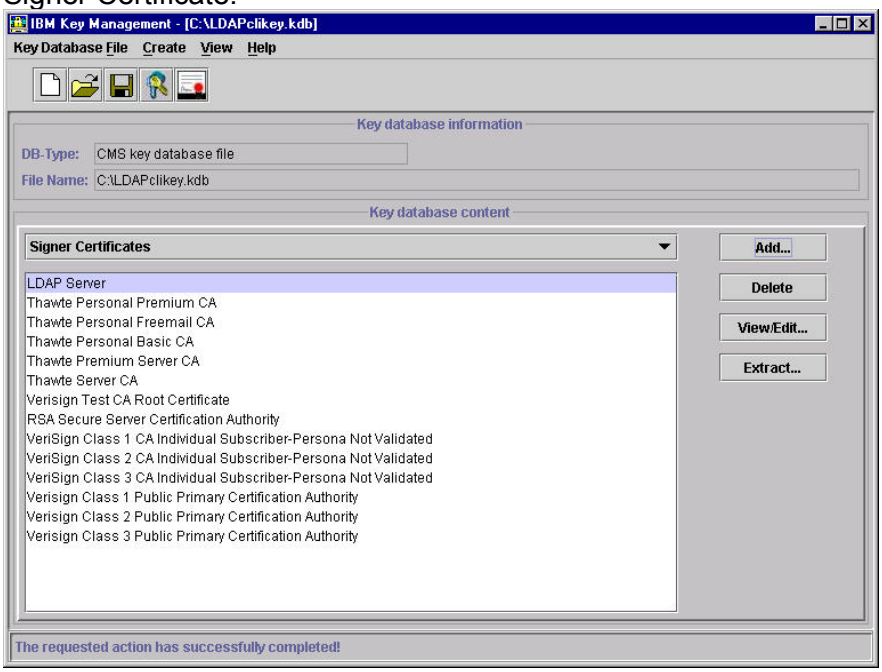


b. Click on 'Add...': the 'Add CA's Certificate from a File' panel will be displayed. Select the data type as `Base64-encoded ASCII data`, and specify the name and location of the `.arm` file which you extracted from the LDAP server: (c:\LDAPsrvcert.arm in our case)

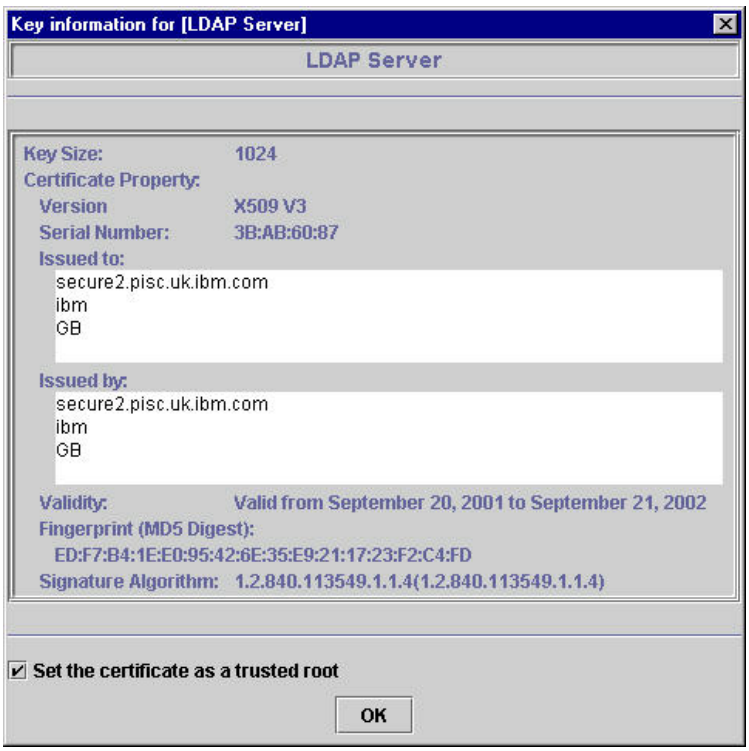


c. Click on '**OK**'; the 'Enter a Label' panel will be displayed. Specify a label for the signer certificate that you are adding. (We used `LDAP Server`; alternatively you might like to use the machine name of the LDAP server.)

d. Click on '**OK**'; the LDAP Server self-signed certificate appears in the client's Key Database as a Signer Certificate:



e. Highlight the newly added Signer Certificate and click on 'View/Edit...'. Ensure that it is marked as a trusted root by making sure that 'Set the certificate as a trust root' tick box is selected:



f. Click on '**OK**' to dismiss the dialogue.

g. To test that SSL communication is working correctly between the LDAP Client and Server, run the following command from a command line at the client machine

```
ldapsearch -h LDAP_servername -Z -K client_keyfile -P password -b "" -s base
objectclass=*
```

h. The results should look similar to the following:

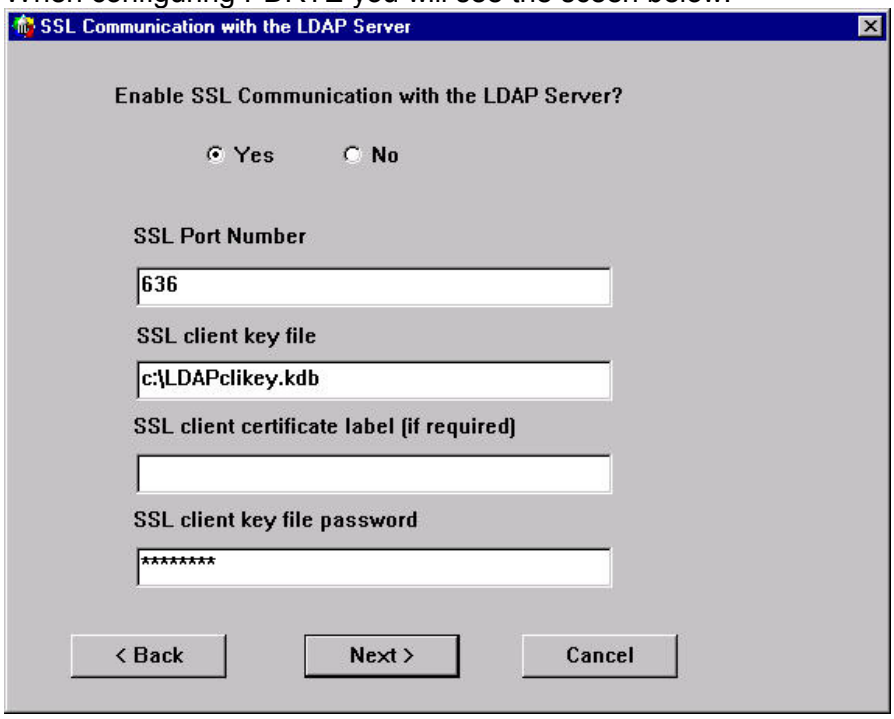
```
C:\> ldapsearch -h secure2.pisc.uk.ibm.com -Z -K "c:\LDAPclikey.kdb" -P
Secure99 -b "" -s base objectclass=*

Namingcontexts=CN=SCHEMA
Namingcontexts=OU=EMEA,O=IBM,C=GB
Namingcontexts=SECAUTHORITY=DEFAULT
Namingcontexts=CN=LOCALHOST
Subschemasubentry=cn=schema
Supportedextension=1.3.18.0.2.12.1
Supportedextension=1.3.18.0.2.12.3
Supportedextension=1.3.18.0.2.12.5
Supportedextension=1.3.18.0.2.12.6
Supportedcontrol=2.16.840.1.113730.3.4.2
Supportedcontrol=1.3.18.0.2.10.5
Secureport=636
Security=ssl
port=389
supportedsaslmechanisms=CRAM-MD5
supportedldapversion=2
supportedldapversion=3
ibmdirectoryversion=3.2.1
ibm-ldapservicename=secure2.pisc.uk.ibm.com
ibm-adminid=CN=ROOT
ibm-servertype=master
```

```
ibm-supportedacimechanisms=1.3.18.0.2.26.2
```

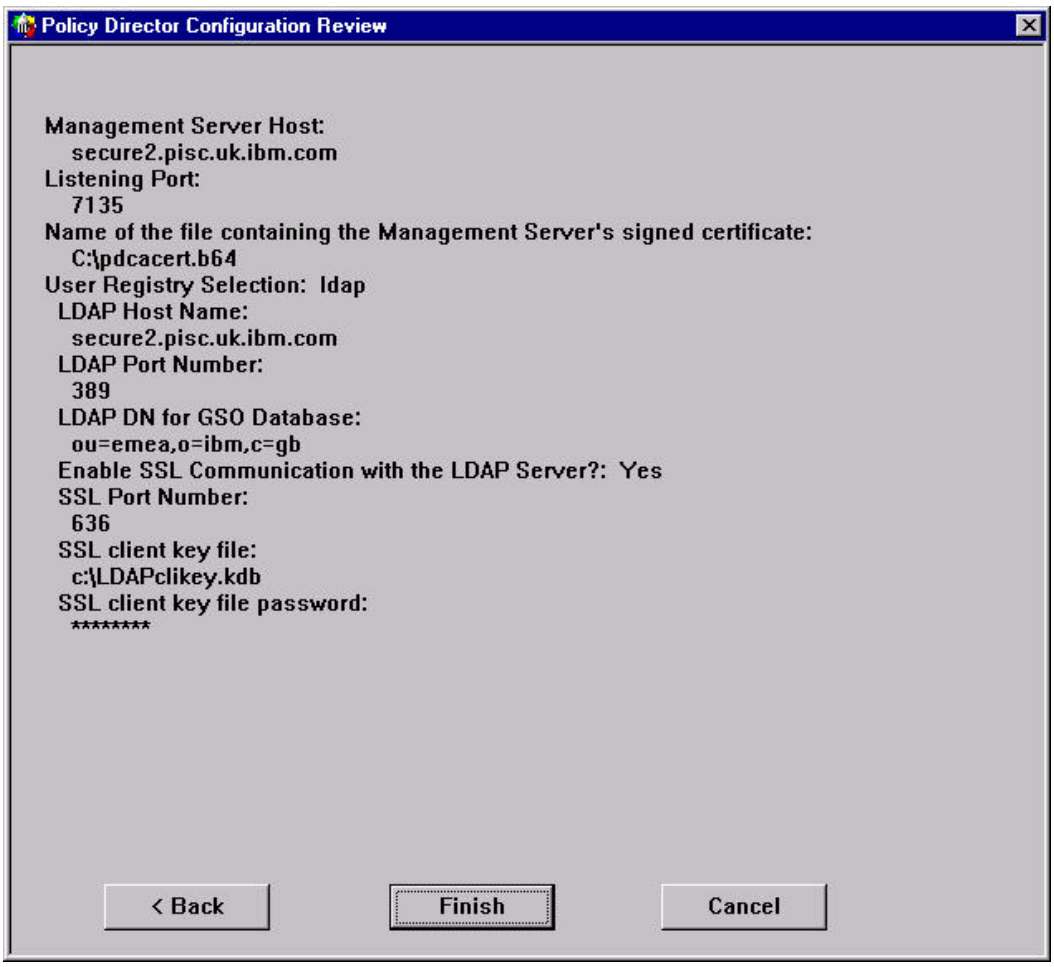
Configuring PDRTE for SSL communication to LDAP

If you wish to use SSL communication between PD components such as WebSEAL and LDAP then you will need to make this decision as you configure the PDRTE. This will mean a couple of different choices than those described in the earlier chapters.

When configuring PDRTE you will see the sceen below.



a. Specify 'Yes' to the question do you want to enable SSL communication with the LDAP Server. Enter the port number (we used the default) and enter the path and filename of the SSL client key file (in our case c:\LDAPclikey.kdb). Enter the SSL client key file password (**Secure99** in our case) and click '**Next**'. You will see the summary screen below.



b. Click ‘Finish’, the PDRTE is configured.

c. You can then continue and configure any remaining PD servers that you need that will then communicate via this PDRTE to LDAP.

28. Installation of SecurID token support

Note: This section needs to be revised for Access Manager 3.9.

Grateful acknowledgement to Jorge Ferrari, from the WW Security Competency Center, and David Winters - this section is based on their work. This section describes the installation of the SecurID ACE/Server to support Policy Director 3.6 token authentication in a Windows NT environment. The ACE/Server is installed in the same machine where Access Manager is installed - this is an unlikely situation in real world, but it is useful for demonstration purposes. (Refer to the Policy Director red book for a description of how to install the ACE/Server on a machine remote from WebSEAL.)

This assumes that assume you are using the ACE/Server package from Security Dynamics which was supplied with the SecureWay Boundary Server (SBS), so you have:

- CD-ROM with the ACE/Server 3.3.1
- CD-ROM with the ACE/Agent CD 4.3 (not used in this installation)
- Diskette with the ACE/Server license code
- Diskette with the tokens record (token Seed Kit), and
- Two SecurID tokens

This also assumes that you have a working Policy Director 3.6 running on NT.

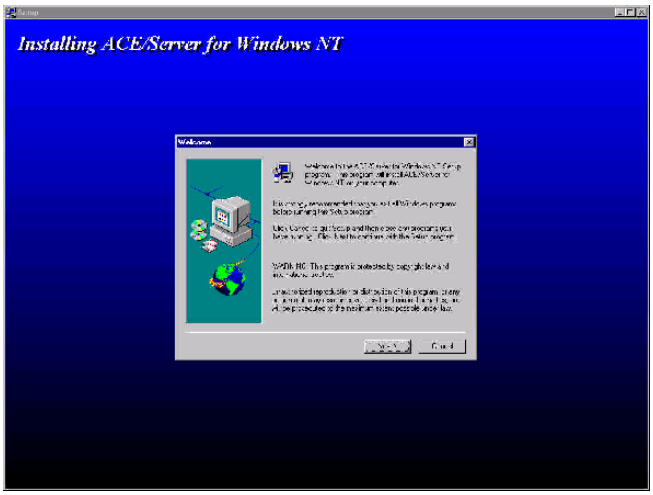
a. Log in as a Windows NT administrator.

b. If there is any possibility of the ACE/Server having been previously installed on the machine, delete the file `C:\WINNT\system32\securid`. (This file contains a secret which is used for the cryptographic protection of communication between the ACE client and server.) *You might also want to ensure that the* `\ace` *directory is deleted (to remove any existing ACE/Server configuration data).*

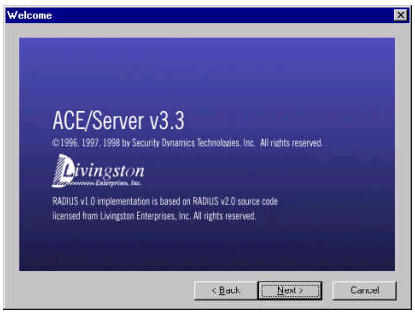
c. Insert the ACE/Server V3.3.1 CD-ROM into the CD drive.

d. Insert the diskette labelled "ACE/Server V3.3.1 2 User Promo License" into the diskette drive.

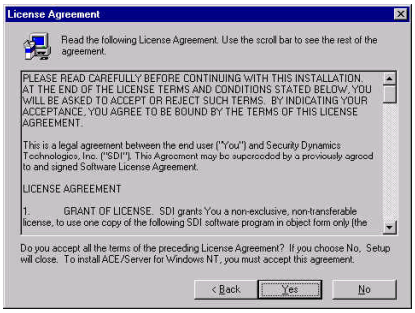
e. Using ‘My Computer’ find the `\aceserv\nt_i386` directory on the CD, and double click on `setup.exe`. An ACE/Server window displays, followed by the Welcome screen:



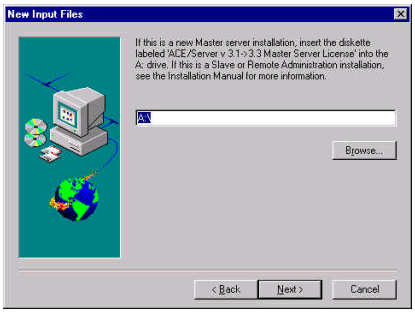
f. Click on '**Next**'. A further Welcome screen will be displayed:



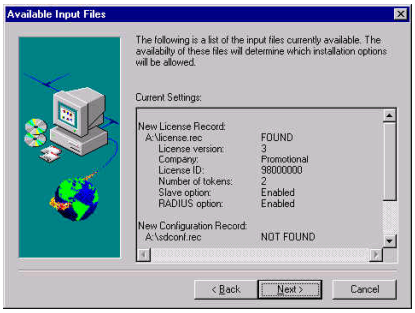
g. Click on '**Next**'. The License Agreement screen will be displayed:



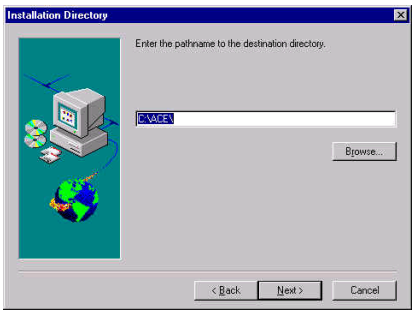
h. Click on 'Yes'. A 'New Input Files' screen will be displayed. Ensure that the diskette labelled "ACE/Server V3.3.1 2 User Promo License" is inserted in the diskette drive specified.



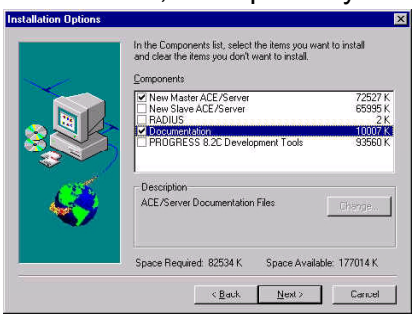
i. Click on '**Next**'. The 'Available Input Files' screen will be displayed:



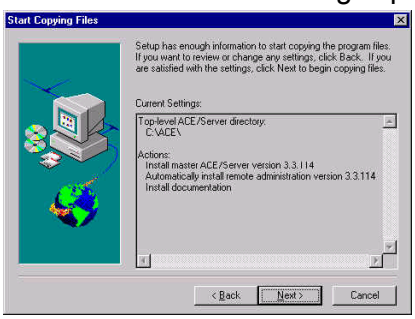
j. Click on '**Next**'. The 'Installation Directory' screen will be displayed:



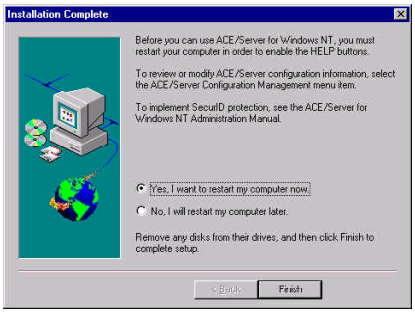
k. Click on '**Next**'. The 'Installation Options' screen will be displayed. Select 'New Master ACE/Server', and optionally select 'Documentation':



l. Click on '**Next**'. The settings specified will be displayed:

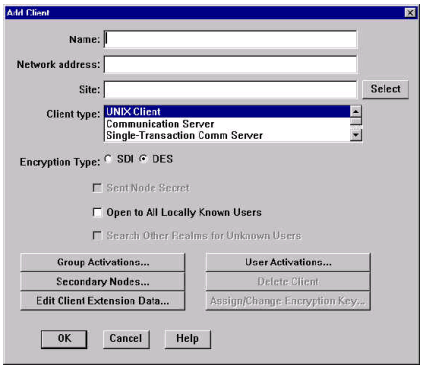


m. Review the settings and click on '**Next**'. The files will be copied across and the 'Installation Complete' screen will be displayed:

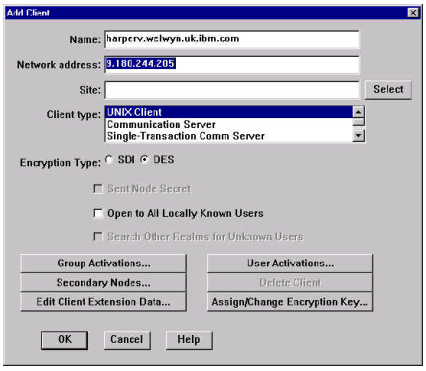


n. Remove the diskette from the diskette drive. Click on 'Finish'. The system will re-start.

o. Issue Start -> Programs -> ACE Server -> Database Administration - Host Mode. From the menu bar select Client -> Add Client.... The 'Add Client' panel will be displayed:

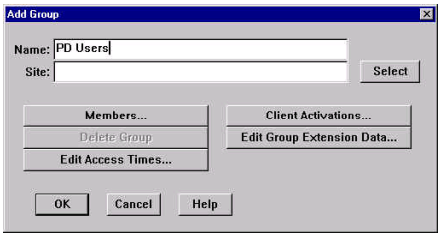


p. Enter the name of the Policy Director machine in the Name field. When you press Tab to exit the Name field, the IP address of the Policy Director machine will automatically be displayed in the Network address field, based on the information you have in your DNS server or local hosts file. Select a Client type of Single-Transaction Comm Server:



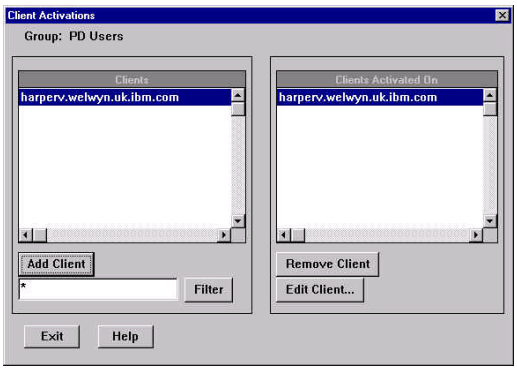
q. Click on '**OK**'. You will be returned to the ACE/Server Administration screen.

r. From the menu bar, select Group -> Add Group.... The 'Add Group' panel will be displayed. Enter the name of the group you want to activate at the client - in our case we created the group PD Users:



s. Click on 'Client Activations...'. A confirmation message will be displayed:

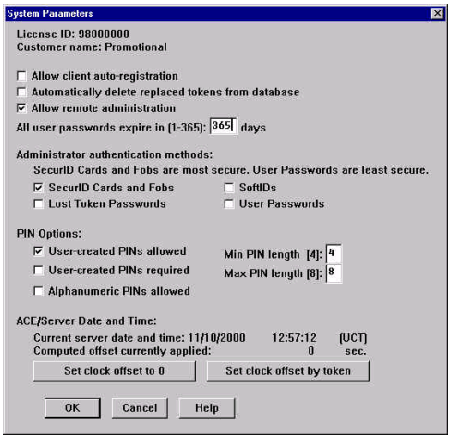
t. Click on 'Yes. A 'Client Activations' panel will be displayed. Ensure that the Policy Director machine is highlighted under 'Clients', and click on 'Add Client'. The Policy Director machine will be added to the list under 'Clients Activated On':



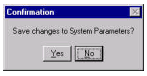
u. Click on 'Exit'.

v. The 'Edit Group' dialog will be displayed again. Click on '**OK**'.

w. Click on System -> Edit System Parameters.... A 'System Parameters' panel will be displayed. Deselect 'User-created PINs allowed' (since Policy Director does not support the user creating his/her PIN number). You may also like to change the password expiry value from 90 days to some other value:

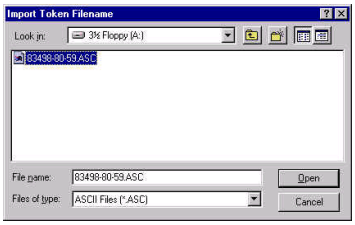


x. Click on '**OK**. A confirmation message is displayed:



y. Click on ‘Yes’. You will be returned to the ACE/Server Administration screen.

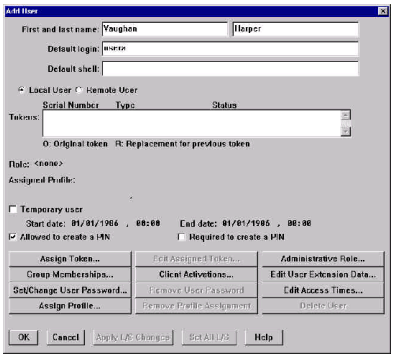
z. From the manu bar, click on Token -> Import Tokens.... An ‘Import Token Filename’ panel will be displayed. Insert the diskette containing the SecurID seed values (whose label includes a batch name, a specification of two Records, and the file name specifications) in the diskette drive. Select the file on the floppy disk:



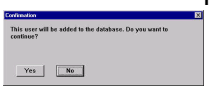
aa. Click on ‘Open’. The ‘Import Status’ panel will be displayed:

bb. Click on ‘**OK**’. You will be returned to the ACE/Server Administration screen.

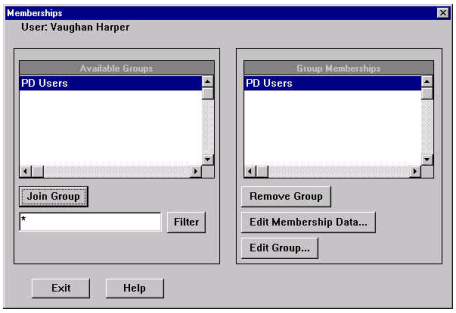
cc. On the menu bar select on User -> Add User.... The ‘Add User’ panel will be isplayed. Specify a First and Last name for the user, together with the Default login. Note that the Default login must match the User ID specified in the Policy Director Console:



dd. Click on ‘Group Memberships...’. A Confirmation message will be displayed:

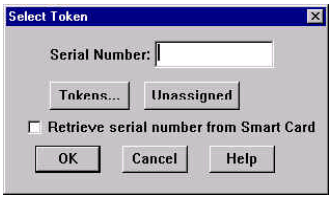


ee. Click on ‘Yes’. The ‘Memberships’ panel will be displayed. Ensure that the user group created is highlighted under ‘Available Groups’, and click on ‘Join Group’. The group will be added to the list under ‘Group Memberships’:



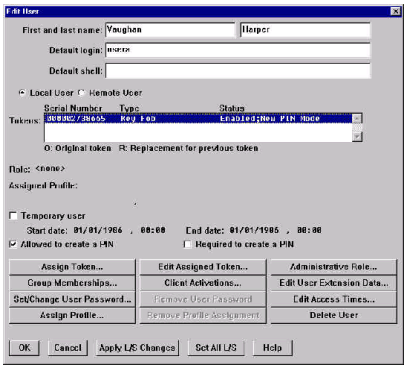
ff. Click on ‘Exit’. The ‘Edit User’ panel will be displayed again.

gg. Click on ‘Assign Token...’. The ‘Select Token’ panel will be displayed:



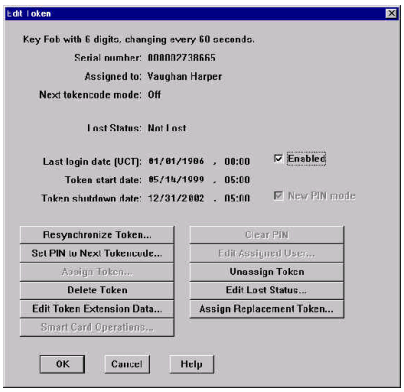
hh. Click on ‘Unassigned’. A SecurID Serial Number will be displayed in the ‘Select Token’ panel:

ii. Click on ‘**OK**’. The ‘Edit User’ panel will be displayed again, this time with a token specified. Highlight the token:

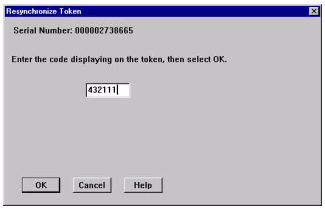


jj. Find the actual SecurID token whose serial number matches that displayed.

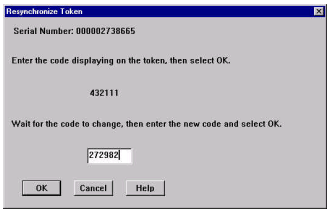
kk. Click on ‘Edit Assigned Token...’. The ‘Edit Token’ panel will be displayed:



ll. Click on 'Resynchronize Token...'. The 'Resynchronize Token' panel will be displayed. Key the six digit number displayed by the SecurID token:



mm. Click on '**OK**. Wait for the display to change, then key the new six digit number displayed by the SecurID token:



nn. Click on '**OK**'. A message should indicate that the token has been successfully resynchronized:

oo. Click on '**OK**'. The 'Edit Token' panel will be displayed again.

pp. Click on 'Set PIN to Next Tokencode...'. The 'Set PIN to Next Tokencode' panel will be displayed. Enter the Key the six digit number displayed by the SecurID token:

qq. Click on '**OK**'. A message indicating that the PIN will be the first 4 digits of the next tokencode:

rr. Click on '**OK**'. The 'Edit Token' panel will be displayed again.

ss. Wait for the display to change: the PIN for the SecurID token will be first four digits of the new six digit number displayed by the SecurID token. (In our case the next displayed value was 789538, so the PIN is therefore 7895.) Ensure that you note this PIN value.

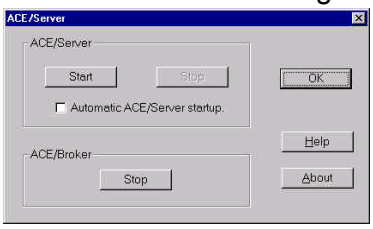
tt. Click on '**OK**' to close the 'Edit Token' window. The 'Edit User' window will be displayed.

uu. Click on '**OK**' to close the 'Edit User' window. You will be returned to the ACE/Server Administration screen.

vv. **Copy the ACE/Server configuration file `sdconf.rec` from the `\ACE\data` directory to the `\WINNT\system32` directory.** (This file will tell CDAS what encryption to use to communicate with the ACE/Server and where the server is located.)

ww. Copy the file `aceclnt.dll` from the `\ACE\prog` directory to the `\WINNT\system32` directory.

xx. Click on 'Start -> Settings -> Control Panel. Double-click on the ACE Server icon:



yy. Click on 'Start'. A message indicating that the ACE/Server has been started will be displayed:

zz. Policy Director `iv.conf` changes:

a) Activate forms-based login: in the `[wand]` stanza ensure that the `https-forms-auth` entry is set to `yes`.

b) Specify the Token Login Prompt - you must specify a special login form appropriate to this token-based authentication process. Activate the token login prompt page (HTML) by changing:

```
pkms-login-error-page = login.html
#pkms-login-error-page = tokenlogin.html
```

to:

```
#pkms-login-error-page = login.html
pkms-login-error-page = tokenlogin.html
```

c) In the `[wand]` stanza ensure that the `verify-clients` entry is set to either `optional` or `never`. (Otherwise a client would be forced to use certificate based authentication.)

d) Enable the token CDAS by adding to following line to the `[authentication-mechanisms]` stanza. For Windows NT the entry is as follows:

```
token-cdas=cdasauthn.dll&entry=/.:/subsys/intraverse/cdas/server/token/<hostname>
```

For Solaris the entry is:

```
token-cdas= libcdasauthn.so&entry=/.:/subsys/intraverse/cdas/server/token/<hostname>
```

For AIX the entry is:

```
token-cdas=libcdasauthn.a &entry=/.:/subsys/intraverse/cdas/server/token/<hostname>
```

aaa. Start DCE, and ensure that all the correct DCE services are running.

bbb. Log in to DCE.

ccc. Perform the DCE configuration required by the token CDAS server:

a) Change directory to `C:\Program Files\Tivoli\Policy Director\cdas_server\bin`

b) At the MS-DOS prompt, issue:

```
cdas_dce_setup <hostname> token <cell-admin-password>
```

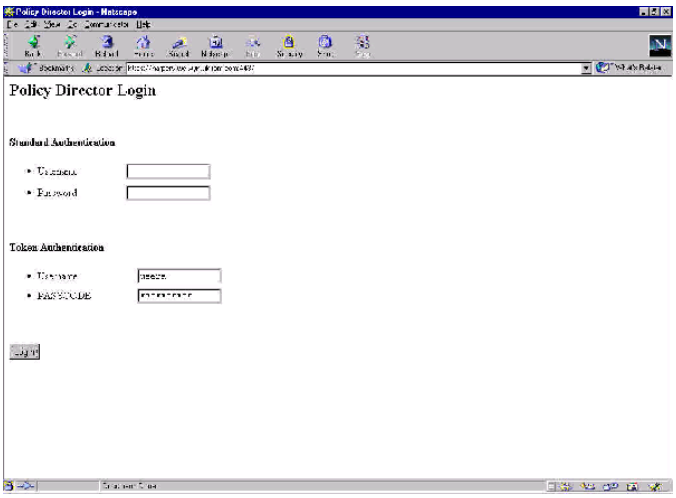
c) (Although not relevant to this chapter, the equivalent steps on a UNIX platform involve using a shell script located in the following directory: `/opt/intraverse/cdas_server/bin`. The following command needs to be entered: `# sh ./cdas_setup.sh <hostname> token <cell-admin-password>`.)

ddd. Start Policy Director, LDAP (if required) etc, and ensure that all the correct services are running.

eee. Start the Token CDAS server. You can do this in one of two ways:

- In an MS-DOS window change directory to `C:\Program Files\Tivoli\Policy Director\cdas_server\bin` and enter `cdas_server -h <hostname> -r <registry>`
- Start service from Start -> Settings -> Control Panel, double-click on Services, select Cross Domain Token Authentication Service and click on Start.

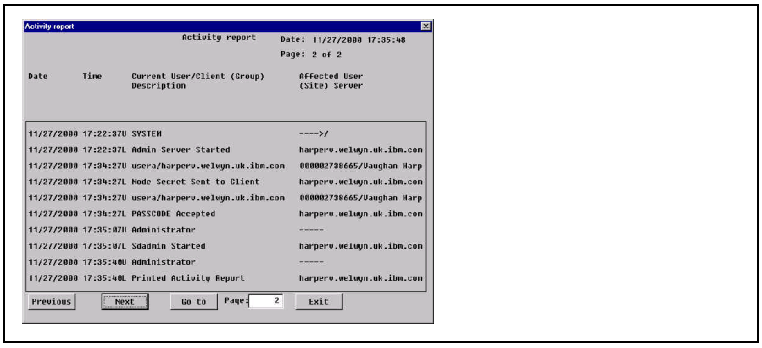
fff. Point a browser at a web page which requires authentication and click on `Re-access the page using HTTPS`. The token login web page will be displayed. In the Token Authentication Username field key the Policy Director User ID which matches the Default login configured to at the ACE/Server administration screen. In the PASSCODE field type the four digit PIN followed by the six digit SecurID display:



ggg. Clicking on ‘Login’ should result in successful authentication.

Problem Determination

In the event of token authentication failing, it is often worth looking at the ACE/Server log. To do this, use Start -> Programs -> ACE Server -> Database Administration - Host Mode, then Report -> Activity. Successful token authentication will result in a report similar to the following:



Uninstalling

Problem:

When you uninstall the WebSEAL component of Policy Director 3.6 - that has been configured with the default token (SecurID) CDAS server - the token CDAS server is not removed from the system.

a. Workaround:

You must perform the following steps to manually remove the token CDAS server **before** you begin the normal WebSEAL uninstall procedure. (These steps must be performed as a Windows NT administrator.)

b. From the Windows NT Services panel, shut down the token CDAS server by selecting "Cross Domain Token Authentication Service" and click the Stop button.

c. From the Windows Command Prompt, enter the following commands to manually remove the token CDAS server component:
MSDOS> dce_login cell_admin <password>
MSDOS> cdas_dce_remove.exe <host> token
Where host is the name of the machine where the token CDAS server resides.

d. You can now start the normal WebSEAL uninstall procedure.

29. Useful LDAP commands

For a full treatment of LDAP, see the excellent red book SG24-5110 *LDAP Implementation Cookbook*. But in the meantime, the following commands may prove useful:

- `ldapsearch -h hostname -b "C=US" "objectclass=*" "*"` this lists all attributes for all directory entries with a base of “C=US”
- `ldapsearch -h hostname -b "C=US" "objectclass=*" "modifytimestamp"` this lists the time stamps for all directory entries with a base of “C=US”
- `ldapsearch -t -h hostname -b "C=US" "objectclass=*" "*"` useful for binary objects - this writes all attributes to files, and displays the names of the files created, for all directory entries with a base of “C=US”
- `ldapsearch -h hostname -b "" -s base "objectclass=*"` this lists all the base objects within the directory

30. Troubleshooting…

This section is certainly not comprehensive, but it gives a few miscellaneous ideas that *might* help relating to fault finding/problem determination. Not every item is applicable to every platform.

Access Manager won't start…

a. Has LDAP started? Are the correct LDAP services running? Try issuing an `ldapsearch` from the machine in question to the LDAP directory.

b. Have all the Access Manager servers started?

Under AIX, if you type `ps -ef |grep PolicyDirector`, the following processes should be listed: pd`mgrd`, `pdacld` and if you type `ps -ef |grep webseald` the following process should be listed: `webseald`.

If not, look at the appropriate log files.

Issue `netstat -a` to see whether anything else is listening on the ports which WebSEAL is wanting to listen on.

If under UNIX the Access Manager servers won't start it might be worth stopping them all and then deleting any Process ID files left over (e.g. `secmgrd.pid`).

Problems once Access Manager has started…

Depending on the nature of the problem, doing one of the following steps may help:

- Try running an IP trace between WebSEAL and LDAP. (See below for hints on running traces.)

- Switch on the LDAP auditing. If you are using the IBM SecureWay Directory, using the LDAP web administration interface, select Logs -> Audit log -> Settings, then select `Enable audit logging=Yes`, `Operations to log=all`, `Type logging = All attempts`.

- Run LDAP in debug mode. If you are using the IBM SecureWay Directory under AIX, look at Contents -> Troubleshooting -> Debugging in the *IBM SecureWay Directory Version 3.2.2 for AIX Installation and Configuration guide* – this is on the **Tivoli Access Manager Base for AIX Version 3.9** CD at `/doc/Directory/aparent.pdf` (or the corresponding manuals for the other platforms). There are other SecureWay Directory product manuals in the same directory.

  You can try issuing the following:

```
ldtrc on
slapd -h 65535 2>&1 | tee ldap.out
```

This will write maximum debugging information to a file. (65535 is a bitmask value which turns on full debug output and generates the most complete information.)

(Afterwards issue `ldtrc off`)

- Try running Access Manager in debug mode.

- Try running PD services in the foreground with the '-foreground' parameter

- If you suspect LDAP problems (on Windows), you can sometimes find useful information by going to Start -> Programs -> Administrative Tools (Common) -> Event Viewer, and clicking on Log -> Application.

Page Not Found problems…

- Try running an IP trace between WebSEAL and the back-end web server.

- Try specifying `-j` when creating the junction, and (optionally) specify `script-filter=yes` in the `[script-filtering]` stanza of `webseald.conf`, or try setting up the Junction Management Table.

- If you are having cookie-related problems, you can get a whole load of useful information from Internet Explorer. To do this, switch on the warnings that IE issues whenever it is invited to set a cookie. When you get the warning you can click on 'More Info', which tells you lots of information about the cookie (Name, Domain, Path, Expires, Data, and whether or not Secure).

  To switch this on, do the following:

  - select Tools -> Internet Options
  - click on Security
  - select the correct zone for your target system (Internet, Local Intranet etc)
  - click on Custom Level
  - select 'Prompt' against 'Allow cookies that are stored on your computer' and 'Allow per-session cookies (not stored)'

Running IP traces

On AIX

- To start a trace, do the following:
  `iptrace –a –d 9.180.244.207 –b /tmp/trace207.trace`
  This will trace all traffic between the machine in question and IP address `9.180.244.207`, and write this to a binary trace file (`/tmp/trace207.trace`).
- After the activity you want to capture, to stop the trace issue:
  `ps –ef|grep iptrace`
  to determine the PID of iptrace, then issue:
  `kill` *`pid`*
  (where *`pid`* is the PID which you determined in the previous step)
  (Do **not** issue `kill -9` *`pid.)`*
- To convert the trace to a readable format, type:
  `ipreport /tmp/trace207.trace |more`
  or to write it to a file, type:
  `ipreport /tmp/trace207.trace >/tmp/trace207.report`

On Solaris

- Type:
  `snoop –o /tmp/trace207 –v 9.180.244.207`
  This will trace all traffic between the machine in question and IP address `9.180.244.207`, and write this to a trace file (`/tmp/trace207`).

On NT

- The ***Network Monitor*** comes with Windows NT Server 4.0 but it is not installed by default. To install the monitor, go to the Control Panel, open Network, select the Services tab and click on Add. From the list of services that is displayed, select and install "Network Monitor Tools and Agent". Once the Network Monitor is installed, it is run from the Start menu [Start -> Programs -> Administrative Tools (Common) -> Network Monitor].
- This is lots of useful information on this in *Windows NT TCP/IP Network Administration*, published by O'Reilly. You can find the relevant chapter at http://www.oreilly.com/catalog/wintcp/sample_chpt/tnt_11.html.

Other problem determination ideas - AIX

1. Verify LDAP is running
```
# ps -ef | grep slapd
```

2. Stop PD services
```
# iv stop
```

3. Start PD
```
# iv start
```

4. Verify PD is running
```
# iv status
```

Part VI - 3.9 Beta Workshop Hands-on Labs Guide

This section was written by Oleg Bascurov, Gianluca Gargaro and Jeff Miller under the leadership of Avery Salmon and Jon Harry from the PIC, Hursley, as a Lab Guide for the 3.9 Beta Workshop. Some of the information here is no longer relevant as it relates to the Beta code rather than the GA code or it duplicates information covered elsewhere within the cookbook. However much of the information here will be useful as it covers other configurations, other user registries, AM WAS, etc.

31. Introduction

This hands-on lab was written for use in the Policy Director v3.9 workshop. It covers some of the major new functions introduced in PD v3.9 including J2EE integration with WebSphere Application Server v4.0.2, Web server plug-in, new Directory support, and WebSEAL enhancements.

The labs (each of which is represented by a section in this document) should work independently of the others but are written with the intention that this document will be followed from beginning to end.

The labs follow this overall flow:

- Installation and Configuration
- WebSEAL Enhancements
- Policy Director Integration with WebSphere
- Form-based Single Sign-on
- Policy Director Web Server Plug-in

There are also several appendices at the end of this lab workbook that contain installation procedures that either have been done in advance or are alternatives to the lab-specified methods for performing various tasks.

31.1 Style conventions

A number of text styles have been used in this document:

Syle	Purpose
`pdadmin>` **`user list * 100`**	Shaded text represents a screenshot or the contents of a text file. The bold text is user input.
? What does this mean?	The large question mark symbol indicates a question or something for you to try to test your understanding.

> Read this. It could be useful information that you won't see anywhere else.

The solid bar on the left of the text indicates that the text contains hints and tips beyond the instructions for completing the lab exercises.

31.2 Addition information resources

If you want additional information while you are going through these labs then please refer to the PD v3.8 TOI class notes or the product publications. Beta copies of the Policy Director publications are available in **D:\AMPublications** directory.

31.3 Machine hostnames and DNS names

For these lab exercises you will need to know the full DNS names of the machines you are using. To determine this open a command window and issue the command:

```
C:\>ipconfig
```

Note the IP address of the machine and then use the following command to get the DNS name:

```
C:\>ping -a x.x.x.x
```

Where x.x.x.x is the IP address from the ***ipconfig*** command.

31.4 Lab Environment

These lab exercises were written assuming the lab environment described below.

The lab PCs are preloaded with the following software:

- *Microsoft Windows 2000 Server Service Pack 2*
- *Microsoft Internet Explorer 5.5 SP2*
- *Netscape Navigator v4.77*
- *Winzip*
- *Java 1.3 SDK*
- *Adobe Acrobat v4.05*

Before starting the Policy Director exercises you need to install and configure the prerequisite software. The instructions for these are in Appendix A:

1) IBM HTTP Server 1.3.19
2) GSKit 5
3) DB2 UDB 7.2 plus Fixpack-4
4) User Registry

Of course Policy Director also requires a User Registry, so you must install and configure one of the below. The instructions to install & configure these are also in Appendix A.

> Note: Not all components are supported with all registry types. For maximum test-case coverage use IBM Directory Server 3.2.2

- IBM Directory Server 3.2.2
- Lotus Domino Server 5.0.9
- MS Active Directory

Many of the labs use a sample J2EE application called *Banker 2001*. You'll use it to test role-based authorization in WebSphere, particularly when Policy Director makes the authorization decisions for WebSphere. The banking functions of the application are the protected ones. These are creating accounts, viewing accounts, and transferring money. The other functions are primarily used to test various lab features.

To install & configure WebSphere 4.02 use the instructions in Appendix B.

31.5 Default Configurations

File Locations

Option	Value
DB2	*C:\SQLLIB*
IBM HTTP Server	*C:\Program Files\IBM HTTP Server*
Policy Director	*C:\Program Files\Tivoli\Policy Director*
WebSphere Application Server	*C:\WebSphere\AppServer*
IBM Java 2 v1.3.0	*C:\WebSphere\AppServer\java*
Hands-on files	*D:\LabFiles*

IBM Directory Server Configuration Options

Option	Value
Directory Administrator ID	cn=root
Directory Administrator Password	passw0rd
Directory Server Hostname	*<yourhost>.pisc.uk.ibm.com*
Suffix	o=ibm,c=gb
Directory Server Port	38900
Installation Directory	*C:\Program Files\IBM\LDAP*

Active Directory Server Configuration Options

Option	Value
Directory Administrator ID	Administrator
Directory Administrator Password	passw0rd
Directory Server Hostname	*<yourhost>.pisc.uk.ibm.com*
Suffix	dc=<yourhost>,dc=com
Directory Server Port	389
Installation Directory	(system)

Domino Server Configuration Options

Option	Value
Directory Administrator ID	Administrator
Directory Administrator Password	passw0rd
Directory Server Hostname	*yourhost.pisc.uk.ibm.com*
Directory Server Port	3890
Installation Directory	*C:\Lotus\Domino*

31.6 User IDs, Passwords and Ports

During the labs, you will set-up and use several user IDs, passwords and ports. To help you keep track of them, they're are listed here:

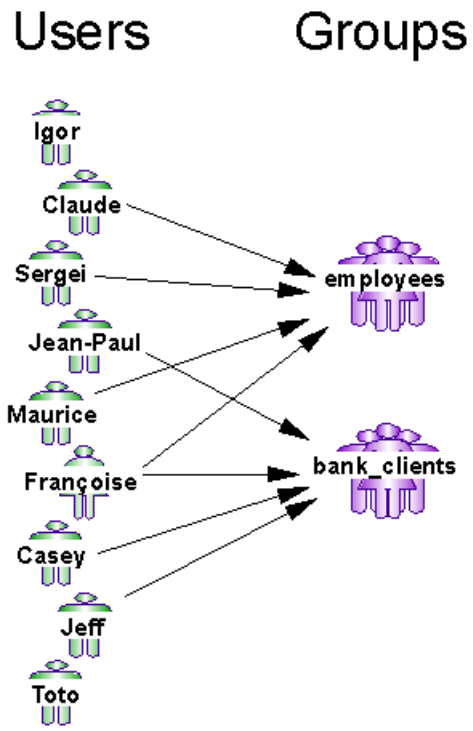
User ID	Password	Purpose
Administrator	*passw0rd*	Machine and directory passw0rd
db2admin	*passw0rd*	Administer DB2
sec_master	*passw0rd*	Policy Director administrator
wasadmin	*passw0rd*	WebSphere administrator
pdwas	*passw0rd*	Represents the WebSphere JVM in PD

You will also use several ports for HTTP. For reference, here are the lab defaults:

Port	Purpose
80	Port for WebSEAL
82	TCP Tunnel input port
443	Port for WebSEAL SSL
888	Port IIS
4444	Port for IBM HTTP Server SSL
8000	Domino HTTP port number
8888	Port for IBM HTTP Server
9080	Port for WebSphere embedded Web server

31.7 Banker 2001 Users and Roles

Throughout the labs you will use a sample application called Banker 2001 to configure and test application security. The application has 9 users and 2 groups. You will configure these in the directory you choose for the labs. (When you work with these users and groups, all names should be fully lower case, without accented characters.) The mappings look like this:



Two of the users do not belong to groups.

31.8 Useful utilities

In order to make the most of these labs the following utilities can be used. Some are available on the desktop and some are copied when the lab setup batch file is run after the installation section of the labs:

WordPad Unless a better text editor is available Wordpad is recommended for editing text configuration files

Tail This utility allows a text file to be monitored in real time. It is very useful for viewing log files. Log files can be dragged onto the icon from Windows Explorer. Located in the *D:\LabFiles* directory.

Base64 This utility converts text into Base64.

You may want to create a couple of BAT files yourself that make it easier to CD to the PD directories.

pd.bat This could be a batch file that changes the working directory to the default PD install directory, *C:\Program Files\Tivoli\Policy Director*

pdweb.bat This could be a batch file that changes the working directory to the default WebSEAL install directory, *C:\Program Files\Tivoli\PDWeb*

32. Installing Policy Director

32.1 Setup

Installation of Web Portal Manager requires that WebSphere Application Server be installed on your machine. This should already be done (per the procedure in 47 Appendix B -- WebSphere Installation). To check WebSphere, open a DOS window and enter

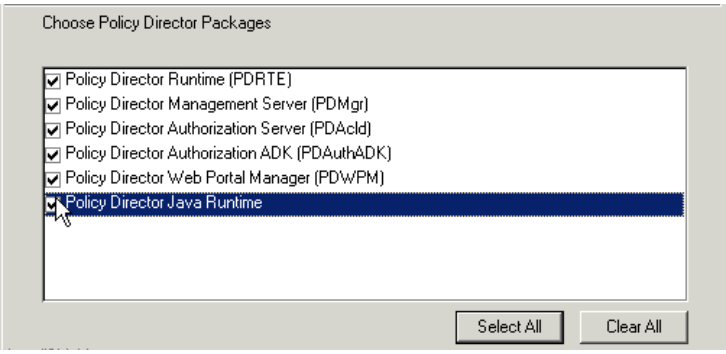
```
C:\>echo %WAS_HOME%
C:\WebSphere\AppServer
```

If the WAS_HOME environment variable is not set, talk to your instructor.

Use Windows Explorer to open the drive where the *Policy Director* CD images are located under the *D:\LabFiles\PDImages* directory. This directory has three subdirectories:

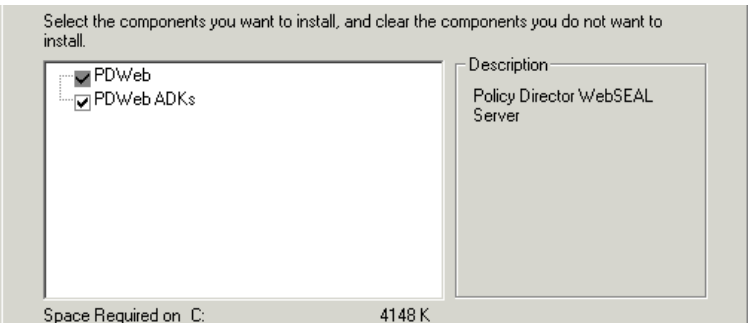
- pd_*
  - Policy Director disk images directory
- pdweb*
  - PD Web Portal Manager setup directory
- PDWebPI*
  - PD Web Plug-in disk images directory

Under *Policy Director\Disk Images\Disk1* launch the *Setup.exe* file by double-clicking on it.



Select all the components and click Next to start the install of the Policy Directory files on your machine.

When asked, do not reboot now but navigate to *WebSEAL\Disk Images\Disk1* and double-click *Setup.exe* to install WebSEAL, too.



Select all the components for WebSEAL. This will install the Policy Directory files on your machine.

The products are now installed but still need to be configured. Reboot your machine.

33. Configure Policy Director with Your User Registry

There are five Policy Director installed packages and each needs to be configured for full PD functionality. All but the first, PDRTE, are the same regardless of the directory server underneath. In this lab, choose the PDRTE section that corresponds to your directory server. Do that part and then skip to section Part VI - 33.4 Finishing Policy Director Configuration on Your Directory Server that covers configuring the four remaining packages.

33.1 Configuring PDRTE with IBM Directory Server

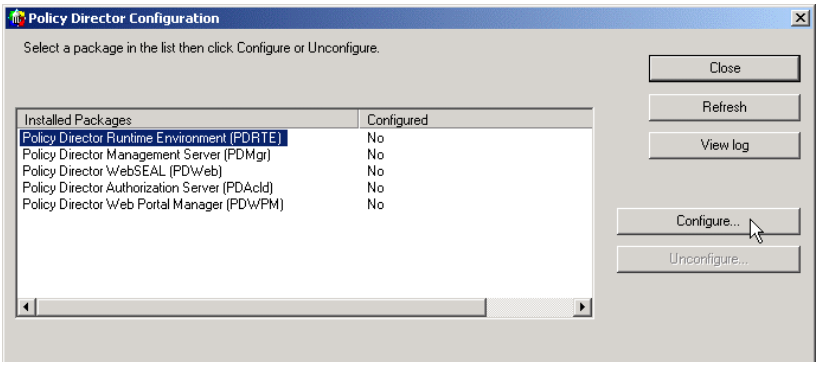
Considerations

IBM Directory Server 3.2.2 should already be installed and configured to listen on port 38900 as per the instructions in section 46.4 Installing IBM SecureWay Directory Server 3.2.2. All the Policy Director components should also be installed in order to start the configuration process.

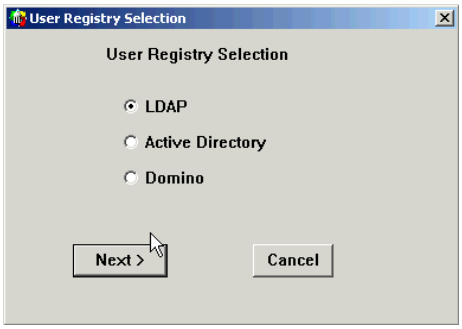
First start your user registry.

Configuration of PDRTE using IBM Directory Server 3.2.2

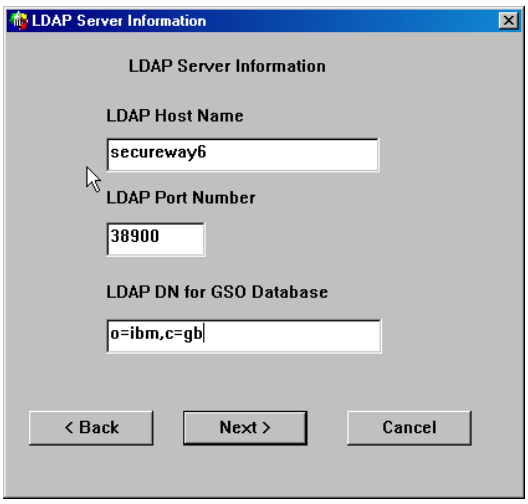
To begin configuration, select START->Programs->Policy Director->Configuration.



This displays the Policy Director Configuration dialog. Select PDRTE and click Configure....

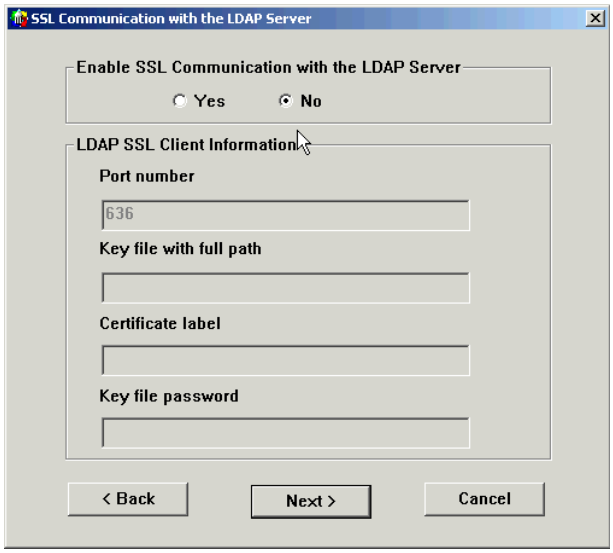


Select LDAP as user registry. Click Next.

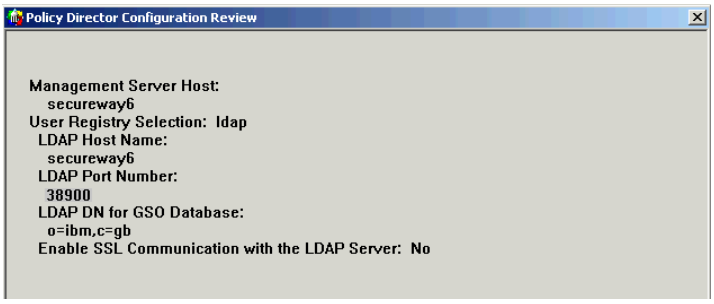


Provide the information as per the table in section 31.5 IBM Directory Server Configuration Options. Set the LDAP Host Name to that of your machine. Note that the default port of 389 is changed to 38900. This is because it can be. Active Directory also uses 389 by default and it is unable to use another. So to keep all the lab machines consistent, 389 is reserved for Active Directory, 3890 for Domino, and 38900 for IBM LDAP.

Click Next.



These labs don't require SSL for communication between the LDAP client and server, hence disable this feature. Click Next.



At this point the configuration procedure has all the info required to start and will show you what provided, simply click on Finish to proceed. Now go to section Part VI - 33.4 Finishing Policy Director Configuration on Your Directory Server to continue.

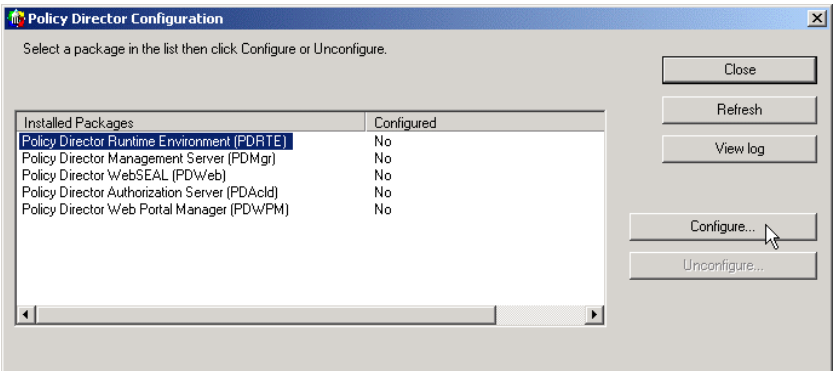
33.2 Configuring PDRTE with Active Directory

Considerations

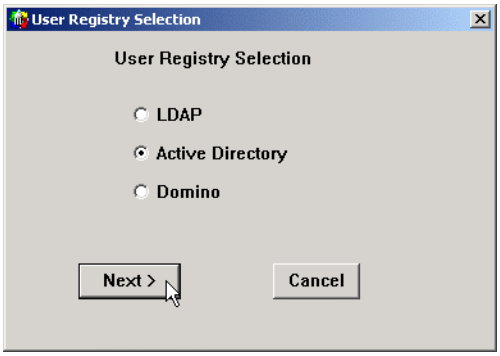
Active Directory should already be installed on your machine with a DNS fully configured. Policy Director should also be installed but not configured. These instructions start with Policy Director configuration and use Active Directory as the LDAP server.

Configuration

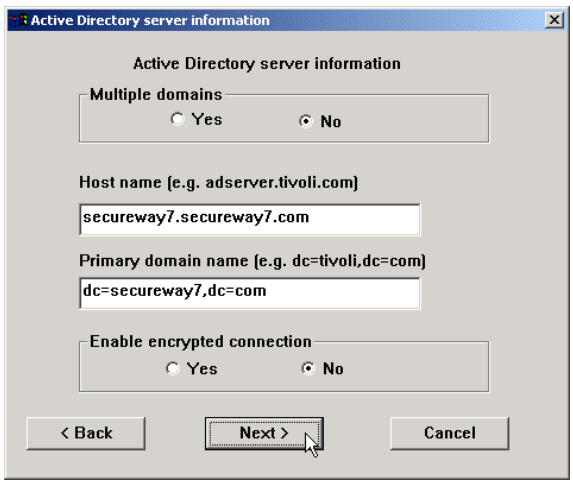
To begin configuration, select START->Programs->Policy Director->Configuration.



This displays the Policy Director Configuration dialog. Each entry must be configured in order, from top to bottom. Select PDRTE and click Configure....



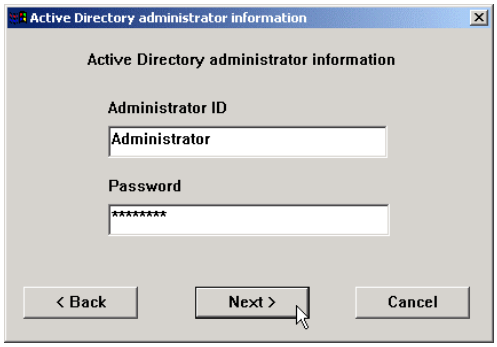
Select Active Directory and click Next.



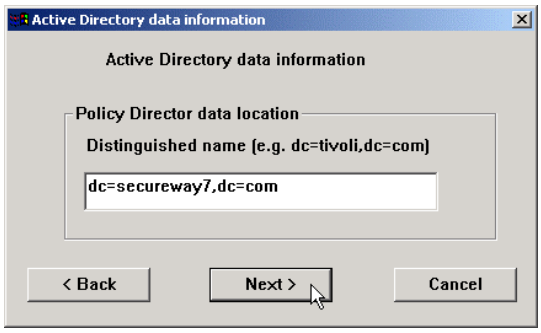
Enter the information for your host and domain names as shown above.

> To find out the Host name and the Primary domain name of your machine right-click on “My Computer” icon on your Desktop and choose the tab "Network Identification."

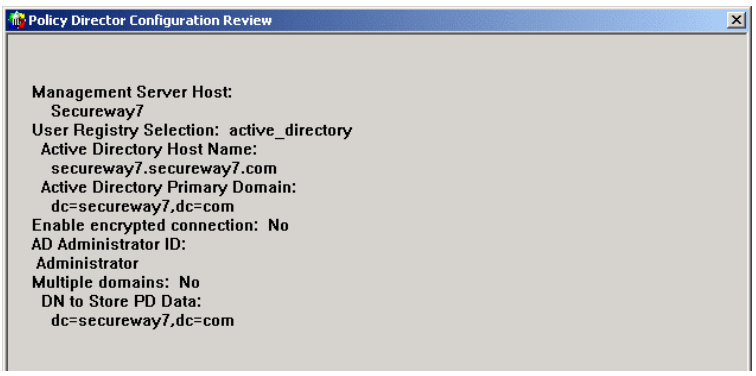
Select No for both Multiple domains and Enable encrypted connection. Click Next.



Enter the Administrator ID and *passw0rd* as the Password and click Next.



Here, *dc* stands for *domain controller*. Set the portion shown as secureway7 above to <your hostname>.



Click Finish.

Wait until the configuration finishes. Now go to section Part VI - 33.4 Finishing Policy Director Configuration on Your Directory Server to continue.

33.3 Configuring PDRTE with Domino

Considerations

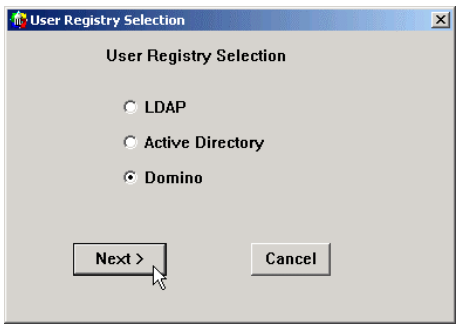
In order to configure Policy director to use Domino as the directory server, you first need to check that the prerequisites are met. The following components have to be installed, properly configured and **running (Lotus Domino Server)** prior to Policy Director (the whole package) configuration:

- IBM GSKit latest available version
- DB2 7.2 + Fixpack 4
- WebSphere Application Server 4.0.2 Advanced Edition or Advanced Edition Single Server Version
- IBM Directory Server 3.2.2 Client
- Lotus Domino Server 5.0.9
- Lotus Notes 5.0.x

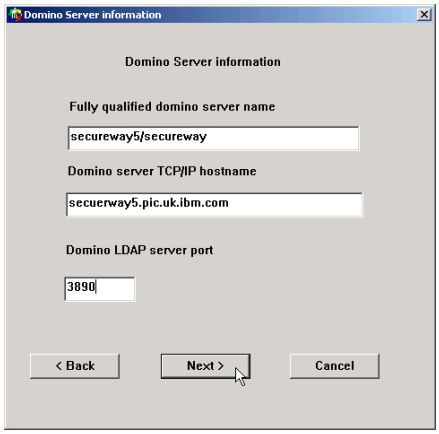
Check the user using the Notes client. This may not be the correct user. You can click cancel on the Notes client login, and change to user PDaemon, whose ID file will be located under the Notes directory in ids\people\PDaemon.id.

Procedure

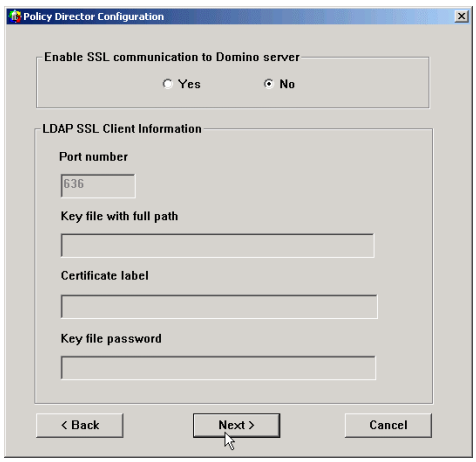
Run Start -> Programs -> Policy Director -> Configuration. Select “Policy Director Runtime Environment” (PDRTE) and click on Configure.



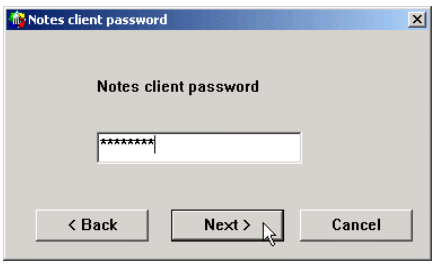
1) Select Domino as the User Registry. Click Next.



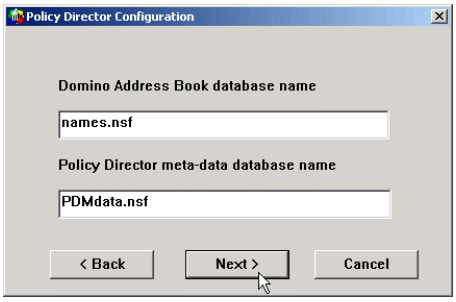
2) Enter the fully qualified Domino server name. This includes the name of the server and the Notes domain.
3) Enter the full DNS name of the Domino server.
4) Enter the port number that the Domino server TCP LDAP interface is listening on. This must match that which was configured on the Domino server, normally 389 by default. However, in these labs 389 is the Active Directory port, even though you may not be using Active directory. So set the Domino port to 3890. Then click Next.



5) Specify if SSL should be used for communication with the Domino LDAP interface. SSL does not need to be enabled for the labs. Click Next.



6) Enter the password of the PD Privileged User. This password will be used by Policy Director to log into the Notes client in order to communicate with the Domino Server. This password is the one that was given when creating the PD Privileged user, *passw0rd*. Click Next.

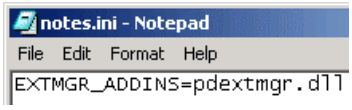


7) Specify the filename of the Domain Address book on the Domino Server. By default this will be *names.nsf* and is pre-filled with that value. This filename is relative to the server Data directory.
8) Specify the filename of the PD metadata database on the Domino Server. By default this is *PDMdata.nsf* and is pre-filled with that value. This filename is relative to the server Data directory and will be used to create the PD metadata database when PDMgr is configured. Click Next.

Confirm by clicking Finish that the information you provided is correct. The configuration of the Policy Director RTE on Domino is completed.

> You may take a look at the *domino.conf* file (under *C:\Program Files\Tivoli\Policy Director\etc*), which contains the configuration information entered by the administrator. All of the information is visible in this file with the exception of the Notes client password, which is obfuscated so that it cannot be read.

> You may also take a look at the client's *notes.ini* file (by default under x:\Lotus\Notes). It was modified during the PD configuration by adding a line that allows Policy Director to silently log into the Notes client using the password stored in the *domino.conf* file.

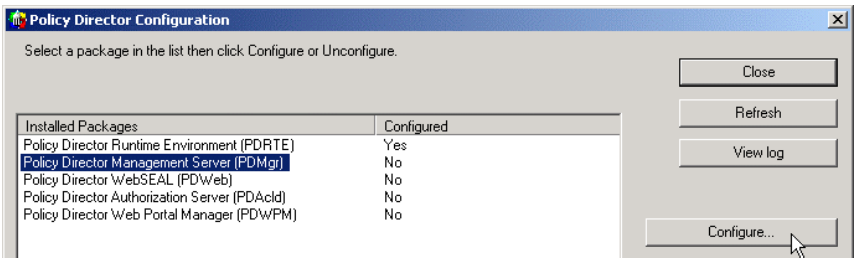


The configuration of other Policy Director components corresponds to that with IBM Secureway Directory or Active Directory.

Note: make sure the IBM Directory Server client is installed on the Management Server machine. Continue with PD configuration in the following section.

33.4 Finishing Policy Director Configuration on Your Directory Server

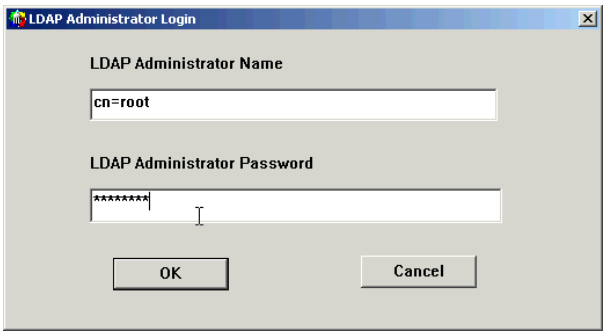
After you've installed PDRTE on your directory server, continue here.



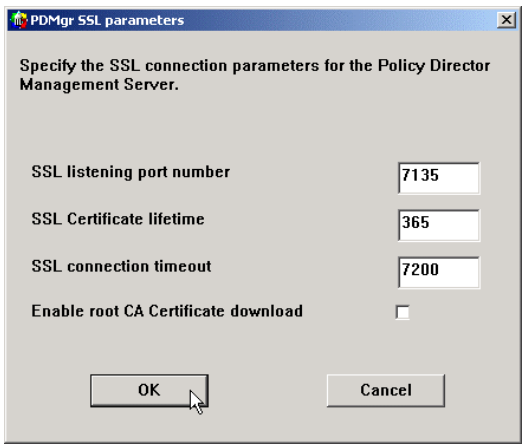
Configure each package in turn.

Enter *passw0rd* as the Administrator Password and click OK.

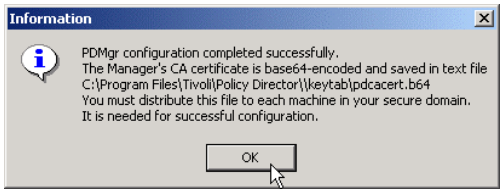
Note: The type of user registry chosen during the configuration of PD Runtime Environment changes slightly the dialogs displayed during configuration of the PD Servers (PDMgr, PDAcl, WebSEA). The dialogs shown in the remainder of this section are for IBM SecureWay LDAP.



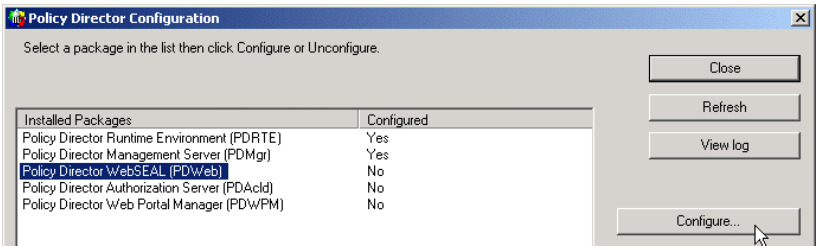
On this dialog enter *cn=root* and *passw0rd* to specify the user name and the password of the directory administrator during both PDMgr and PDAcl configurations.



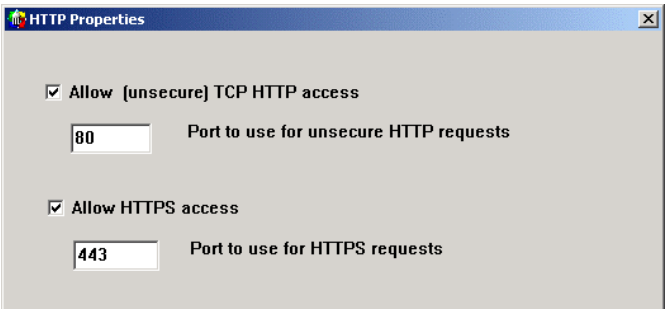
Since you are installing on a single machine, you do not need to enable download of the root CA Certificate – other components can use the file directly from the hard drive. Accept the defaults and click OK. This takes a few minutes to complete. Wait until the configuration finishes.



You now have a base64-encoded root CA certificate available in the file *C:\Program Files\Tivoli\Policy Director\keytab\pdcacert.b64*. Click OK. Now configure WebSEAL.

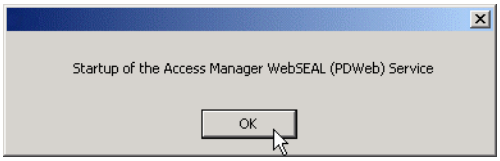


Click Configure....

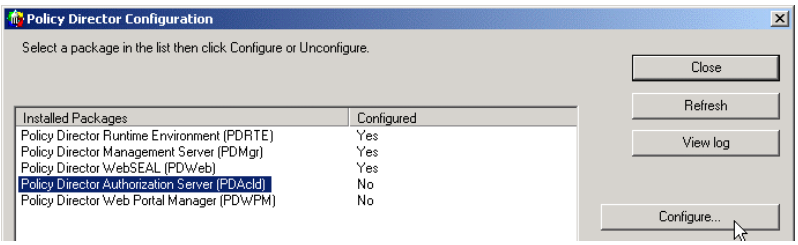


Leave the WebSEAL ports at the standard defaults. (The IBM HTTP Server HTTP ports should be set to 8888 and SSL at 4444 in *C:\IBM HTTP Server\conf\httpd.conf*.) Click OK.

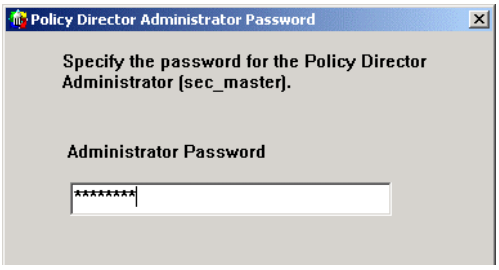
Enter *passw0rd* as the Administrator Password and click OK. After a moment the configuration will start. Wait until the configuration finishes.



Click OK. (If this fails, unconfigure and try it again.)



Click Configure to start configuration of PDAcld.



Enter *passw0rd* and click OK. Wait until the configuration finishes.

Policy Director is now fully configured.

NOTE: The WebSEAL service has been renamed to "Access Manager WebSEAL" and will appear at the top of the services list like this:

34. Installing and Configuring Web Portal Manager

By default, you won't be able to successfully configure Web Portal Manager installing it into WebSphere Application Server 4.0.2, because the labs use WAS Advanced Edition (WAS AE) for Multiplatforms and the beta configuration script only supports the Single Server version of WAS. So there is an extra BAT file you must run that will setup

simulated commands so that WPM configuration will work with WAS AE.

34.1 Initial Procedure

Make sure WebSphere Admin Server and Admin Console are running. In the Admin console, make sure the Default Server is started. Open a DOS window and change to *D:\LabFiles\WPM* and run *SetupWPM.bat*. This will copy the simulation files to their proper directories. *PDWPM.xml* and *pdwpm.ear* are copied to WAS_HOME%\InstallableApps. These are the XMLConfig script and the application EAR, respectively.

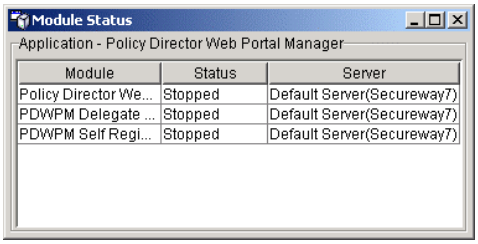
The three BAT files copied are

- *StopServer.bat* – does nothing but represents the command used to stop WAS Single Server version
- *SEAppInstall.bat* – represents the file used to install applications into WAS Single Server version, and here uses XMLConfig and *PDWPM.xml* to install *pdwpm.ear* into WAS AE
- *StartServer.bat* – does nothing but represents the command used to start WAS Single Server version. It's not necessary to stop and start WAS AE when installing an application

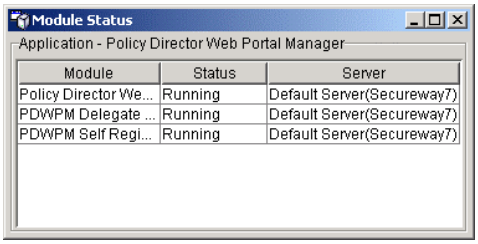
The PD Configuration GUI calls these three BAT files in this order. By copying these, you provide the Configuration GUI what it expects to find with WAS Single Server version.

Now back in the Policy Director Configuration dialog, select PDWPM and click Configure....

When the configuration completes, in the WebSphere Admin Console expand Enterprise Applications you should see Policy Director Web Portal Manager. Check if is running. Right mouse click on it and select Show Status.



You need to start it if its status is Stopped. Close the status dialog and right mouse click on Policy Director Web Portal Manager again, and select Start. Click OK to dismiss the completion dialog. Show status again to verify it is running.



The dialog shows all three Web modules in the application are running. Now it can be tested to make sure the installation succeeded. Enter *http://<your hostname>:9080/pdadmin* in the browser of your choice. You should see the login screen for the Web Portal Manager.

Next go to *http://<your hostname>:8888/pdadmin* to include IBM HTTP Server in the path. You should see the same screen.

34.2 Enable SSL

The configuration of WPM adds a localhost stanza in the IHS configuration file, *C:\IBM HTTP Server\conf\httpd.conf*. Edit this file.

```
### BEGIN PDWPM CONFIG ENTRY ###
Listen 4444
LoadModule ibm_ssl_module modules/IBMModuleSSL128.dll
<VirtualHost secureway6:4444>
SSLEnable
SSLClientAuth none
DocumentRoot "C:\Program Files\IBM HTTP Server\htdocs"
ErrorLog logs\error.log
TransferLog logs\access.log
</VirtualHost>
SSLDisable
Keyfile "C:\PROGRA~1\Tivoli\POLICY~1\\keytab\pdwpm.kdb"
SSLV2Timeout 100
SSLV3Timeout 1000
### END PDWPM CONFIG ENTRY ###
```

Find the PDWPM configuration stanza at the bottom and change the SSL port number from 443 (the default) to 4444, for the Listen entry and the <VirtualHost> entry. 4444 is the default IHS SSL port for the labs. Restart IHS to enable the change.

? Can you connect to Web Portal Manage using a secure SSL connection?

If you have a problem, check that WebSphere has a virtual host alias of 4444.

35. Verify the Configuration with PDADMIN and WebSEAL

35.1 Starting PDAdmin

Enter

```
C:\> pdadmin
pdadmin>
```

> On Windows you can also start PDADMIN by clicking:
> START->Programs->Policy Director->Administration Command Prompt

Unauthenticated access

While you are still an anonymous user:

- ? Issue help command, which commands are listed
- ? Which commands can you execute as an anonymous user
- ? What happens if you try listing the users and groups

Login as 'sec_master'

```
pdadmin> login
Enter User ID: sec_master
Enter Password: passw0rd
pdadmin>
```

- ? How do you start and log into PDAdmin all on the same line?

35.2 Creating Users with PDAdmin

Create a user with ***user create***. The format of the user distinguished name depends on the user registry you are using.

Using IBM SecureWay Directory Server

```
pdadmin> user create user1 cn=user1,o=ibm,c=gb user1 user1 passw0rd
pdadmin>
```

Try creating a user with a DN like cn=Avery Salmon,o=ibm,c=gb

- ? Does it work? If not, why not?
  (try "" for parms with blanks)

Try creating a user with DN like cn=Jon Harry,ou=pic,o=ibm,c=gb

? Does this work? If not, why not?
(remember that all entries in LDAP require a parent entry)

Using Active Directory

```
pdadmin> user create user1 cn=user1,dc=<your domain name>,dc=com user1 user1
passw0rd
pdadmin>
```

Try creating a user with a DN like cn=Avery,dc=secureway7,dc=com

? Does it work? If not, why not?
(try “” for parms with blanks)

Try creating a user with DN like cn=Jon,ou=pic,dc,secureway7,dc=com

? Does this work? If not, why not?
(remember that all entries in LDAP require a parent entry)

Using Domino

There are some minor differences from the standard way (IBM Directory or MS Active Directory) in operating Policy Director based with Domino.

You should **not** use the Domino Administrator, while Policy Director Services are running. In particular, avoid changing the administrator identity, as Policy Director always uses the last identity with which a Lotus client has been closed. That applies to any Lotus client -- Domino Administrator, Domino Designer, Lotus Notes -- as they all share the same *notes.ini* (configuration file) and DLLs.

While creating or importing users and groups in Policy Director use the Domino-style Distinguished Names, rather than LDAP-style:

LDAP-DN:	**cn=hugo,o=secureway**
Domino-DN:	**hugo/secureway**

1. Create a user in Policy Director (don’t forget to set account-valid to yes)

```
pdadmin> user create [-gsouser] [-no-password-policy] <user-name> <dn> <cn>
<sn> <pwd>
pdadmin> user create hugo hugo/secureway hugo user passw0rd
```

2. Import a user in Policy Director

First create a Domino Directory user using Domino Administrator or Lotus Notes client. In Policy Director:

```
pdadmin> user import [-gsouser] <user-name> <dn>
pdadmin> user import hugo hugo/secureway
```

The same applies to the creation and import of groups.

35.3 Connect to WebSEAL

Start a browser and connect to one of your WebSEAL servers.
Try to authenticate with one of your new users

? Are you able to successfully access the WebSEAL homepage? If not, why not? (is the account-active flag set to yes?) Use

```
pdadmin> user mod hugo acc yes
```

36. Configure WebSphere with Your User Registry

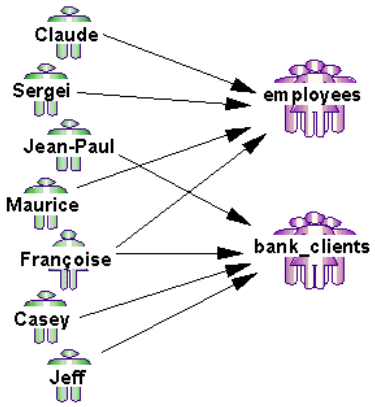
36.1 Objectives

In this lab you will create an administrator user for WebSphere in your user registry directory server, named *wasadmin*. This will be the user ID with which you'll log into WebSphere after you turn on WebSphere security. You will create users and groups for the Banker 2001 application that you'll run in WebSphere. The users you'll create for this application are

Users
toto
casey
francoise
maurice
jean-paul
sergei
claude
igor

Groups
employees
bank_clients

Some of the users will be members of the groups according to this illustration:



In the next sections there will be instructions to create these users and groups – one section per registry type. However, if you don't want to do this manually a command file has been provided to create all the users and groups with one command.

The command file is *D:\LabFiles\create_users-groups.bat.* It takes one parameter, the base DN of your directory' name context.

For IBM LDAP, enter
`o=ibm,c=gb`

For Active Directory enter
`cn=users,dc=<your domain name>,dc=com`

For example, `cn=users,dc=secureway7,dc=com`

For Domino enter
`<your domain name>`

For example, `secureway` (note no "o=")

From a DOS prompt, run **`D:\LabFiles\create_users-groups.bat <base-DN>`**

This will create the Users and Groups to the directory of your choice. To verify success use a registry tool to confirm that the users and groups have been created.

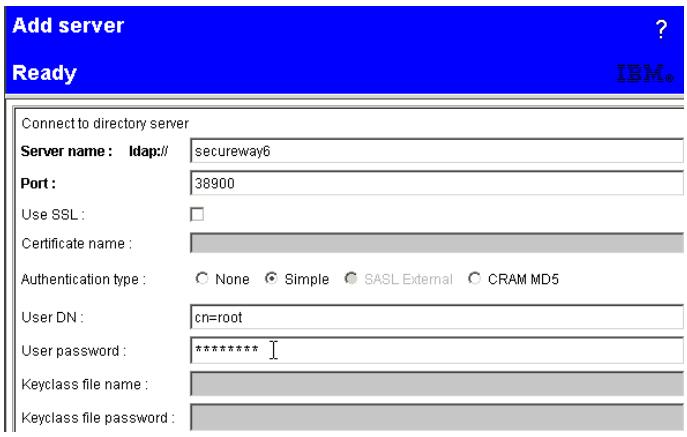
The last steps are to configure WebSphere for your directory and to map the users and groups to the application security created in WebSphere for the Banker 2001 application.

36.2 Adding Groups and Users to IBM Directory Server

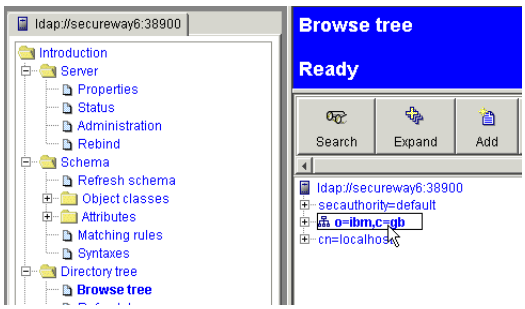
Note: This section provides instructions for manually creating Users and Groups in IBM LDAP. This is, obviously, not necessary if you have already used the **`D:\LabFiles\Create_users-groups.bat`** command file to create these Users & Groups. You may wish to confirm that these have been created successfully.

To do this, start the DMT (Directory Management Tool):

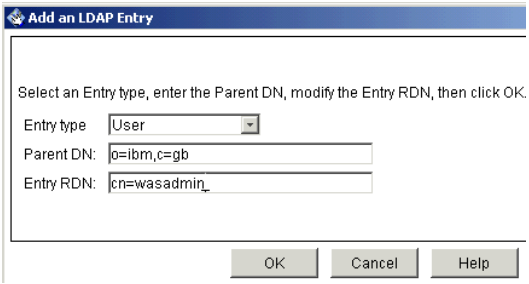
Start->Programs->IBM SecureWay Directory->Directory Management Tool



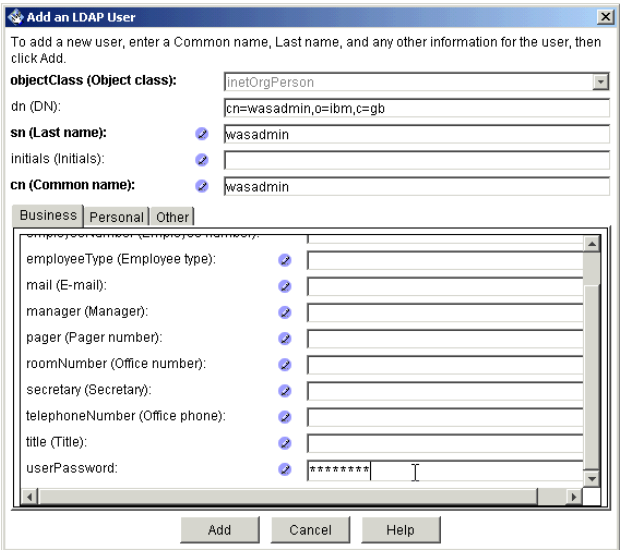
When the DMT is loaded, add your server name and port, and bind as administrator filling in the fields.



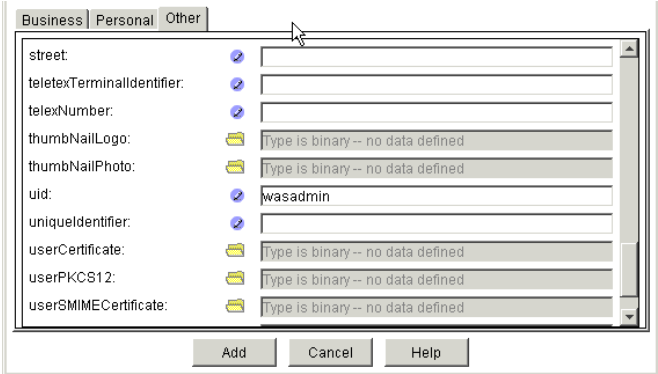
Explore the three entries. Select the suffix o=ibm,c=gb and click on Add to create an LDAP user named *wasadmin* with the password *passw0rd*. This will be the user that is the WebSphere administrator.



Fill in the fields and click OK. The next screen it is opened to provide further information such as the second name and password.

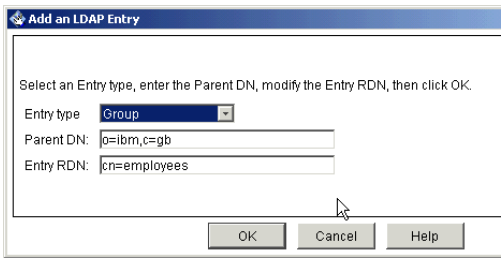


Enter *passw0rd* as the password per the convention throughout these labs. In order to properly use the user with WebSphere you must also set the *uid* attribute with the same name you give for the *cn* attribute. Click on the *Other* tab.

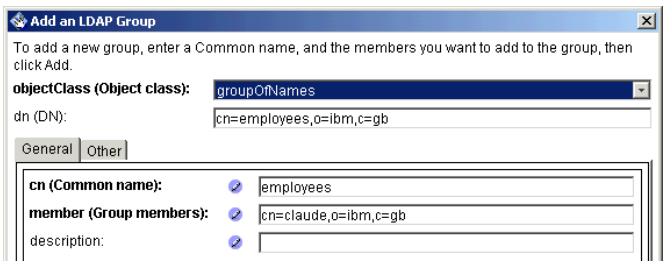


Set the uid: field to *wasadmin*.

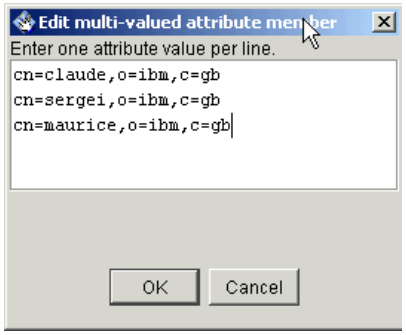
You should repeat all these steps for each user you need to create for the Banker 2001 application.
Create a group and add some users on it. Always select the suffix *o=ibm,c=gb* first and then click on Add button. Select *Group* as entry type.



Fill in the fields and click OK. In the next screen provide further information such as the group's member users.



Click on the blue dot and a panel will open allowing you to import multiple users into the group.



Add a user for each line and click OK when done.

If you do not use the BAT file to import all users and groups, repeat these steps for the other group, *bank_clients,* which you need to create for the Banker 2001 application.

36.3 Adding Groups and Users to Active Directory

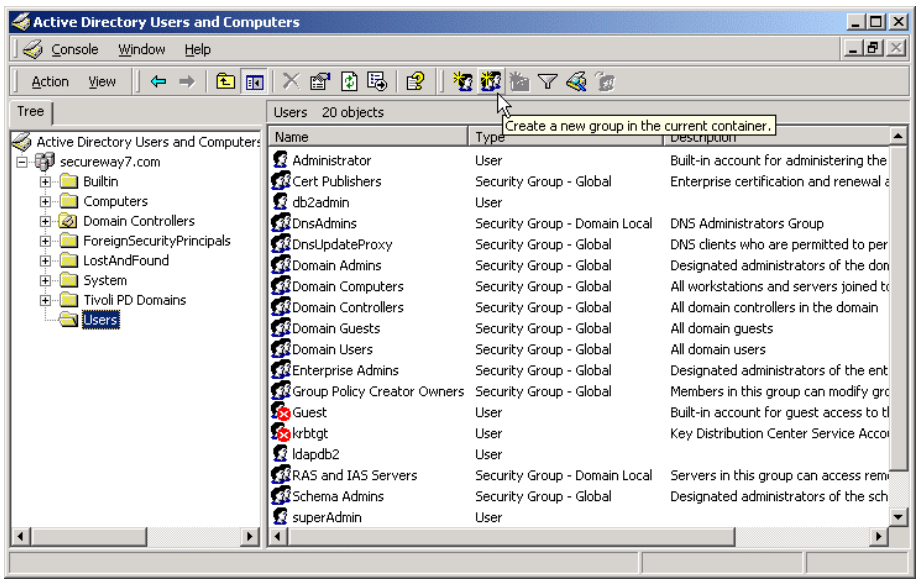
Considerations

Note: This section provides instructions for manually creating Users and Groups in Active Directory. This is, obviously, not necessary if you have already used the **`D:\LabFiles\Create_users-groups.bat`** command file to create these Users & Groups. You may wish to confirm that these have been created successfully.

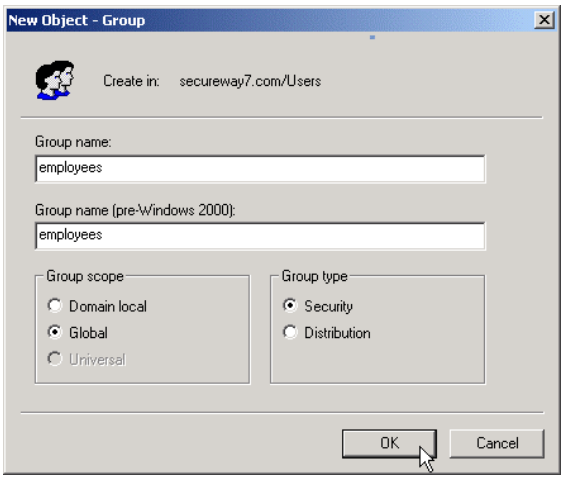
In order to provide authentication and authorization for applications running in WebSphere, users and groups need to be created in Active Directory. You will create the users and group using the Active Director console. Later you will import those users and groups into Policy Director.

Using the Active Directory GUI

Start the Active Directory console by running Start->Programs->Administrative Tools->Active Directory Users and Computers.

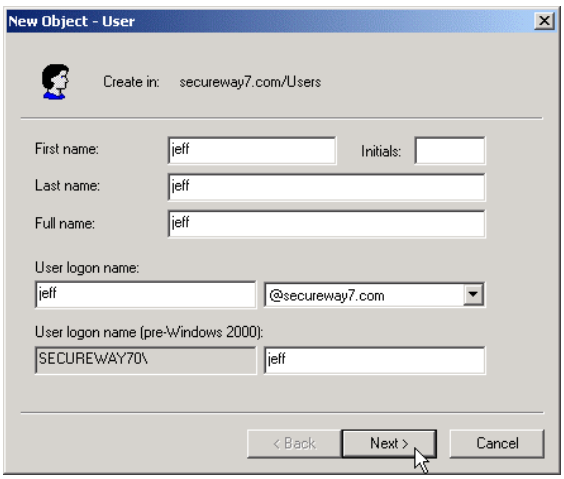


First select the *Users* folder under your hostname. Then click the Create a new group icon.

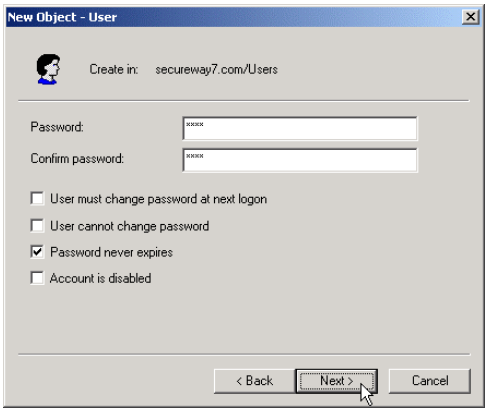


Enter *employees* as the Group name and click OK. Do the same for a group named *bank_clients*. Now you will add users and make some of them members of these groups.

Click the Create a new user icon just next to the Create group icon.



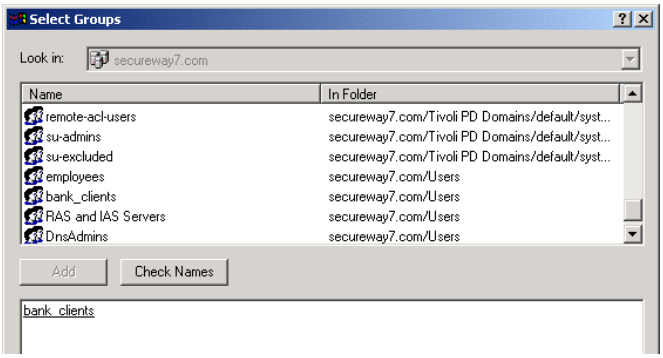
Add a user named *jeff*. Use the same values for First name, Last name, and User logon name. Change the Full name back to a single *jeff*. Click Next.



Enter *passw0rd* as the Password and click Password never expires. Click Next and Finish on the confirmation dialog.

Repeat the process for all the users. See the beginning of section 36.1 for the list of users and groups, and their memberships. (All lower case letters, using *passw0rd* as the password.)

Now you need to add the users to groups as previously indicated. Some users are not in any groups and it is not required that a user belong to a group. In the Active Directory console right mouse click on user *jeff* and select Properties. On the Properties dialog click the Member Of tab and the Add... button.



Scroll down and highlight *bank_clients*, click the Add button. In this dialog you can add users to multiple groups if desired by multiply selecting the groups while holding the Control key down. Click OK. Click OK on the Properties

dialog.

> ? Before you do the same for each user you've created, adding them to the group(s) according to the picture above, is there an easier way when several users belong to a group.
>
> Yes. double-click on the bank_clients group, click on the Members tab, click the Add… button below, and Ctrl-click to select multiple users. Then click OK, and OK again. This is easier.

Now create a user in Active Directory named *wasadmin* with the password *passw0rd*. This will be the user that is the WebSphere administrator.

36.4 Adding Groups and Users to Domino Server

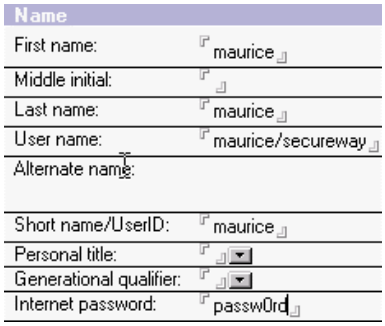
Note: This section provides instructions for manually creating Users and Groups in Domino. This is, obviously, not necessary if you have already used the **`D:\LabFiles\Create_users-groups.bat`** command file to create these Users & Groups. You may wish to confirm that these have been created successfully.

WebSphere Application Server Advanced Edition can use users and groups defined in the Domino Directory (aka NAB – Name and Address Book) for authentication and role definitions. The users **do not** have to be "Registered Users." They may be created as "Directory Users" or imported from an external source without necessarily being registered in Domino. The Directory Users can not access the Domino Server using a Lotus Notes Client, as they are not certified and do not have an ID file.

Creating Domino Directory Users

To create a Domino Directory User start the Lotus Domino Administrator and connect to your Domino Server. Navigate to "People & Groups" -> <Domain> 's Address Book -> People and click

Fill in the user information.



Important: use syntax "<user name>/<domain name>" for the "User Name" field. This corresponds to the Distinguished Name: cn=maurice,o=secureway in the sample.

"Save & Close" the User Document.

> The LDAP interface provided by the Domino Server does not support LDAP commands **ldapmodify** or **ldapadd**. So the creation or modification of the users through the LDAP interface is not possible.

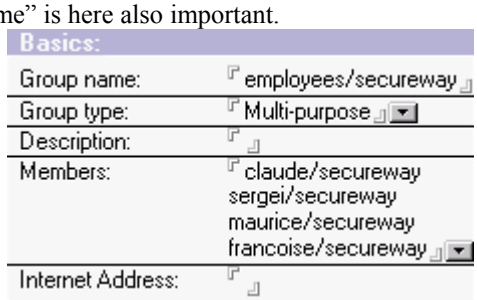
Create all Domino users according to "Banker 2001 Users and Roles" using the Lotus Administration Client. Set all the passwords to *passw0rd*.

Now create a user in Domino named *wasadmin* with the password *passw0rd*. This will be the user that is the WebSphere administrator.

Creating Domino Groups

To create a Domino Group navigate to "People & Groups" -> <Domain> 's Address Book -> Groups and click

Fill in the Group information. You can immediately assign the users to the group according to "Banker 2001 Users and Roles". The syntax of the "Group Name" is here also important.



Basics:	
Group name:	employees/secureway
Group type:	Multi-purpose
Description:	
Members:	claude/secureway sergei/secureway maurice/secureway francoise/secureway
Internet Address:	

Some useful LDAP commands

Important: Use the IBM LDAP client and its commands to search the Domino Directory. By default, the client is located under C:\Program Files\IBM\LDAP\bin.

To list all the users in the LDAP directory:

```
C:\Program Files\ibm\LDAP\bin>ldapsearch -h <LDAP host name> -p <LDAP port> -b
"o=<Domino domain>" objectclass=inetorgperson
```

Use an administrative user account to get more detailed information (more attributes are visible):

```
C:\Program Files\ibm\LDAP\bin>ldapsearch -h <LDAP host name> -p <LDAP port> -D
"<Admin user>/<Domino domain>" -w passw0rd -b "o=<Domino domain>"
objectclass=inetorgperson
```

Get information about available Organization (aka O=…) entries. Policy Director creates one (O=Policy Director) to store information about its domain-wide users.

```
C:\Program Files\ibm\LDAP\bin>ldapsearch -h <LDAP host name> -p <LDAP port> -D
"<Admin user>/<Domino domain> " -w <password> -b "" objectclass=organization
```

Take a closer look at a user entry (e.g. for user igor):

```
C:\Program Files\ibm\LDAP\bin>ldapsearch -h <LDAP host name> -p <LDAP port> -D
"<Admin user>/<Domino domain> " -w <password> -b "o=<Domino domain>" cn=igor
```

36.5 Configuring WebSphere Security with Your User Registry

Considerations

This lab contains instructions for all three user registries. Where they differ each will be described in turn.

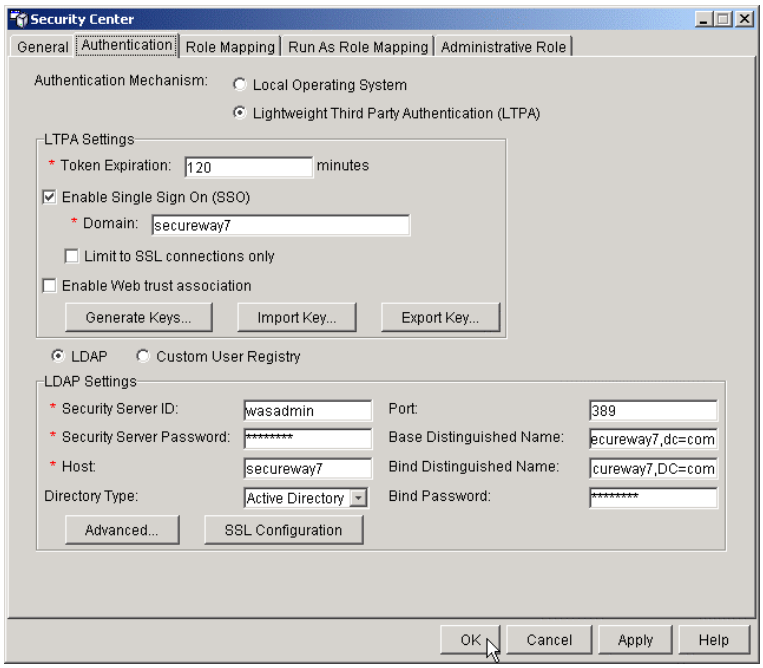
To use each user registry for authentication with WebSphere Application Server, there are some specific steps you must take. By default, none of the directories allows anonymous LDAP queries. To make LDAP queries or browse the directory, an LDAP client must bind to the LDAP server using the distinguished name (DN) of an account that has administrative rights on the directory.

Setting up the Registry in WebSphere

Make sure you've created a user named *wasadmin* with the password *passw0rd* in your user registry as described previously. This user is the WebSphere administrator account, the user ID you'll use to log into WebSphere after you've enabled WebSphere security. See the appropriate earlier section on this chapter for instructions on how to do this.

There are two types of accounts you need for this process. One is the administrative account with which WebSphere binds to the directory using an LDAP client. This is the *Bind Distinguished Name*. The other is an account already existing in the user registry that will become the WebSphere security administrator. This is the *Security Server ID*.

Make sure the WebSphere Admin Server is running and start the WebSphere Admin Console. Choose Console->Security Center... and click on the Authentication tab.



Click Lightweight Third Party Authentication to see the rest of the dialog. For labs coming up, click Enable SSO and enter your domain name (your hostname) as the Domain. Note that the Active Directory LDAP port is always 389 in these labs. The IBM Directory Server and Domino Server LDAP ports have been set to different values. Enter the following information in the LDAP settings fields:

- **Security Server ID**: *wasadmin*
  This is the account ID of the user you created to be the WebSphere administrator.

- **Security Server Password**: *passw0rd*
  This is the password of the account chosen above.

- **Directory Type**: (choose yours) *SecureWay* / *Active Directory* / *Domino 5.0*

If you're using AD or Domino click on the Advanced... button. You can see that several of the LDAP Advanced Properties have changed to conform to the non-default directory. Temporarily set the Directory Type back to SecureWay to see the difference. Don't forget to set it back to Active Directory or Domino again.

If you are using IBM LDAP, you need to make the following change **IF** you want WebSphere to recognize groups created by Policy Director. (The create_users-groups.bat file uses PD, so you will need to complete this procedure if you did not create the users 'by hand' with the DMT).

This change is required because Policy Director creates groups of object class *accessGroup* and the default WebSphere search algorithm does not look for those type entries.

1) For 'Directory Type' choose *Custom* and click on *Advanced*
2) Change the 'Group Filter' to

   (&(cn=%v)(|(objectclass=groupOfNames)(objectclass=groupOfUniqueNames)**(objectclass=accessGroup)**))

   I.e., add *(objectclass=accessGroup)* immediately after '...UniqueNames)'

3) Change 'Group Member ID Map' to

   groupOfNames:member;groupOfUniqueNames:uniqueMember;**accessGroup:member**

   I.e., add *accessGroup:member* to the end.

4) Click OK

- **Host**: *<your registry hostname>*
  This is the DNS name of the machine running your registry, e.g. *secureway7*.

- **Base Distinguished Name**:
  For IBM Directory Server: *o=ibm,c=gb*
  For Active Directory: *DC=<your domain name>,DC=com*
  For Domino: (leave blank)
  The domain components of an account in the Administrators group in your registry, e.g. `dc=secureway7,dc=com` for Active Directory.

- **Bind Distinguished Name**:
  For IBM Directory Server: *cn=root*
  For Active Directory: *CN=Administrator,CN=Users,DC=<your hostname>,DC=com*
  For Domino: *cn=wasadmin,o=<your domain name>*
  The full DN of the account chosen just above from the Administrators group.

- **Bind Password**: *passw0rd*
  The password of the account in the Administrators group used just above.

Now click on the Security Center General tab to display the first page of the wizard. Enable global security by checking the Enable Security checkbox. If you are asked to enter the LTPA password, enter *passw0rd*.

Click **OK** button to save the changes. Then Stop and restart the administrative server to make the changes take effect. Later, when you install an enterprise application into WebSphere, you'll be able to select users and groups from Active Directory to map to the enterprise application's configured security roles.

36.6 Mapping Users and Groups to Roles with the WebSphere Admin Console

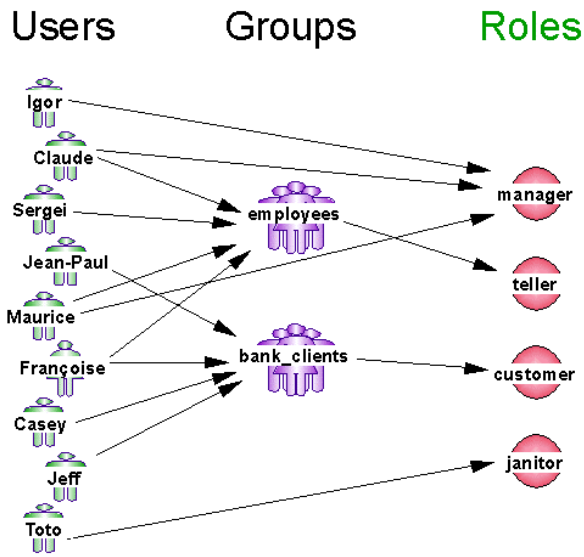
Considerations

In J2EE, a security role is the central object in the configuration of application security for access control. On the application side when the application is assembled, permissions are granted to roles to execute methods on resources such as servlets and EJBs. On the user side at deployment time, users and groups are mapped to those roles. The net result is that users and groups now have the permissions.

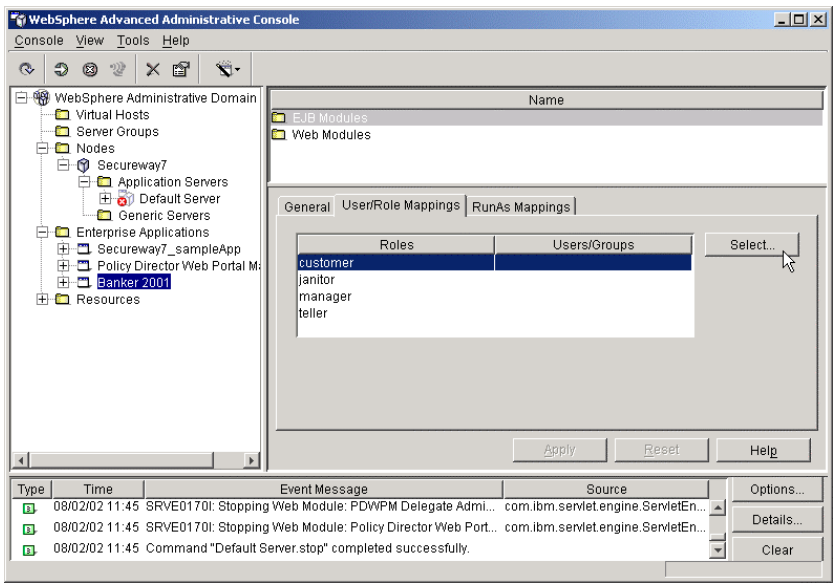
When you install an application into WebSphere you can map users and groups to roles that are defined by the application assembler. You can also do this after the application has been installed. The Banker 2001 application has been preinstalled into WebSphere for you. (See section 47 Appendix B -- WebSphere Installation for reference.) You've defined users above that you will assign to roles already defined in Banker 2001.

Configuring the Banker 2001 Application

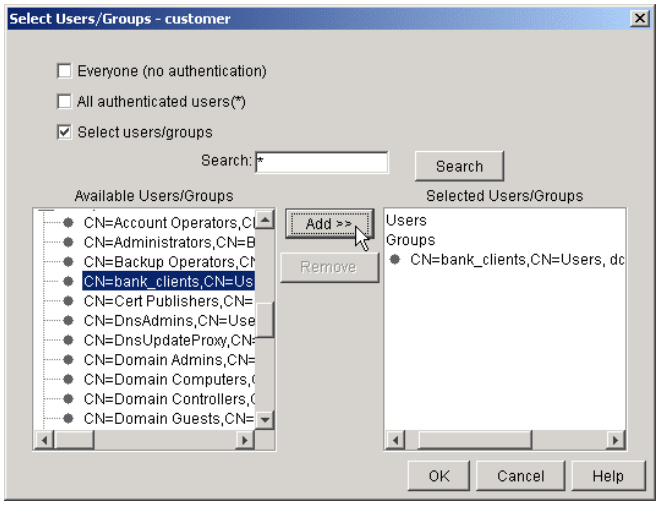
Start the WebSphere Admin Server and Admin Console if they're not already running. Expand WebSphere Administrative Domain, Nodes, your hostname, and Application Servers, and stop the Default Server by selecting it and clicking the Stop icon in the menu bar. (Stopping and restarting the Default Server may not be necessary.) Expand Enterprise Applications and select the Banker 2001 application. On the right side, click on the User/Role Mappings tab. This is where you will map users and groups to roles according to the associations in the following picture:



The WebSphere console allows you to select each role and assign users and groups.



Highlight the *customer* role and click Select.... It turns out that all members of the *bank_clients* group have the permissions granted to the customer role.



Click the Select users/groups checkbox. The Search field will be enabled. Enter * and click Search. You should see a list of users and groups in user registry. (The picture above shows Active Directory entries.) Scroll down, highlight the bank_clients group, and click ADD >>. (You can hold down the Shift or Ctrl keys for multiple selections.) Bank_clients will be selected on the right. Click OK. Back in the Admin Console you should see *Selected users/groups* next to the *customer* role.

Repeat the above steps mapping *janitor*, *manager*, and *teller* roles to both groups and individual users per the picture. When you've finished all four roles, click Apply. Don't forget!

In WebSphere, after you modify the security of an application you need to restart the application for the changes to take effect. So select the Banker 2001 application, click the red "x" in the menu bar to stop it, and when it is stopped, click the green arrow to restart it.

36.7 Testing Banker 2001 Security

Starting the Application

Make sure WebSphere is running, Global Security is enabled, and that the Banker 2001 application is running. Open a browser and go to *http://localhost:9080/Banker2001*. (Case sensitive!)

> ? Why use port 9080? Where is the request received?

The Banker 2001 application welcome screen should display. At the bottom, select the Users and Roles link. You should see a picture in a second browser window showing the complete configuration of users, groups, roles, and methods. You can use this as a guide for testing which users can perform which tasks.

Other Application Functionality

Banker 2001 has some useful functions. Besides the banking functions of

- creating accounts,
- transferring funds, and
- viewing account balances, you can also

- view the headers the browser's request passed to the application,
- fill out a sample form to view the request parameters passed to the application,
- force a reauthentication (doesn't work with WebSEAL), and
- view the users, roles, and methods for which security has been configured.

Testing Security

In general, security is applied when you actually perform the task. For example, if you are user Igor and try to View Balances, you will be permitted to see the screen where you can enter an account number. But when you enter a valid number and click Get Balance, the application will tell you you are not authorized.

Review the Users and Roles screen and try various combinations of users and methods. At any point you can View Request Headers to see the basic auth header, decoded from base64.

Logged in as different users, try to create some accounts, try to transfer funds, and try to view balances to prove that WebSphere is providing the proper security.

> When testing Banker 2001, if you receive "authorization failed" messages from the browser, return to the Admin Console and double-click on the last "authorization failed" message in the messages pane. You will see more detail about your error message. This might help to diagnose the problem.

Importing Banker 2001 Users and Groups into Policy Director

To prepare for labs to come, you need to import users associated with Banker 2001 from your standard user registry into PD. First make sure PDMgrd is running.

Import_users-groups.bat is in the *D:\LabFiles* directory. To run this you need to enter your directory's Base DN. For IBM LDAP, enter

```
o=ibm,c=gb
```

For Active Directory enter

```
cn=users,dc=<your domain name>,dc=com
```

For example, `cn=users,dc=secureway7,dc=com`

And for Domino enter

```
<your domain name>
```

For example, `secureway` (note no "o=")

From a DOS prompt, run **`D:\LabFiles\Import_users-groups.bat <GSO>`**

This will copy all the Banker 2001 users and groups to the PD domain. Wow! To verify that your import came off well, you can check using the Web Portal Manager by clicking on **User->Search** and searching for 100 users. You should see the Banker 2001 users in the list.

37. Multiple WebSEAL Servers on the Same Machine

This lab is the first of the WebSEAL enhancements. In this lab you'll configure WebSEAL to server multiple hosts on the same machine. Because WebSEAL doesn't offer true virtual hosting, it's necessary to configure multiple WebSEAL server instances to achieve this. In this lab, you'll do that in a couple of different ways. First, you'll configure a second WebSEAL server (named webseal1) with the same IP address as the first, but listening on different ports. Next, you'll configure a third WebSEAL server (named webseal2) with a different IP address.

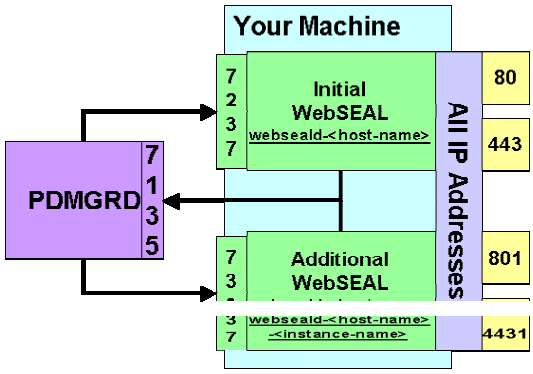
37.1 Configuring a Second WebSEAL Server to Listen on Different Ports Using the Same IP Address as the Initial WebSEAL Server

? How many WebSEAL servers are configured in your environment? Hint: use a pdadmin server command to find that out.

The environment currently contains one WebSEAL server and one Authorization Server:

```
webseald-secureway5
ivacld-secureway5.secureway5.com
```

Configure a new WebSEAL Server (**webseal1**) listening on the ports **801** (HTTP) and **4431** (HTTPS) and communicating on port **7337** with the Management Server, as shown in the picture:



? What command do you issue in order to configure the new WebSEAL server? Hint: Change to *PDWeb\bin* and run **ivweb_setup** to see which options you have.

_____

```
C:\Program Files\Tivoli\PDWeb\bin>ivweb_setup /?

Usage:  ivweb_setup   options

Options:
    -?                  Print this usage
    -q                  Silent mode.  No message boxes only stderr
    -u yes|no           Allow unsecure HTTP access
    -r http_port        Port for unsecure HTTP access
    -U yes|no           Allow  HTTPS access
    -R https_port       Port for HTTPS access
    -m pdadmin_pwd      sec_master password
    -i instance instance name
    -M mts_listen_port  mts listen port
    -n interface        interface
```

Ultimate hint:

```
C:\Program Files\Tivoli\PDWeb\bin>ivweb_setup -u yes -r 801 -U yes -R 4431 -m
passw0rd -i webseal1 -M 7337
```

It may take a couple of minutes -- be patient or get a cup of coffee (or both).

Use *pdadmin server show webseald-<your-host>-<instance-name>* to see, if the new WebSEAL instance has been registered in the PD Domain and see its configuration. The output will look like this:

```
webseald-secureway5-webseal1
    Description: webseald/secureway5-webseal1
    Hostname: secureway5.secureway5.com
    Principal: webseald/secureway5-webseal1
    Port: 7337
    Listening for authorization database update notifications: yes
    AZN Administration Services:
        webseal-admin-svc
        azn_admin_svc_trace
```

Make sure that the new WebSEAL is listening on the specified ports. Hint: point the browser to the ports you expect the new WebSEAL server to respond on.

? Can you figure out the WebSEAL HTTP and HTTP/S listening ports by using a pdadmin command? How can you check that? Hint: configuration files might be very helpful.

Create a junction to IBM HTTP Server running in front of your WebSphere Application Server.

```
pdadmin> server task webseald-secureway5-webseal1 create -t tcp -h localhost -
p 8888 /ihs
```

? What parameters have you used? Fill in the parameters:

? WebSEAL server name:

_____

? Name of the junctioned server:

_____

? Port of the junctioned server:

_____

? Junction name:

_____

Hint: Take a look at httpd.conf located in *<IBM HTTP Server-home>\conf* and search for "port" to find out the IBM HTTP Server listening port.

Point your browser to the junction you have created to check that it works. Hopefully it does. Otherwise try to restart the WebSEAL instance you have created.

? How can you stop the instance? _____

? What is the name of the Windows Service representing the new instance?

_____

37.2 Configuring a Third WebSEAL Server to Listen on Ports 80 and 443 Using a Different IP Address than the Initial WebSEAL Server

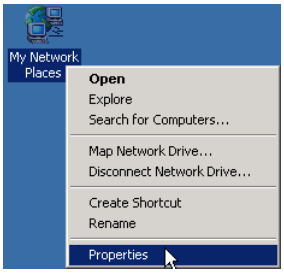
For testing purposes you may not always have a physical network interface configured on your machine. Windows also supports virtual IP addresses, which you will use in the lab to configure the third WebSEAL instance, binding to it and listening on default ports 80 for HTTP and 443 for HTTP/S.

This section will only work for computers using static IP addresses - not DHCP.

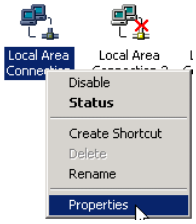
> **It should also be possible to install the Loopback adapter and configure it to use IP.**

Create a new virtual IP-address

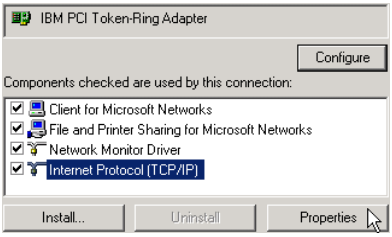
On the Windows Desktop right-mouse click on “My Network Places.”



Select Properties.

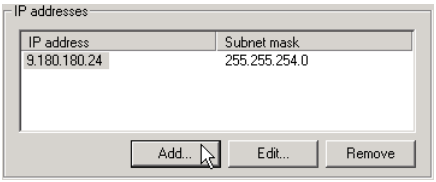


Select the icon representing the Token-Ring Adapter and right-mouse click on it.

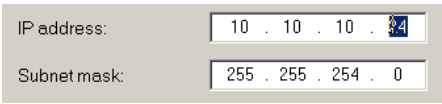


Select TCP/IP Protocol and click on Properties.

Select the “Advanced” button near to the bottom of the window.



One IP-Address is already configured (e.g. 9.180.180.24). Click on Add to create a virtual IP-address.



Choose an IP address of '10.10.10.***x***' where '***x***'= the 4th number of the existing IP address. This will ensure that all machines on the subnet have a unique IP address.

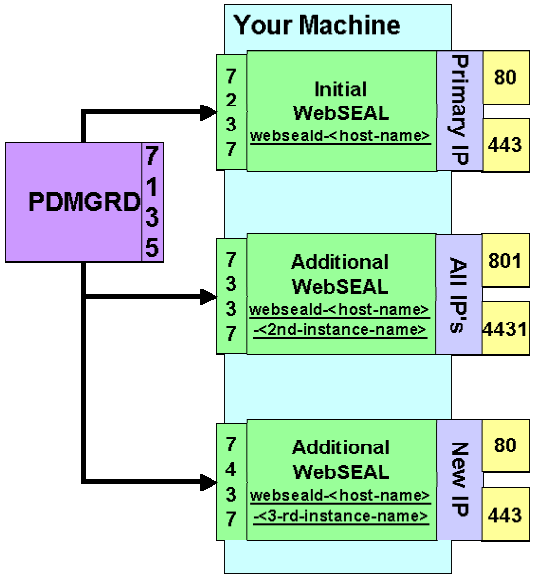
The example shown here uses '24'.

Fill in the new IP-address using subnet mask of '255.255.254.0' click on "Add."

Close all windows by clicking OK buttons. The new virtual IP address is configured. You can now ping it (from your machine only).

Configure the Third WebSEAL Instance

Configure the new WebSEAL instance to bind to the new IP-address (**10.10.10.** ***x***), listen on ports **80** and **443**, and communicate through port **7437** with PDMGRD as shown on the picture.



Run

```
C:\Program Files\Tivoli\PDWeb\bin>ivweb_setup -u yes -r 80 -U yes -R 443 -m
passw0rd -i webseal2 –M 7437 -n 10.10.10.x
```

After this command completes, point your browser to *https://10.10.10.* ***x*** or *http://10.10.10.* ***x*** to see whether the new WebSEAL instance responds on the ports 80 and 443 as configured.

> ? Are you sure which WebSEAL instance is responding? Is that the one you expect? Hint: of course, there are many possible ways to figure it out. Here's an interesting one: try to edit index.html located in …*\PDWeb\www-webseal2\docs* with Notepad and substitute *iv30.gif* with *ivlogo.gif.* Try to access webseal2 once again.

Take a look at the configuration file of webseal2 in …*\PDWeb\etc*

> ? Which parameter lets WebSEAL listen only on the specified port? Hint: search for *network.*

? Can a WebSEAL instance be configured to listen on 2 of 3 available IP-addresses (if you would create one more virtual IP-address)?

37.3 Changing the Configuration of the Primary WebSEAL Instance

? Why do we need this? Hint: The initial webseald instance is currently listening on all local machine IP addresses, and ports 80 and 443. You've just added the new webseald2 server instance that is listening on IP address 10.10.10.10 and the same ports.

Stop "Policy Director WebSEAL" Service.

Open the configuration file of the primary WebSEAL instance *(...\PDWeb\etc\webseald.conf)* in an Editor. You need to restrict the initial webseald instance to listen not on all IP addresses, but only your host's default IP address. This will avoid a conflict with webseald2.

Go to the *[server]* stanza and **add** a new *network-interface* option inside the stanza specifying the primary IP address (e.g. 9.180.180.24). Webseald2 is listening on the single virtual IP address you have added.

```
##############################
# WEBSEAL GENERAL
##############################
[server]
network-interface = 9.180.180.24
```

Hint: use *ipconfig /all* command to find out which IP addresses are configured on your machine.

Start all the configured WebSEAL instances and try to connect to them on configured ports and interfaces.

The Name and IP address resolution of MS Internet Explorer does not always work as expected. Often it is worth trying the same operation with Netscape.

37.4 Final Question

? Can multiple WebSEAL instances on the same machine belong to different Policy Director Domains?

Hint: are they all not using the same RTE?

38. HTTP 1.1 Support

Among the enhancements to WebSEAL with Policy Director 3.9 is WebSEAL's ability to support HTTP 1.1 to the back-end Web server. Previously WebSEAL only handled HTTP 1.0 regardless of the Web server's capabilities. In

order to see the difference you need to be able to monitor the contents of the request as it is forwarded by WebSEAL to the Web server, and the subsequent response from the Web server back to WebSEAL.

To that purpose you will use a small Java application called **TCP Tunnel**. TCP Tunnel is packaged with Apache SOAP to monitor SOAP-based network traffic, but it can also monitor plain HTTP. TCP Tunnel allows you to view both the headers and the body content of the HTTP request and response. It listens to HTTP messages arriving on a particular port, displays them in a window, and then forwards the messages to their ultimate destination. The same happens with the returned result.

Running TCP Tunnel

TCP Tunnel is part of the SOAP classes that come with WebSphere.

? What does SOAP stand for and with what technology is it used?

To setup TCP Tunnel, open a new command prompt window and navigate to the *D:\LabFiles\TCPTunnel* directory. Copy the contents to a new directory called *C:\TCPTunnel*. Run *setup.bat* to set the classpath correctly. Then to run TCP Tunnel, enter the following command:

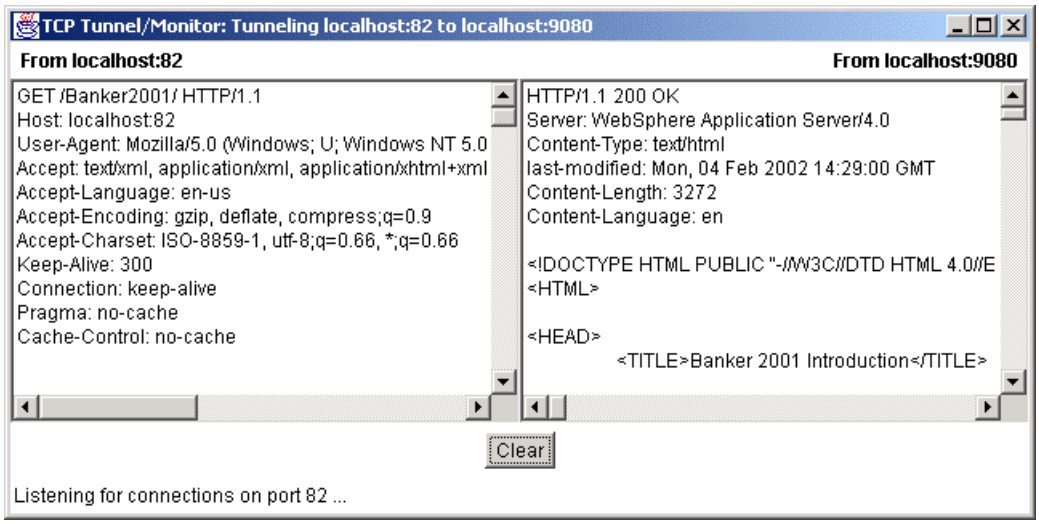
```
C:\TCPTunnel\tunnel 9080
```

This is the equivalent of **java org.apache.soap.util.net.TcpTunnelGui 82 localhost 9080** inside the *tunnel.bat* file. The first parameter (82) is the port the tool listens on for new HTTP messages; the second and third parameters indicate the host and port that the request will be forwarded to. You can enter (and change) all parameters on the Java command line if you don't use the *tunnel.bat* file with its presets. You can reuse tests from previous exercises; the only change is the hostname or port number. In the above case you are going directly to WebSphere's embedded Web server from the browser.

You should see the TCP Tunnel application window open and ready to display requests and responses as they pass through. Make sure the IBM HTTP Server and WebSphere are running and in a browser enter

http://localhost:82/Banker2001/

Your TCP Tunnel window should look something like the following:



Using TCP Tunnel to monitor WebSEAL

Now you know TCP Tunnel is setup properly. But to use it to test WebSEAL-Web server communication, you need to set up a WebSEAL junction that points to localhost:82, the port on which you will have TCP Tunnel listening. In pdadmin, enter the following command to create a junction between WebSEAL and TCP Tunnel:

```
pdadmin> server task webseald-<your host name> create -t tcp -h <your host
name> -p 82 /TCPTunnel
Created junction at /TCPTunnel
pdadmin>
```

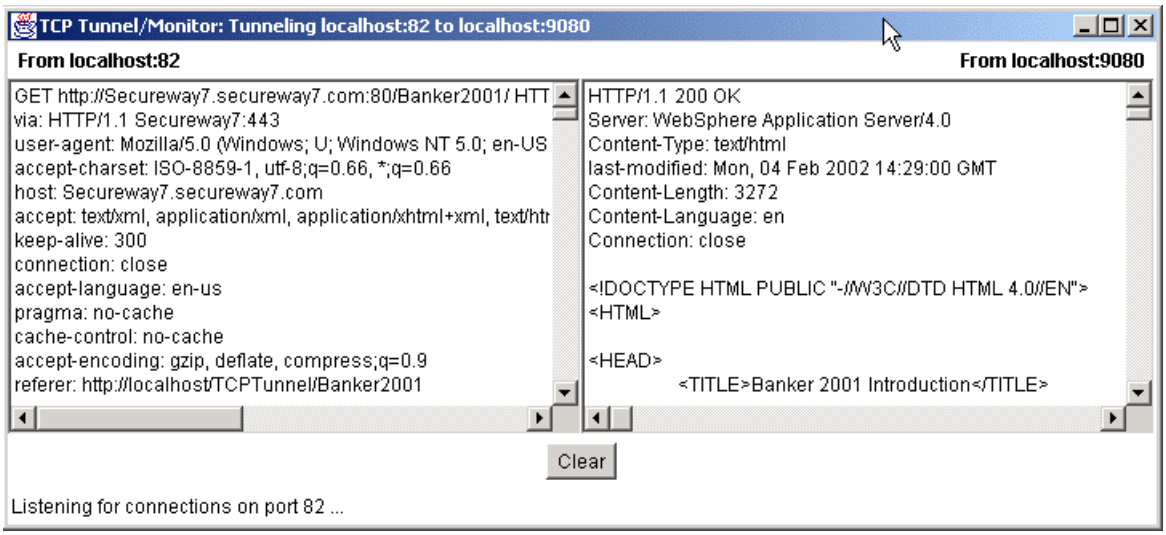
where webseald-**<your host name>** could be **webseald-secureway7** for example.

You have TCP Tunnel forwarding requests to port 9080 already, so the overall flow is

Browser → WebSEAL → TCP Tunnel → WebSphere Embedded Web Server

Now in the browser enter *http://localhost/TCPTunnel/Banker2001/*. You should be presented with WebSEAL's **Forbidden** page suggesting you re-access the page using HTTPS. Do that and you should be redirected by WebSEAL to

https://secureway7.secureway7.com:443/TCPTunnel/Banker2001/ or something similar where *secureway7* represents your host and domain names. Now take a look at what is displayed in TCP Tunnel.



Some of the headers shown that are new to, updated for, or required by HTTP 1.1 are

- **via:** HTTP/1.1 Secureway7:443
  - 1.1 as the HTTP protocol version number
- **accept-*:**
  - formalized in HTTP 1.1
- **host:** Secureway7.secureway7.com
  - mandatory in HTTP 1.1, servers must check for its presence
- **connection:** close
  - different from **Keep-Alive**
- **cache-control:** no-cache
  - forces end-to-end reload, addition to HTTP 1.0 **pragma:** no-cache

? What are some of the other new features HTTP 1.1?

Try the direct Java command line invocation of TCP Tunnel with different hosts and port numbers:

java org.apache.soap.util.net.TcpTunnelGui 82 <target host> <target port>

and check out the request and response headers when you access the host using

http://localhost/TCPTunnel/<URL>.

39. Forced Re-authentication, Constant Session ID and Session Termination

39.1 Enable Forms-Based Login

Since forced re-authentication won't work with Basic Auth, you need to change the authentication type to forms-based. It is possible to set up forms-based login for HTTP requests and leave BA for those over HTTP/S.

Locate the configuration file of WebSEAL server at …*\PDWeb\etc\webseald.conf* and open it in edit mode. Find the *[ba]* stanza.

```
[ba]
#----------------------
# BASIC AUTHENTICATION
#----------------------

# Enable authentication using the Basic Authentication mechanism
# One of <http, https, both, none>
ba-auth = https
```

Change it as shown to enable BA for HTTP/S connections only. Then find the *[forms]* stanza.

```
[forms]
#----------------------
# FORMS
#----------------------

# Enable authentication using forms
# One of <http, https, both, none>
forms-auth = http
```

Enable it for HTTP connections.

Restart WebSEAL and call *http://<hostname>:<HTTP port>* from the browser. You should be presented with the WebSEAL login form.

39.2 Configure Forced Re-authentication

Assume that you want to enforce user re-authentication as the user accesses the *chpwd.exe* script to change their GSO

user IDs and passwords. The script is located in WebSEAL's *cgi-bin* directory.

> ? What is the management entity that forces the user to re-authenticate while accessing an object:
> - ❑ ACL
> - ❑ POP
> - ❑ Configuration file:_____

First create a POP.

```
pdadmin> pop create reauth
```

Call it *reauth*, for example.

```
pdadmin> pop modify reauth set attribute reauth yes
```

Set the POP attribute to enable forced re-authentication.

To enable the POP, attach it to the selected object (e.g. for WebSEAL on a server *secureway5*): */WebSEAL/secureway5/cgi-bin/update_pwd.exe*

```
pdadmin> pop attach /WebSEAL/secureway5/cgi-bin/update_pwd.exe reauth
```

You can attach the ACL to an object using *pdadmin* or WPM. The *pdadmin* command is shown.

Point your browser to the WebSEAL's entry page using HTTP (since forms-based login is configured for HTTP only) and login as the user of your choice, for example, *igor*.

Note: you might need to click the refresh button on your browser to display the page correctly.

Browse to any links on your WebSEAL server you are aware of, such as *HTTP://<your WebSEAL>:<port>/pkmshelp*

Point the browser to the URI on which you have applied the POP: *http://secureway5/cgi-bin/update_pwd.exe*

You should be presented with the login form again.

> ? Can you continue browsing other pages you are authorized for even if you do **not** re-authenticate?

> You are not allowed to use a user ID other than the one you have used for initial login (e.g. *claude*). But go ahead and try it to see what happens.

39.3 Constant Session ID

WebSEAL maintains a constant session ID throughout the lifetime of the user credential. This session ID is contained in the EPAC (PD credential), which can be transferred to a junctioned server as the value of the CGI-variable *iv_creds*. *iv_creds* can be parsed with aznAPI. But an easier way to retrieve the session ID on the back-end is to let WebSEAL insert it as the value of the CGI-variable *pd_session_id*.

Configure WebSEAL to Transmit the Session ID to the Junctioned Server

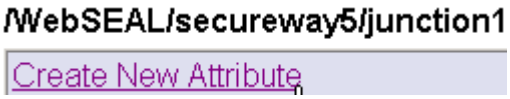
To enable the transmission of the WebSEAL session ID to the junctioned server, add the HTTP-Tag-Value attribute to the object representing a junction. You can do it via pdadmin or PD WPM.

Connect to PD WPM and authenticate as *sec_master*.

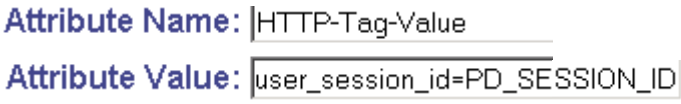
Click on *Object Space -> Browse* and navigate to the object representing a junction to WebSphere Application Server (e.g. junction1).

Click on the junction name to see the properties of the junction.

Click on *Extended Attributes.*



Click on *Create New Attribute.*



And fill in the fields as shown.

Finally, click on *Create*. From now on WebSEAL will be set up to transmit the session ID on *junction1*, as long as you have not turned off the parameter *user-session-id* in the *[session]* stanza of WebSEAL's configuration file.

Parsing the HTTP Request Header using Banker 2001

You can use a servlet in the Banker 2001 application that you should have deployed previously, to show the content of the HTTP Request Headers. Go through the junction1 that points to WAS to the initial page of Banker 2001: *http://<hostname>:<port>/junction1/Banker2001.*

Click on "View Request Headers." Depending on the application security configuration you may be prompted for authentication.

The direct URI of the servlet is

http://<hostname>:<port>/junction1/Banker2001/servlet/com.ibm.jeff.HeaderDumperServlet

Locate the variable containing the PD session ID.

? What is the name of the variable? _____

It consists of two parts. The first (before the equals sign) represents the base64-encoded name of the WebSEAL server. The second part (after the equals sign) is the PD session ID. You can see the values just underneath.

The long, unintelligible PD session ID string can be used to terminate a user's session. You'll do that shortly.

39.4 Configure a Constant Session ID on WebSEAL

Reduce Session-Inactivity Timeout

For testing purposes you will reduce the session inactivity timeout for WebSEAL sessions from 600 (default) to 30 seconds.

Open *webseald.conf* in editing mode and locate the *[session]* stanza.

```
# inactive-timeout = 600
inactive-timeout = 30
```

Change *inactive-timeout* value to 30. Then restart WebSEAL (stop it and give a short grace period before starting again).

Point your browser to the HeaderDumperServlet going through WebSEAL, at
http://<hostname>:<port>/junction1/Banker2001/servlet/com.ibm.jeff.HeaderDumperServlet

? What is the displayed session ID? It is usually enough to note the first six characters of the ID.

_____

? Do you expect the session ID will change, if you reconnect to the URI after 30s? Why?

_____

Try it again in just over 30 seconds and compare the session ID displayed with the one noted previously.

Turn on REAUTH-FOR-INACTIVE

By default, WebSEAL 3.9 (also all previous releases) deletes the session from its cache, if the session becomes inactive. To configure WebSEAL to mark inactive sessions rather than deleting them from the credential cache, find the *[reauthentication]* stanza.

```
# reauth-for-inactive = no
reauth-for-inactive = yes
```

Change the *reauth-for-inactive* parameter to *yes* in the *[reauthentication]* stanza.

Restart WebSEAL in order to make the changes effective and call the servlet again at
http://<hostname>:<port>/junction1/Banker2001/servlet/com.ibm.jeff.HeaderDumperServlet

Note the session ID displayed (first 6 characters) _____

? Do you expect the session ID will change this time, if you reconnect to the URI after 30s? Why?

_____

There are other parameters that manage the behaviour of the credential lifetime after successful re-authentication. They are also located in the *[reauthentication]* stanza.

? Can the same session ID be preserved over the lifetime of the credential?

_____

> You may want to restore the original value of *inactivity timeout* at the end of this lab. Otherwise you will be often forced to re-authenticate.

39.5 Terminating a User Session

Terminate a Specific User Session

Have you ever wanted to secretly kick yourself out of your own session? Given the known session ID (from the previous lab) you can terminate that session.

Open *pdadmin* CLI and login as *sec_master*.

```
pdadmin> server task webseald-secureway5 terminate session
_bjxxPAQAAAAwAAAAEJ6XA3FaMjRmODJ6Z0lrUlNoczA1VGZDU1kyMnlkdC1wZVlmUWczOW5ab29wL
WdBQUFBQQ==
```

Issue the command to terminate the session, using the long session ID (after the equals sign) from the previous section. Replace the long session identifier shown here with your own.

Refresh the browser. If using forms-based login you will be prompted for re-authentication again. If you're using BA login you will just see that the session ID has been changed.

Terminate All Sessions of a Particular User on a WebSEAL Server

You can terminate all sessions of a particular user. Connect to WebSEAL and authenticate as a user of your choice, for example *igor*.

Open *pdadmin* CLI and login as *sec_master*.

```
pdadmin> server task webseald-secureway5 terminate all_sessions igor
```

Issue the command to terminate the session.

Refresh your browser to observe the same behaviour as described in the previous sample.

40. Switch User

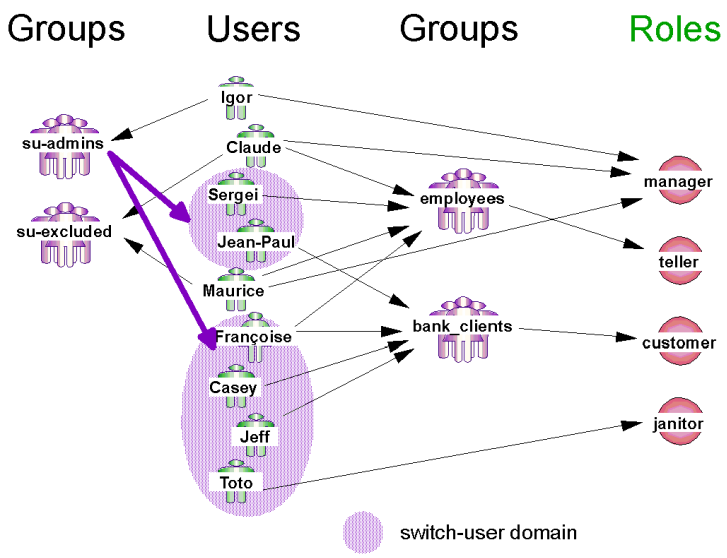
40.1 Objectives

In this lab you will configure, enable and test the new Switch User functionality of WebSEAL 3.9.

40.2 Scenario

Let us declare that the user *igor* is assigned to the role *Manager* in *Banker2001,* and to be the supervisor in charge. The big boss. The head honcho. El capitan. Le PDG. He is allowed to act on behalf of *Employees* and *Customers*. However, he must not be allowed to act on behalf of other *Managers* (*Claude*, *Maurice*).

In terms of "switch-user" functionality, this scenario results in the assignment of users and groups as shown on the picture:



40.3 Assigning Users to the Groups

To start configuration of this scenario, add *igor* to the *su-admins* group but exclude *claude* and *maurice* from being switched to.

```
pdadmin> group modify su-admins add igor
pdadmin> group modify su-excluded add claude
pdadmin> group modify su-excluded add maurice
```

Members of *su-excluded* cannot be the target of a switch user.

> ? Do you need to include the user *igor* to the group *su-exluded* to prevent a switch to that user?

40.4 Enabling the Switch User Functionality on WebSEAL

Edit *webseald.conf* and locate the *[authentication-mechanisms]* stanza.

```
[authentication-mechanisms]
su-password = C:\Program Files\Tivoli\PDWeb\bin\suauthn.dll
```

Add the *su-password* entry shown and restart WebSEAL.

40.5 Using the Switch User Function

If you have completed lab 39 Forced Re-authentication, Constant Session ID and Session Termination, you already have WebSEAL configured for forms-based login for HTTP connections, and BasicAuth login for HTTPS.

Make sure WebSphere Application Server is running and check whether you have a junction to WAS.

```
pdadmin> server task webseald-<hostname> create -t tcp -h <hostname> -p 9080 -
c all /junction1
```

If you don't already have one, you can use this command to create a junction (*junction1*) to WAS that will also supply the user ID, groups and PD credential. If you already have a junction, modify it (use –f option) to supply the additional information accordingly.

It would be useful to have the *Banker2001* application up and running. If you don't, use the Snoop servlet (*http://<was-server>:9080/servlet/snoop*) to look into the HTTP request headers.

Point the browser to the WebSEAL that is listening for HTTP. You will be presented with a login form.

Authenticate as user *igor*

Point your browser to the *HeaderDumperServlet*, i.e.

http://<hostname>:<port>/junction1/Banker2001/servlet/com.ibm.jeff.HeaderDumperServlet

or click on View Request Headers on the Banker 2001 welcome page.

? What user is authenticated as iv-user? _____

? What is the session ID (first 6 chars)? _____

Call the switch-user URL at *http://<hostname>:<port>/switchuser.html*

- Username sergei
- Destination URL /
- Authentication method su-forms

Fill out the fields where

- ***Username*** is the ID of the user to which you want to switch
- ***Destination URL*** is the URL you want to be redirected to and is relative to WebSEAL, i.e. "/" will bring you to the main WebSEAL page
- ***Authentication method*** corresponds to one of the configured *Authentication Mechanisms*. since you have configured only the *su-password* Authentication Mechanism, the password-based Authentication Methods are available: *su-ba* and *su-forms*

? In what directory can you find the file *switchuser.html*?

_____

Point your browser to the *HeaderDumperServlet* at
http://<hostname>:<port>/junction1/Banker2001/servlet/com.ibm.jeff.HeaderDumperServlet

You may need to refresh the browser window because the page may have been cached

? What user is authenticated as (iv-user)? _____

? What is the session ID (first 6 chars)? _____

Now you have switched to another user (i.e. sergei) and have access only to the resources permitted for that user. You can set up an appropriate ACL in order to check it.

Proceed to pkmslogout at *http://<hostname>:<port>/pkmslogout*

Point your browser to the *HeaderDumperServlet.*

? What user is authenticated as (iv-user)? _____

? What is the session ID (first 6 chars)? _____

Since you have rolled-back to *igor* your permissions are restored and you can access resources available for *igor*.

Call the switch-user URL again and try to switch to user *claude*.

? You are still *igor*. What prohibits you, as a member of the group *su-admins,* from switching to *claude*?

_____

41. Caching data on POST method

There used to be a problem with WebSEAL that if

1) you were unauthenticated and filling in a form,
2) you tried to submit it with a POST to a protected resource and were sent to a login page where you authenticated,
3) and you then were redirected back to the form page,

the form data was lost. This could also occur if you were filling out a very long form and your session expired. In WebSEAL 3.9 the form data is now cached so that it is still present when the form is resubmitted. You'll test this in this lab.

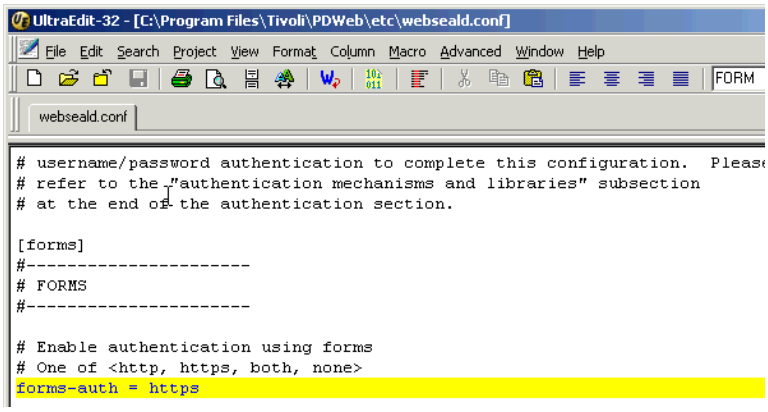
For these lab exercises you will need to set up a junction to your IBM HTTP Server (IHS) on which WebSphere runs. Open a DOS prompt.

```
C:\>pdadmin -a sec_master -p passw0rd
```

```
pdadmin> server task webseald-yourhost create -t tcp -h yourhost -p 8888
/websph
pdadmin> quit
```

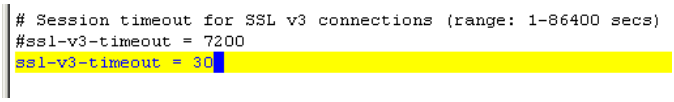
Enter the commands to create the junction named */websph*. 8888 is the IHS HTTP port. Quit pdadmin.

Because the problem of lost data on the POST method affects only form-based authentication, you need to enable this option in the *[forms]* stanza of webseald.conf file as shown.



Add the highlighted line.

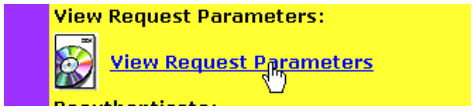
In order to cause faster SSL session expiration change the default value for the SSL timeout to 30 seconds, unless you'd have a couple of coffees in the middle of each of the experiments in this lab!



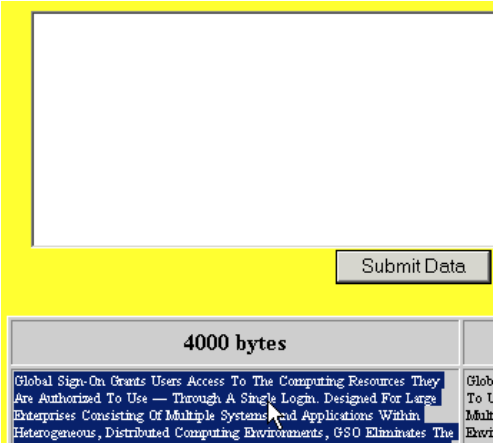
Restart WebSEAL to enable the changes.

```
http:// yourwebseal/wbsph/Banker2001
```

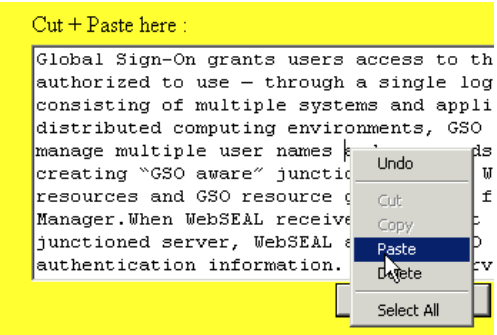
Connect to the main page of the Banker 2001 application using the junction you just created,
and authenticate to Policy Director using one of the pre-existing accounts (for example toto/passw0rd)



Follow the link to this lab's the test page. Don't panic if you are asked to authenticate again; probably you have exceeded the SSL timeout. You are now in the main part of the lab.



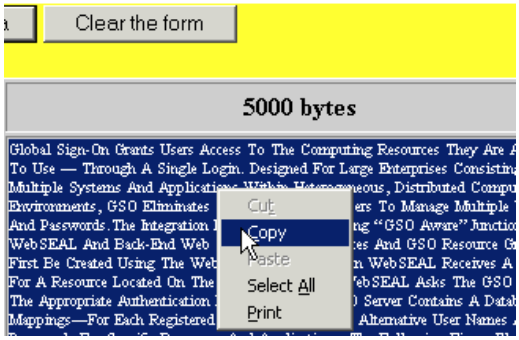
In this sample page select and copy in the clipboard all the text in the 4000-byte column.



Paste in the text area above and wait for at least 30 seconds before submitting the data to be sure that session expires.

If the session has successfully expired, as soon as you submit the data you should be redirected to the Policy Director login form page. Login again you will see that all your data has been successfully sent to the server, which is so happy to show you what has been sent!

Now submit more data so that you overflow the caching capacity. Going back with your browser to the submission form page, clear the form with the button.



Copy 5000 bytes in the clipboard paste the data into the form again. Again wait at least 30 seconds before submitting to be sure the session expires. Login again to recover the SSL session when requested.

? Does it still work? What happened?

Policy Director shows you this screen. In order to again have a kiss from Banker 2001, change the amount of the data that WebSEAL will cache by editing the *[server]* stanza in the webseald.conf file.

```
# request-body-max-read = 4096
request-body-max-read = 5096

# When a user is prompted to authenticate before a request
# can be fulfilled, the data from that request is cached
# for processing after the completion of the authentication.
```

Change the buffer size to 5096, save the file, restart WebSEAL, and try repeating the submission of 5000 bytes. Don't forget to wait a while before clicking on the submit button!

You should now be able to see that the backend server has received all the 5000 bytes and is offering you a kiss in gratitude!

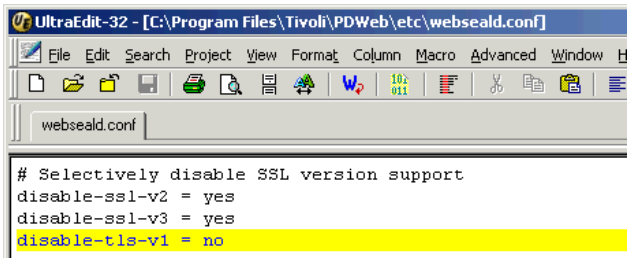
You've completed this lab. Be sure to restore the default values for the parameters you've changed (SSL timeout and Form Based login) in the webseald.conf file to continue with the successive labs.

42. TLS support

By default, WebSEAL is configured to support all three kinds of SSL protocols,

- SSL v2
- SSL v3
- TLS v1

This can be verified in the SSL stanza of webseald.conf, where all three kind of SSL protocols are enabled.



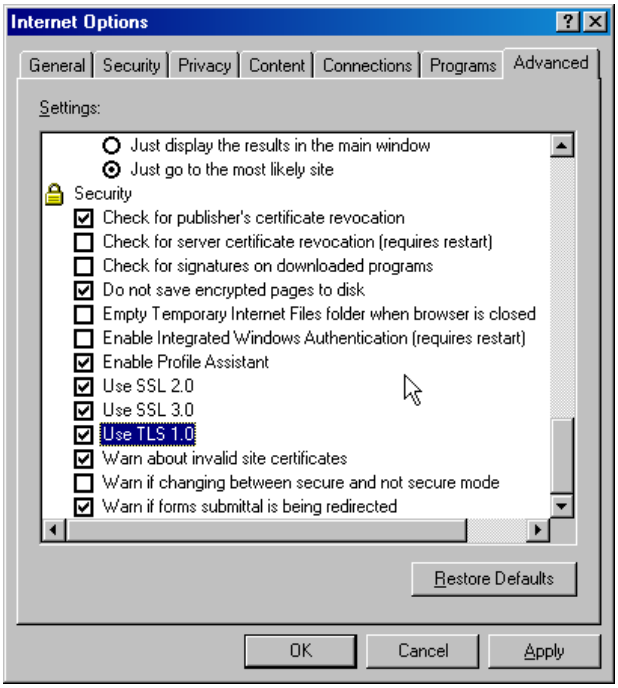
Force WebSEAL to use only TLS by modifying the webseald.conf, disabling SSL.

Restart WebSEAL and try to connect to it with IE5.

? Can you do it? If not, why not?

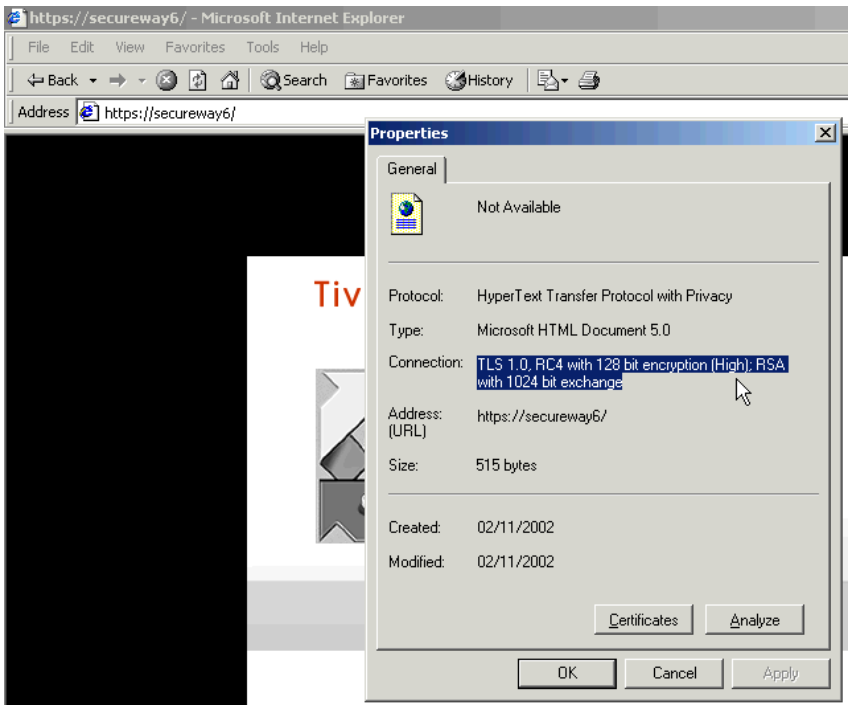
By default IE5 is not configured to use TLS, so this feature must be enabled in the advanced property page of the browser. In IE select

Tools->Internet Options->Advanced.



Check the TLS checkbox and click OK.

Now try to connect to WebSEAL and after authenticating, right-click with the mouse on WebSEAL's home page.



You should see the properties window that shows the protocol in use.

Re-edit webseald.conf and turn back on SSL v2, SSL v3 and TLS, like the original configuration. Save the file and restart WebSEAL.

Again point your browser (where TLS is still enabled) to WebSEAL. Right-click on the HTML page and you should see that with all three protocols enabled both on server and client, the handshaking procedure always selects the strongest security protocol, in this case TLS.

43. Integration of Policy Director and WebSphere Application Server

43.1 Objectives

Using WebSEAL, Tivoli Policy Director can provide authentication for J2EE applications running in WebSphere. Policy Director can also provide programmatic authorization for applications running in WebSphere. Now Policy Director 3.9 can be integrated with WebSphere Application Server to externalize and centralize authorization of J2EE applications. In this exercise you will install, configure, and test this integration.

There are two overall software components in this integration, PD for WAS and the Migration Tool.

The overall process will be to

1. Install PDWAS
2. Install and setup the migration tool
3. Migrate the WAS Admin Server application security to PD
4. Tell WAS to use PD for authorization

5. Test PD and WAS integration
6. Migrate the Banker 2001 application security to PD
7. Test it all

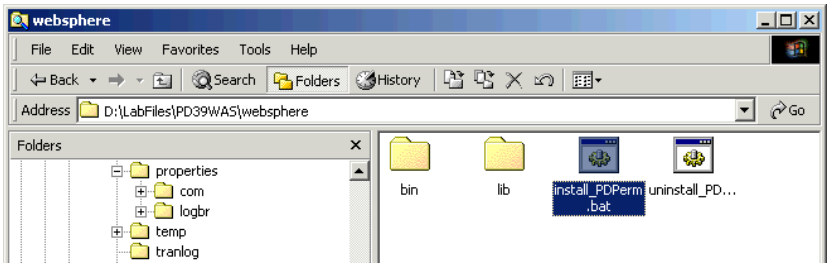
In more detail, you will

0. Unzip the PDWAS 3.9 classes
1. Perform PDWAS installation and configuration
    a. Install PDWAS
        - Run Install_PDPerm.bat
    b. Create a user in PD to represent the WAS JVM & add it to the remote-acl-users group
        - For example, name the user pdwas or wasjvm
    c. Run configure_PDPerm.bat or manually run pdjrtecfg and SvrSslCfg
2. Install and setup the migration tool
    a. Run install.bat in "migrate" directory. This
        - Creates PDWAS/migrate Directory in same place as Policy Director
        - Copies files to that directory
    b. Create a PD User for WebSphere Administrator (or an Import the user if already in LDAP)
        - For example, the user wasadmin
3. Migrate the WAS Admin Server application
    a. Edit migration script (run_WIN32.bat on Win32) to set it up for your machine and point the ear name to the WAS Admin Server ear
    b. Migrate the WAS Admin Server application by running run_WIN32.bat
4. Tell WAS to use PD for authorization
    a. Activate PD authorization in WAS by modifying the WAS sas.server.props files
5. Test PD and WAS integration
5. Migrate Banker 2001
    a. Export Banker2001.ear (No. Due to a bug, use the installable one without user-role mappings)
    b. Edit run_WIN32.bat to point it to the Banker 2001 ear file
    c. Migrate Banker2001 security to PD
6. Test it all

Initial Setup

You've already installed Web Portal Manager. Now you will install the additional files and do some setup necessary to enable integration. Navigate to *D:\LabFiles\PD39WAS* and double click on *PDWAS39_Windows.zip*. Unzip the files to the same directory, creating the *websphere* folder.

Perform PDWAS Installation and Configuration



Open the *websphere* folder and double click on *install_PDPerm.bat*. This will copy the PDWAS runtime components

in the bin and lib directories to their corresponding directories below *C:\WebSphere\AppServer* (%WAS_HOME%). Files copied are

- WebSphere LIB directory
  - jaas.jar, PDPerm.jar, PDWASAuthzManager.jar, application_1_2.dtd
- WebSphere BIN directory
  - configure_PDPerm config script

Check that PD Management and Authorization Server are running.

The *configure_PDPerm.bat* file still has some problems. You will run its commands manually.

> In case configure_PDPerm is fixed, it will be run like so:
> `C:\WebSphere\AppServer\bin>`**`configure_PDPerm pdwas passw0rd <auth server hostname> <mgt server hostname>`**
> But don't do this now.

Run

```
C:\Program Files\Tivoli\Policy Director\sbin>pdjrtecfg -action config -
java_home %was_home%\java\jre
```

This copies newer versions of the necessary files including .jar files to their proper directories for use by WAS. It also creates a *PolicyDirector* directory under %WAS_HOME\java\jre\lib.

Next, run the Java class manually that is run normally by configure_PDPerm.bat

```
C:\WebSphere\AppServer\bin>java com.tivoli.mts.SvrSslCfg pdwas passw0rd
secureway7 secureway7
```

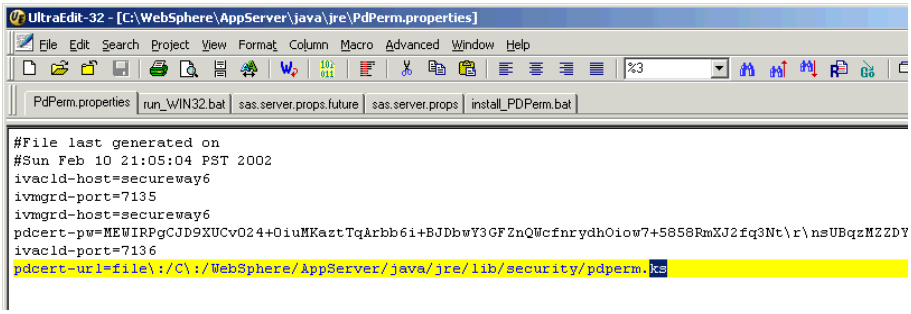
This creates a new Policy Director URAF user named pdwas-secureway7 in your user registry. In Active Directory, for example, the user has the following DN: CN=pdwas-secureway5,CN=users,**CN=default,CN=Tivoli Policy Director Domains**,DC=secureway5,DC=com.

This user appears to be different from the pdwas user created above. We do not need to create that pdwas user in advance though, since the SvrSslCfg command will do it. The new user is not in the normal AD users group, only in PD's group.

Take a look at the files created:

%WAS_HOME%\java\jre\lib\security\pdperm.ks
%WAS_HOME%\java\jre\pdperm.properties

pdperm.ks is the key file.



pdperm.properties describes the configuration of how WebSphere will use the PD Java API to authenticate to PD.

Setup the Migration Tool

Policy Director needs to be able to handle authorization for the WebSphere Admin application application itself. You will import a user that is authorized to run the Admin Console and then you will migrate the Admin Server application authorization to Policy Director.

The *wasadmin* user ID is the one used to log into the WebSphere Admin Console. Import the user *wasadmin* already defined in the directory you are using into Policy Director domain. In pdadmin, enter the following two commands. If you're using the IBM LDAP server, enter

```
pdadmin> user import wasadmin cn=wasadmin,o=ibm,c=gb
pdadmin> user modify wasadmin account-valid yes
```

For Active Directory enter

```
pdadmin> user import wasadmin cn=wasadmin,cn=users,dc=<domain name>,dc=com
pdadmin> user modify wasadmin account-valid yes
```

For Domino enter

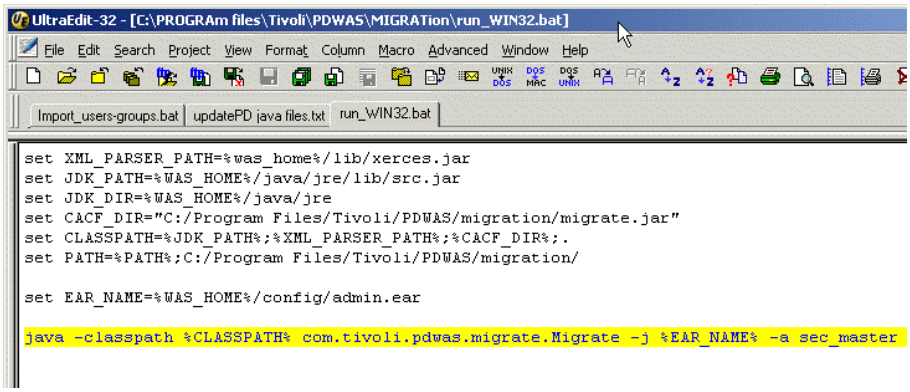
```
pdadmin> user import wasadmin wasadmin/<domain name>
pdadmin> user modify wasadmin account-valid yes
```

Run *D:\LabFiles\PD39WAS\migrate\install.bat*. This will create a new migration directory called *C:\Program Files\Tivoli\PDWAS\migration* and copy all the files in the *migrate* directory to it. These files are

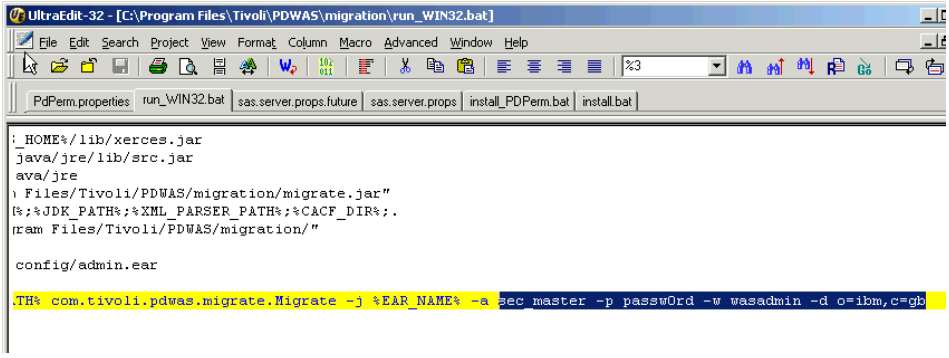
- migrate.jar, PDPopulate.dll (JNI file), Scripts for running Migration Tool, dtd files

Migrate the WAS Admin Server Application

Change to this new directory and with a text editor edit the file *run_WIN32.bat*. This is the BAT file used to perform the actual migration.



Change the first line to set the correct path for *xerces.jar*, the XML parser. Verify that all other parameters point to the right paths as shown on the screenshot above. (You're using the JDK that comes with WebSphere.) If it doesn't already, set the EAR_NAME variable to point to the Admin Server ear file, *admin.ear*.



Add the highlighted portions of the line above to specify the WebSphere administrator name. The above illustration shows the IBM LDAP suffix. For Active Directory, use

```
sec_master -p passw0rd -w wasadmin -d dc=<your domain name>,dc=com
```

For example

```
sec_master -p passw0rd -w wasadmin -d dc=secureway7,dc=com
```

For Domino, enter

```
sec_master -p passw0rd -w wasadmin -d <your domain name>
```

For example,

```
sec_master -p passw0rd -w wasadmin -d o=secureway
```

Save the file and close the editor.

Check that you have java.exe in your PATH environment variable. Type **`java`** at a command prompt. If the command is not recognized, add *%WAS_HOME%\java\bin* to your system path, close the DOS window, and open a new one.

Open a DOS prompt and navigate to the migration directory you created just above, *C:\Program Files\Tivoli\PDWAS\migration*. Run *run_WIN32.bat* to perform the migration. You may ignore the warning about current members of pdwas-admin.

Tell WAS to use PD for authorization

Now PD knows about WAS, but on the other side, you need to tell WebSphere that it is to use Policy Director for authorization. Navigate to the *%WAS_HOME%\properties* directory and with a text editor edit the files *sas.server.props* and *sas.server.props.future*.

> Read the comments at the top of either of these files to learn their purpose. If you search through these files for "auth," you'll see several mentions of "authentication" but none for "authorization." That's because until now WebSphere has been able to use an external authentication service but not an external authorization service. Not any more...!

Add the following line to the bottom of each file:

```
com.ibm.websphere.security.authorizationTable=com.tivoli.pdwas.websphere.PDWAS
AuthzManager
```

Save both files and close the editor.

> **Known Problem:** At the time of this writing there can be a problem with the ACL attached to the **\WebAppServer\deployedResouces\AdminRole\admin** object. You may need to manually attach the **_WebAppServer_deployedResources_AdminRole_admin** ACL to replace the **_WebAppServer_deployedResources_AdminRole_admin_ACL** ACL. Migrating another application will also fix the problem.

You will take the first approach and manually attach the replacement ACL in *pdadmin*. (Enter the next command all on the same line. There's a space between `admin` and `_WebAppServer`....)

```
pdadmin> acl attach /WebAppServer/deployedResources/AdminRole/admin
_WebAppServer_deployedResources_AdminRole_admin
```

43.2 Testing PD and WAS Integration

Restart WebSphere. Policy Director will now be used to authenticate and authorize the administrator (wasadmin) when you start the WAS Admin Console. In the Admin Console you should see a message after you log in that says a vendor authorization table has been loaded. WebSphere will now use this external service for authorization decisions.

To prove this, add a new temporary administrator for WAS by adding another user to the *pdwas-admin* group, using **pdadmin**. Start pdadmin and if you're using IBM LDAP enter

```
pdadmin> user create tempwasadmin cn=tempwasadmin,o=ibm,c=gb tempwasadmin
tempwasadmin passw0rd pdwas-admin
pdadmin> user modify tempwasadmin account-valid yes
```

If you're using Active Directory, enter

```
pdadmin> user create tempwasadmin cn=tempwasadmin,dc=secureway7,dc=com
tempwasadmin tempwasadmin passw0rd pdwas-admin
pdadmin> user modify tempwasadmin account-valid yes
```

where `secureway7` should be replaced with your domain name. If you're using Domino, enter

```
pdadmin> user create tempwasadmin tempwasadmin/<Domino domain name>
tempwasadmin tempwasadmin passw0rd pdwas-admin
pdadmin> user modify tempwasadmin account-valid yes
```

For example,

```
pdadmin> user create tempwasadmin tempwasadmin/secureway tempwasadmin
tempwasadmin passw0rd pdwas-admin
```

Restart the WebSphere Admin Console and log into the Admin Console as *tempwasadmin*. The Console should start just the same. You've convinced WebSphere to trust a different administrator than the one with which it was originally configured. Policy Director has authenticated and authorized this user to WebSphere because the user is also a member of the *pdwas-admin* group. (You can verify that *wasadmin* is still configured in WebSphere by opening the Security

Center and selecting the Authentication tab. Security Server ID should still be set to *wasadmin*.)

You could, for example create a time-restricted administrator for WebSphere that is only authorized during the afternoon.

```
pdadmin> group create night-pdwas-admin cn=night-pdwas-admin,o=ibm,c=gb night-
pdwas-admin
pdadmin> pop create pdwas_admin_time_control
pdadmin> pop modify pdwas_admin_time_control set tod-access anyday:1200-
1600:local
pdadmin> pop attach /WebAppServer/deployedResources/AdminRole/admin
pdwas_admin_time_control
pdadmin> acl modify _WebAppServer_deployedResources_AdminRole_admin set group
pdwas-admin TB[WebAppServer]i
pdadmin> acl modify _WebAppServer_deployedResources_AdminRole_admin set group
night-pdwas-admin T[WebAppServer]i
pdadmin> user create time-wasadmin cn=time-wasadmin,o=ibm,c=gb time-wasadmin
time-wasadmin passw0rd night-pdwas-admin
pdadmin> user modify time-wasadmin account-valid yes
```

The example above is for the IBM LDAP server. Just change the distinguished name in the user create command. Now try to log in as time-wasadmin. If it's already after the valid time, wait till tomorrow and test to see if you can log into the WebSphere Admin Console at various times of the day to test this functionality.

43.3 Migrate the Banker 2001 Application Security to Policy Directory

Objectives

Now you will migrate the security management of a real application from WebSphere into Policy Director. Back in section 36.7 you imported the Banker 2001 users and groups from your user registry into Policy Director. Now it's time for the Banker 2001 application roles.

The Banker 2001 application has four roles configured: *manager*, *teller*, *customer*, and *janitor*. Associated with these roles are users and groups. These associations were created when users and groups were selected for each role in the WebSphere Admin Console. When this was done, WebSphere did not modify the original EAR file.

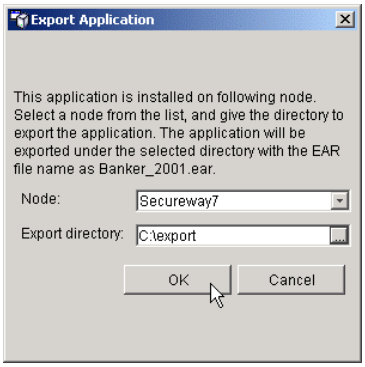
Normally in order to include the user-to-role mappings, you need to export the application back out from WebSphere as an EAR. That one will contain the user-to-role mappings and these should be migrated to PD. However, at the time of this writing the PD Migration application cannot import the roles and associations with users and groups properly.

Procedure

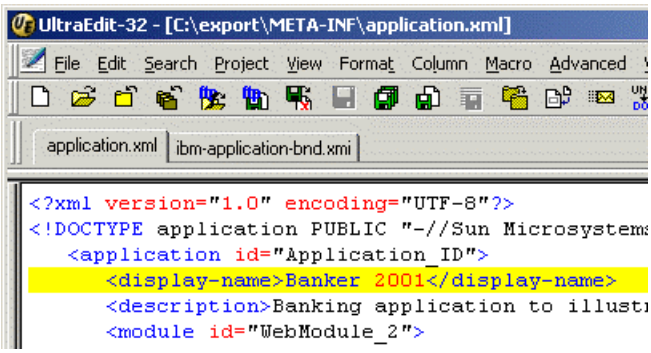
The following section, delimited by ###### characters, is left here for reference but should not be performed. It may be

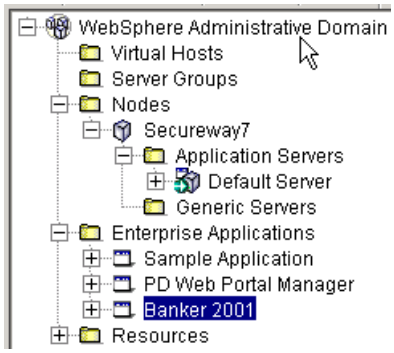
re-included when the PD Migration Tool can correctly import WAS user/group-to-role mappings.

##
Make sure the Policy Director services are running, that the WebSphere Admin Server service is running, and start the WebSphere Admin Console if necessary. Create a directory called *C:\export*. In the Admin Console expand WebSphere Administrative Domain and Enterprise Applications, right mouse click on the Banker 2001 application and select Export Application....



Go to the *C:\export* directory and open *Banker_2001.ear* with WinZip. Extract *application.xml* and *ibm-application-bnd.xmi*also to the *C:\export* directory also. These will extract into the *meta-inf* subdirectory. Open application with a text editor and verify near the top of the file that the <display-name> element value of Banker 2001 is exactly the same as that shown for the enterprise application in the WAS Admin Console.





The name in each is **Banker 2001**. Consistent. If it is not, you need to rename one or the other. The easiest is to rename the enterprise application in WebSphere. Click on the application in the WebSphere Admin console, select the General tab, change the name, and click Apply.
##

Due to the bug with user/group-role migration, you'll migrate the Banker 2001 application using the existing Banker2001.ear located in C:\Websphere\AppServer\installableApps\Banker2001.ear. Navigate to *C:\Program Files\Tivoli\PDWAS\migration*. Edit *run_WIN32.bat*. In *run_WIN32.bat* change the line that sets the EAR_NAME value to

```
Set EAR_NAME=%WAS_HOME%/InstallableApps/Banker2001.ear
```

Run *run_WIN32.bat*.

You may get an error message like this

```
…
User already defined in the URAF Registry.
…
```

The reason for this behaviour is an unexpected response after running a pdadmin command that adds a user to a group already containing that user. The workaround is to remove the user *wasadmin* from the group *pdwas-admin* e.g. by issuing this command:

```
pdadmin> group modify pdwas-admin remove wasadmin
```

Then run *run_WIN32.bat* again.

To verify the command succeeded, open Web Portal Manager, browse the object space, expand Root->WebAppServer->deployedResources, and notice that you've got the four roles that are part of the Banker 2001 application, namely *customer*, *janitor*, *manager*, and *teller*.

Now you need to modify the ACLs separately to associate users and groups with those roles. To make life easier, there is a BAT file that will do this. Navigate to *D:\LabFiles* and run *Import_users_groups_to_ACL.bat*. This will create a temporary file named *import_users_groups_to_ACL.list* that will be used by the BAT file to set up the ACLs of users and groups in Policy Director for each of the Banker 2001 roles. (If you want to see the .list file REM out the deletion of it in the BAT file.)

Testing Banker 2001 Security with Policy Director

Using the same procedure you used when you first tested users and groups in Banker 2001, test security now that Policy Director is in charge. See section 36.7 Testing Banker 2001 Security for those instructions.

? Now that Policy Director is managing authorization, what happens if you remove one or two of the user/group-to-role mappings in the WebSphere Admin Console?

? If you add a new user in PD and map that user to one of the Banker 2001 roles, will this mapping show up in WebSphere?

44. Form Based Single Sign-On

In this lab you will learn how to configure the form-based single sign-on facility of WebSEAL for two applications already installed in WebSphere. These apps make use of a form-based login page for authentication purposes. The first application for which you will create a FSSO facility is the Web Portal Manager.

So with this exercise you will achieve two goals:

1) Protect WPM access with WebSEAL just like any other application on the back-end WebSphere, and
2) Make the Policy Director user *igor* able to administer Policy Director using WPM as if he were the *sec_master* user. Heady stuff, no?

44.1 Part 1

To achieve these two goals, login to pdadmin as *sec_master* and run the following commands. The first creates a GSO resource named *wpm_sso*. The second creates a GSO credential for user *igor*, for that GSO resource.

```
pdadmin> rsrc create wpm_sso -desc "resource for WPM Single Sign On login"
pdadmin> rsrccred create wpm_sso rsrcuser sec_master rsrcpwd passw0rd rsrctype
web user igor
```

Now create a config file that will be used by the FSSO procedure to retrieve information
for any form-based login you want to use. Open a text editor and create a file with the following entries:

```
[forms-sso-login-pages]
login-page-stanza = wpm


[wpm]
login-page = /*/auth/handleLogin.jsp
login-form-action = handleLogin.jsp
gso-resource = wpm_sso
argument-stanza = wpm-login

[wpm-login]
userid = gso:username
password = gso:password
```

Save the file as *fsso.conf* in *C:\Program Files\Tivoli\PDweb\etc*.

> It is important to notice that in the *[wpm-login]* stanza there are two arguments that WebSEAL should look for in the login page. WebSEAL should replace them with two gso values: username and password.

Now modify the junction you have already created for WebSphere in order to include this new config file.

```
pdadmin> server task webseald-yourhostname create -t tcp -h yourhostname -p
8888 -f  -S "C:\Program Files\Tivoli\PDweb\etc\fsso.conf" /websph
```

If the fsso.conf is error-free your junction should be created successfully.

Open a browser and point to http://yourhost/websph/pdadmin, and login using *igor* and *passw0rd*. You should now get into the WPM main page without authenticating as *sec_master*.

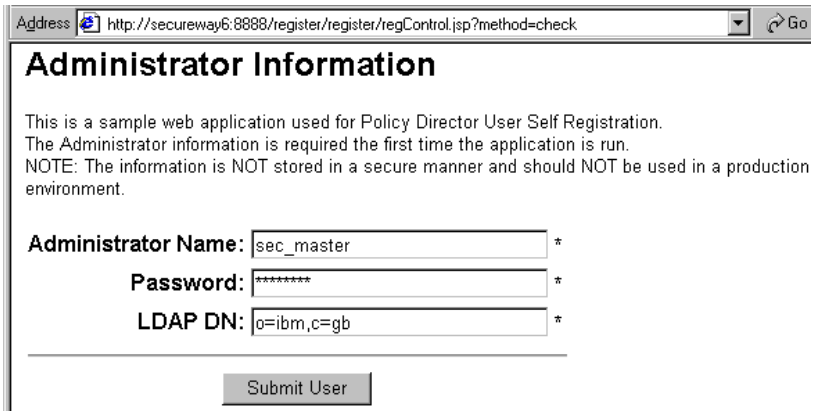
? What happens if you login to WebSEAL as *toto*?

44.2 Part 2

THE FOLLOWING SECTION, 44.2, IS TEMPORARILY BROKEN DUE TO A BUG IN THE BETA OF THE SELF-REGISTRATION WEB APPLICATION, WITHIN THE WEB PORTAL MANAGER. YOU ARE THEREBY EXCUSED FROM DOING THIS LAB SECTION.

In the second part of this lab you will describe a sample application that allow administrators to easily create users by providing only their user name, surname and password. Before doing this though, a login page for the administrator is required.

This application is already loaded on your WebSphere machine and you can access it directly without WebSEAL by pointing your browser at *http://yourhost:8888/register*.



Fill in the fields as shown and you should now be able to access the next page, where you can create a new user.

Fill in the fields and click Submit.

Your successful submission is confirmed.

Now add some more lines to the fsso.conf file as described below:

```
[forms-sso-login-pages]
login-page-stanza = slfreg

[slfreg-login]
admin = string:sec_master
password = string:passw0rd
suffix = string:o=ibm,c=gb
```

Save the file. In order to make this new data available to WebSEAL, reload the junction using pdadmin command line

```
pdadmin> server task webseald-yourhostname create -t tcp -h yourhostname -p
8888 -f  -S "C:\Program Files\Tivoli\PDweb\etc\fsso.conf" /websph
```

Open your browser, point to *http://yourhost/websph/register* and login as any of the users defined in Policy Director (e.g. *toto/ passw0rd*) to see what has changed.

> ? By itself now, can this Policy Director user create a new PD user?

> ? How can you make any user not yet defined in PD able to create an account for themselves, and be sure that no one can sniff their password when they create the account?

45. Installation and Configuration of the Policy Director Web Plug-In for Microsoft Internet Information Server (IIS)

45.1 Objectives

As you know, Policy Director now can run in the form of a plug-in to popular Web servers. The first Web server supported on Windows is IIS. In this lab you will install, configure, and test the new Policy Director Web plug-in with IIS.

Important: When you install IIS you must be disconnected from the network. Otherwise, you-know-what will happen!

45.2 Prerequisites

Check the prerequisites for configuring and running Policy Director Web Plug-In for IIS – PD WebPI:

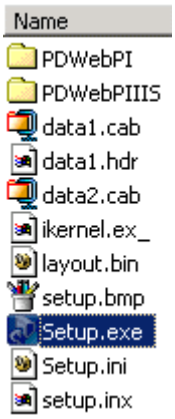
- Policy Director Run Time Environment (PDRTE) and Policy Director Management server (if it is to be installed on the local machine) must be installed and configured.
- There must be an installed and configured WWW-Service on the IIS Server.

- To install the WWW-Service, go to Control Panel -> Add/Remove Programs -> Add/Remove Windows Components. Select and configure Internet Information Service. **Be sure to disconnect you machine (unplug the cable) from the network while doing this. Before it is patched, IIS is a magnet for viruses of various kinds.**
- Stop the IIS Service if it has started
- Apply the Win2K Fix Pack and the IIS Patch
- Reconnect to the network
- Restart the Web Server Service

45.3 Installation of Policy Director Web Plug In for IIS

Navigate to the Policy Director WebPI image location at

D:\LabFiles\PDimages\PDWebPI_020207\Disk Images\Disk1



Run *setup.exe* to start InstallShield.

Choose English as the language for the installation on the next screen and click OK.

Click Next to confirm installing Access Manager Plug-in for Web Servers and click Yes agreeing with the IPLA on the next screen.

Choose both packages to install the Plug-in for Web Servers and the Plug-in for Microsoft IIS as shown. Click Next.

The installation routine will present you with a couple of familiar screens where you click

Next for the 1st screen,
Yes for the 2nd,
Next for the 3rd confirming the install of the package to its default location, *C:\Program Files\Tivoli\PDWebPI,* and
Next for the 4th choosing *Typical* as the type of the installation.

Click Finish after the short splash showing the progress of the installation.

Repeat these installation steps for the next package.

The Policy Director Web Plug In for IIS is now installed.

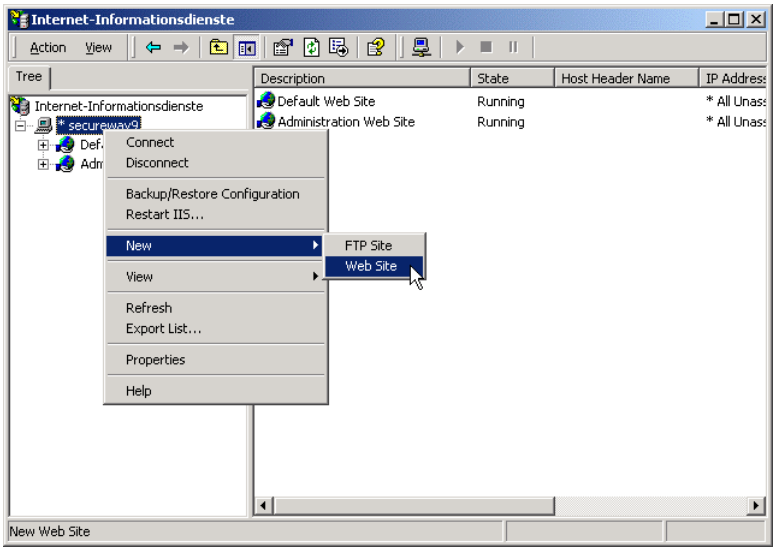
45.4 Configuring new Virtual Hosts on IIS

Considerations

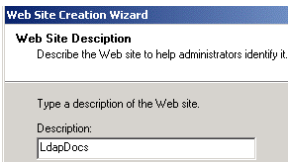
At the time of this writing the WebSEAL plug-in had some known problems remaining with the default virtual hosts defined in IIS. Names containing spaces, such as "Default Server" (the default IIS server) and "Default Administration Server," were not processed correctly. So for testing purposes and to avoid these problems, you should create a virtual host that directly accesses the test directory that will be used.

Procedure

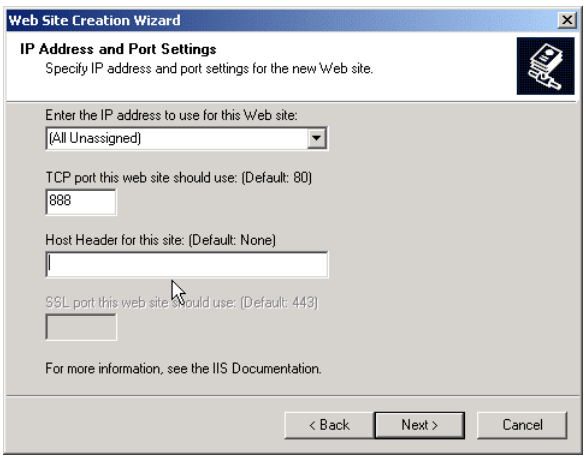
1) Run Start -> Programs -> Administrative Tools -> Internet Services Manager



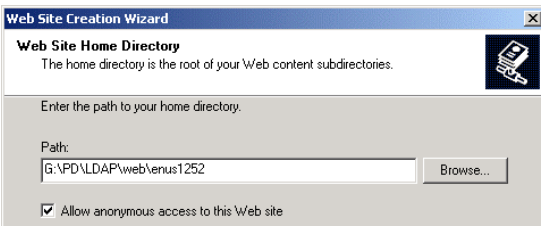
2) Right-click on the server -> New -> Web Site



3) Fill in the name of the Virtual Host. Because the intent of the lab is to serve the content of the IBM Directory Server Manual, which is by default part of the LDAP Client installation, name the virtual host LdapDocs.



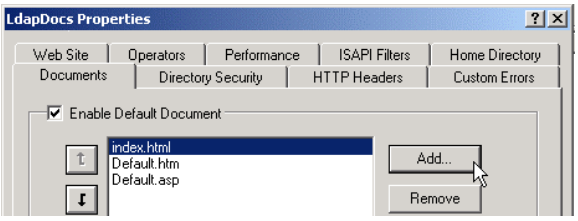
4) Fill in the port. The labs use port 888 (IIS labs default), since the default of 80 is used by WebSEAL. Leave the Host Header field empty.



5) Enter the path to the directory containing your Web site files. As the IBM Directory Server Client is installed on every machine, we use the html manual files for our web site. Navigate to the location of the LDAP client manual (e.g. *c:\Program Files\ibm\ldap\web\enus1252*). Allow anonymous access to this Web site. In the next dialog allow read and execute access and finish the wizard.

The new virtual host is now defined in IIS and is listening on port 888.

6) You might want to set up the default Web page pointing to an existing file.



On Internet Services Manager Console right-click on the virtual host LdapDocs, then Properties. Click on the "Documents" tab and the Add… button. Fill in the name of an existing file (e.g. *getting_started.htm*). You've now configured a new virtual host and setup a default Web page for it that points to the IBM LDAP Directory Server documentation.

Now check that it works by pointing your browser to *http://<hostname>:888*.

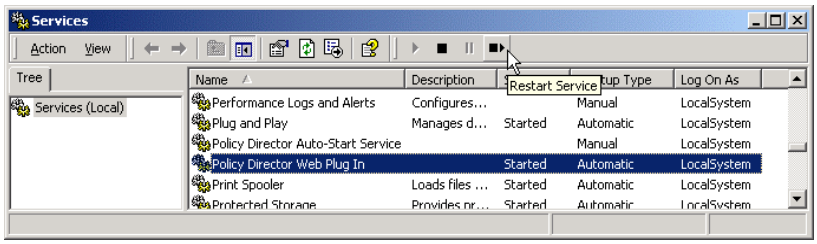
45.5 Configuring the Policy Director Web Plug-In for IIS

1) Use the configuration tool shipped with the Policy Director WPI to install the plug-in and protect the new virtual host. Run the configuration tool by selecting

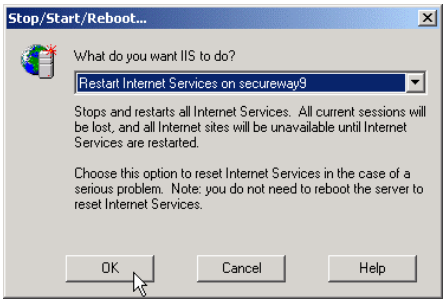
Start -> Programs -> PDWPI -> Configuration

and go through the configuration steps:

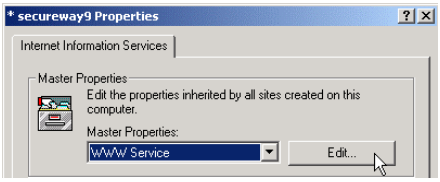
```
Access Manager Web Plug-In Configuration

Please enter 'u' for unconfiguration or 'c' for configuration : c

Gathering the necessary configuration information...

Which virtual hosts are to be protected:
        1. Default Web Site
        2. Administration Web Site
        3. LdapDocs
Menu choice [?,??,all]> 3
Enter the Access Manager Administrator ID : sec_master
Enter the Access Manager Administrator password : passw0rd
Enter the port number to listen on for AZN updates [7237] :7737

Do you want to enable SSL communication between the
Access Manager server and the LDAP server (y/n) [y] : n

Configuring the Web Plug-In (this may take a few minutes)...

Starting the server.

Note: The Web server must be restarted before the changes will take affect.

The plug-in configuration was successful.
```



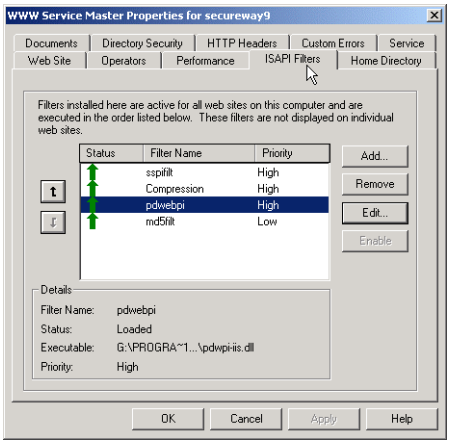
2) In order to load the plug-in, first start the plug-in service as shown, and then restart the IIS Web Server by either restarting the "IIS Admin Service"



or using the MMC for IIS.



3) Check that the plug-in is installed and configured. Click on the server and then on Properties. Choose the "WWW Service" and click on Edit.



Click on to the "ISAPI Filters" tab, which shows installed IIS plug-ins. It should contain "pdwebpi," for **P**olicy **D**irector **W**eb **P**lug **I**n Filter.

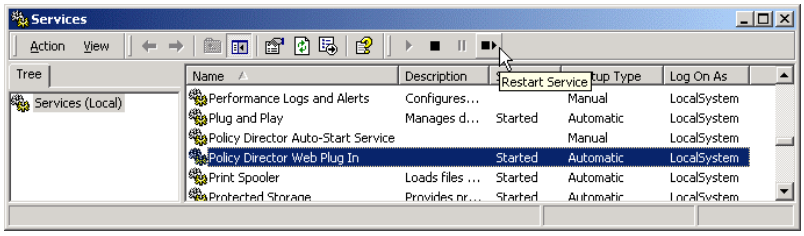
4) Configure forms-based login for Policy Director WebPI. Modify the PDWebPI configuration file. It is located by default at *C:\Program Files\Tivoli\PDWebPI\etc\pdwebpi.conf*.

```
# authentication = BA
authentication = forms

session = session-cookie
# session = BA

post-authzn = forms
post-authzn = tag-value
post-authzn = acctmgmt
```

Go to [common-modules] stanza and modify it as shown (changes are in bold).

Important: be sure to comment out the line beginning with `session = BA` as shown.

Save the file and close the editor.



5) Restart the PD WebPI Service.

The PD Web Plug-in is now installed and configured.

45.6 Using Policy Director WebPI for IIS

The PDWPI can be managed using the Web Portal Manager. How about protecting resources served by IIS?

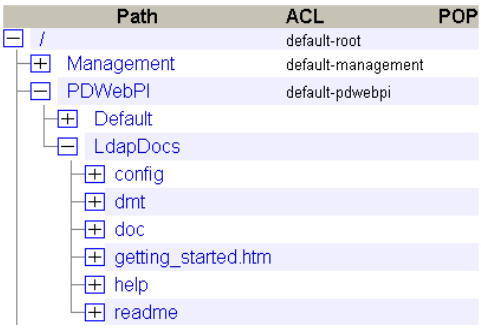
> At the time of this writing if you run PDWebPI as a service it won't show you the objectspace. In order to view the objectspace you may need to run PDWebPI in the foreground. The command is

```
C:>\Program Files\Tivoli\Policy Director\PDWebPI\bin\pdwebpi.exe -foreground
```

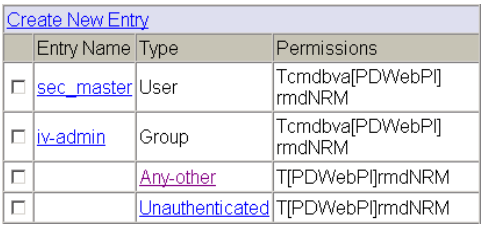
Procedure

1) Point the browser to *http://<your_hostname >:888* (e.g. *http://secureway9:888*), the IIS port for the labs. By default (at the time of writing) the server is not protected, so this request is to the IIS default page.

2) Connect to PD Web Portal Manager or, if you prefer CLI, use pdadmin CLI to perform the following operations. Point the browser to the PD WPM and authenticate as **sec_master**. Navigate to Object Space -> Browse.



3) New object entries have appeared. As PD WebPI works on a virtual host basis, there is no notion of the server that PD WebPI is running on, rather just virtual host names. Take a look at the default-pdwebpi ACL by clicking on it.



4) Unauthenticated users are granted the permissions to access the Web resources on the Web server protected by PD WPI. The permissions to access IIS resources protected by PD WebPI are put together in a separate Action Group. In order to see it navigate to

ACL ->List Action Group -> PDWebPI

PDWebPI

Create New Action

	Name	Label	Type
☐	r	Read	PDWebPI
☐	m	Modify	PDWebPI
☐	d	Delete	PDWebPI
☐	N	Create	PDWebPI
☐	R	Property Read	PDWebPI
☐	M	Property Modify	PDWebPI

5) Protect the IIS server on your machine from the unauthenticated access modifying the default-pdwebpi ACL.

default-pdwebpi

Set Description

Create New Entry

	Entry Name	Type	Permissions
☐	sec_master	User	Tcmdbva[PDWebPI] rmdNRM
☐	iv-admin	Group	Tcmdbva[PDWebPI] rmdNRM
☐		Any-other	T[PDWebPI]rmdNRM
☐		Unauthenticated	T

Change the permissions for Unauthenticated as shown.

6) Point the browser to *http://<your hostname>:888*. You are presented with the login page of PD WebPI. Log in providing the user ID and password of any valid user.

Cookie Information

Name	PDWPI-SESSION-COOKIE
Domain	localhost
Path	/
Expires	End of session
Secure	No
Data	lu9WX6ZzEnb23fxELQo1cS9EsNYFyCtqyPX2jeyjwwo=

7) If you turn on warnings when receiving cookies on your browser, you will see the cookie from PD WebPI. Navigate to *http://<your hostname>:888/pkmshelp* to see available pkms options like

- pkmspasswd - for password change
- pkmslogout - for logout

8) Log out by clicking on **pkmslogout**.

9) You can start the PD WebPI in foreground mode rather than as a Service. Consider the order of the actions as follows:

- stop PD WebPI Service
- stop IIS (WWW Service)

- navigate to the PD WebPI "bin" directory and issue

```
c:\Program Files\Tivoli\PDWebPI\bin>pdwebpi -foreground
```

- start IIS (WWW Service)

45.7 Unconfiguring Policy Director WebPI for IIS

Considerations

At the time of the writing of these labs, creation of additional virtual hosts in IIS was not automatically propagated to PD WebPI. If you want to add additional virtual hosts that you have created in IIS, you have to completely unconfigure PD WebPI and configure it again specifying the virtual hosts of your choice.

> By unconfiguration of PD WebPI the modifyed configuration file (*<PD WebPI home>\etc\pdwebpi.conf*) is deleted. To preserve the modifications, backup the file before unconfiguring the PD WebPI.

> By unconfiguration of PD WebPI the object corresponding to the IIS virtual hosts previously configured is removed from the object space.

Procedure

To unconfigure PD WebPI run Start -> Programs -> PDWebPI -> Configuration

```
Access Manager Web Plug-In Configuration

Please enter 'u' for unconfiguration or 'c' for configuration : u
```

That's all there is to it. Now you can reconfigure, including other virtual hosts required.

45.8 What You Did in this Lab

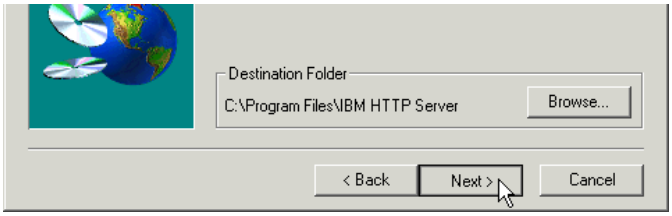
In this lab you installed the Policy Director Web Plug-In into IIS. You created a virtual host to bypass problems the plug-in had with virtual host names having spaces. You configured PD WebPI and turned on security for IIS-served resources. Then you unconfigured PD WebPI so that you could have it support additional virtual hosts.

46. Appendix A -- Installation

46.1 Installing IBM HTTP Server 1.3.19

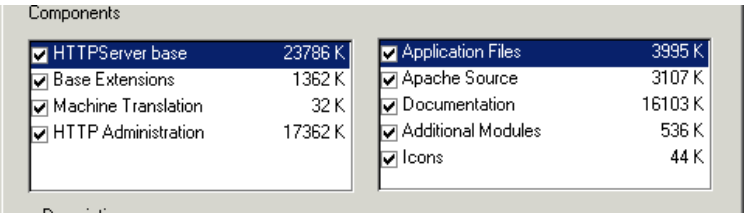
Install IBM HTTP Server 1.3.19

Use Windows Explorer to go to *D:\Lab Setup\HTTP-1-3-19* and launch the *setup.exe.*.

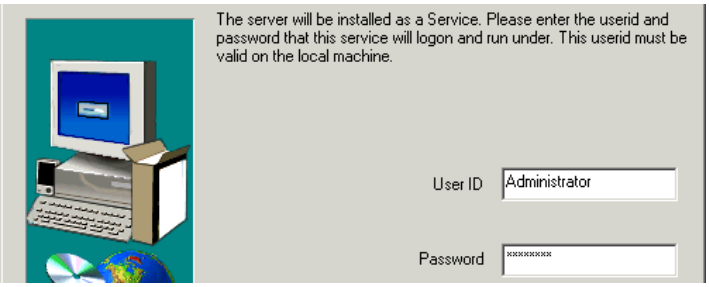


Accept English as the language and the license agreement. As the destination folder select *C:\Program Files\IBM HTTP Server*.

Select *Custom* as the installation type. click Next.



Select *all* components (unless you do not have enough space on the system). Click Next.



Enter "Administrator" and "passsw0rd" for user id and password used to start the server as a service.

Do not reboot now when asked and click on Finish.

Configure IBM HTTP Server 1.3.19

> Since you are going to be installing WebSEAL on the same machine it would be good to change the HTTP Port for the HTTP Server at this point

Open the server's main config file, *C:\Program Files\IBM HTTP Server\conf \httpd.conf,* with a text editor find the *Port* entry.

```
# Port: The port the standalone listens to.
Port 80
```

Change it to 8888, the default IHS port for the labs.

```
# Port: The port the standalone listens to.
Port 8888
```

Save the changes and close the file.

46.2 Installing GSKIT

It is a good idea to install the latest GSKIT, necessary to correctly run PD 3.9 later. Doing this now will avoid the

automatic installation of an older version with other packages requiring SSL (for example, the IBM SecureWay Directory Server).

Use Windows Explorer to open *D:\Lab Setup\GSKIT 5.0.4.56.* Drag-and-drop *setup.ini* on top of *setup.exe*.

> This unusual procedure is required because we are using a package that it is usually part of an automatic installation.

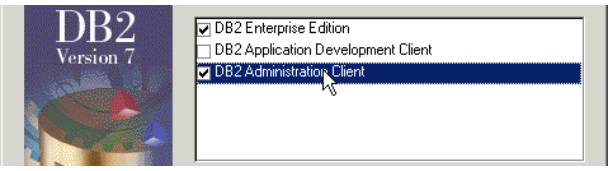
Accept all the default options than click on finish. Should you need to uninstall GSKIT from your machine, use this command:

```
C:\>isuninst -f"C:\Program Files\ibm\gsk5\gsk5BUI.isu"
```

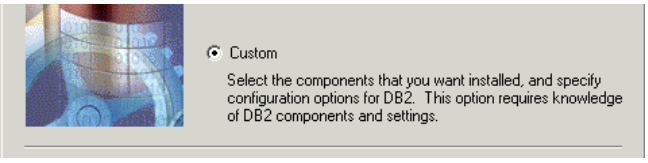
46.3 Installing DB2 7.2

> In order install WAS 4.0 later, you should install *DB2 7.2 Enterprise Edition* with *FixPack 4.* If you were just planning to run *IBM Directory Server 3.2.2,* the *DB2 7.2 Personal Edition* would suffice.

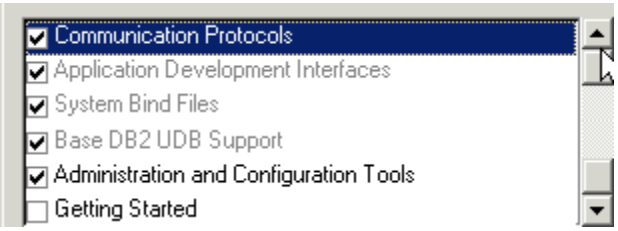
Use Windows Explorer to open *D:\Lab Setup\db2_7.2_Base* and launch the *setup.exe.* Then click on Install.



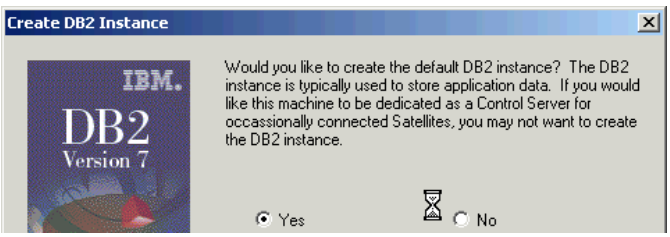
You do not need to install the application development client. Select the other two. Click Next.



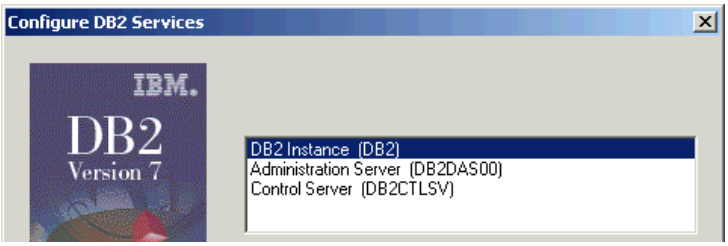
Perform a custom installation to install some administration components that could be helpful to have when working with WebSphere.



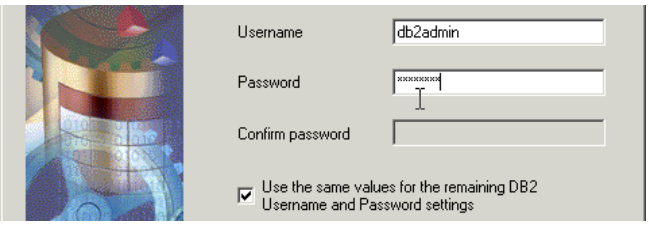
Select the indicated components. The gray'd out components are always installed anyway, so deselect everything else except Administration and Configuration Tools. Click Next.



Choose to create a DB2 instance. Click Next.



Choose to configure the three default services and click Next.



Enter *db2admin* as the user ID and *passw0rd* for the password. Select the option to use these values also for the other DB2 services.

You probably haven't defined a db2admin user on the system already, so you will be asked if the setup procedure should create it for you. Say yes unless you have some other reason to create it manually. continue with the installation. When the installation finished, skip the registration procedure.

Installing DB2 FixPack4

Use Windows Explorer to open *D:\Lab Setup\db2_7.2_Base* and launch *setup.exe*.

It is good practice to stop all the DB2 services before launching the installation program. Otherwise, the installation program will force all the DB2 processes to shut down before proceeding. Accept this since you don't have any applications still running that rely on DB2. Next accept all the other defaults to complete the installation.

Configure DB2 to use JDBC 2

WebSphere 4.x uses the JDBC 2.0 database drivers, but DB2 installs the JDBC 1.1 drivers by default. You need to change to the JDBC 2.0 drivers for DB2. Open the Services panel.

If running, stop the DB2 processes that use JDBC as shown. Open a DOS prompt and go to *C:\Program Files\SQLLIB\java12*.

```
C:\>"C:\Program Files\SQLLIB\java12\usejdbc2.bat"
UnZipSFX 5.31 of 31 May 1997, by Info-ZIP (Zip-Bugs@lists.wku.edu).
  inflating: db2java.zip
  inflating: db2jdbc.dll
  inflating: db2ccs.exe
  inflating: db2jd.exe
  inflating: db2jds.exe
        1 file(s) copied.
        1 file(s) copied.
        1 file(s) copied.
        1 file(s) copied.
        1 file(s) copied.
        1 file(s) copied.

C:\>
```

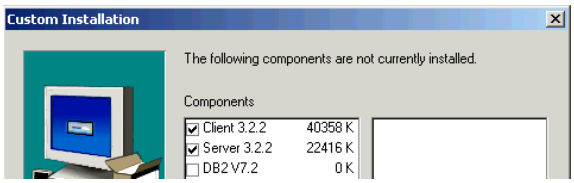
Run *usejdbc2.bat* and be sure that all the files are correctly copied as shown. Your DB2 is now ready to be used by WAS 4.0, and even by IBM Directory Server in case you plan to use this as your user registry for PD 3.9.

46.4 Installing IBM SecureWay Directory Server 3.2.2

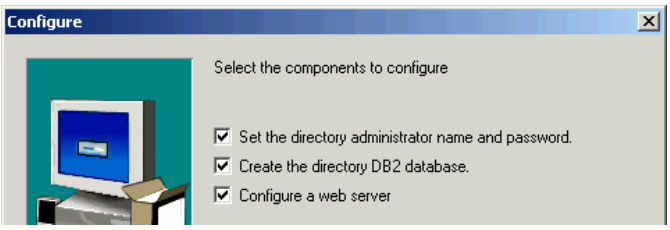
Use Windows Explorer to open the drive where the *D:\Lab Setup\ldap322\ldap32_u* and launch the *setup.exe* .

Accept English as installation language, and accept the licence agreement and the default installation directory.

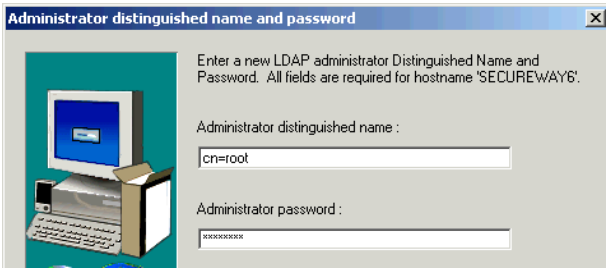
The set-up procedure should find DB2, the GSKIT and the IBM HTTP Server already installed, if all the steps described before have been successfully completed. Select Custom Installation.



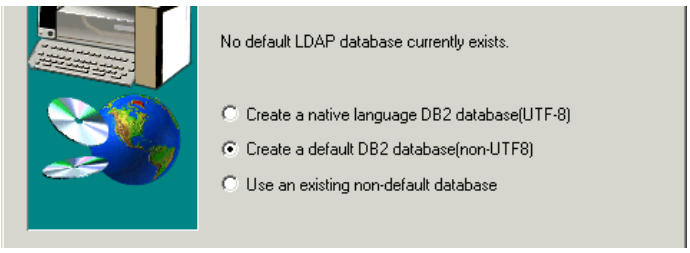
By selecting a custom installation you can verify that only the components not yet installed, such as the LDAP Server and Client, are selected. Click Next.



Accept the creation of a program folder in the Programs menu. When asked, select all three options to configure as shown. Click Next.



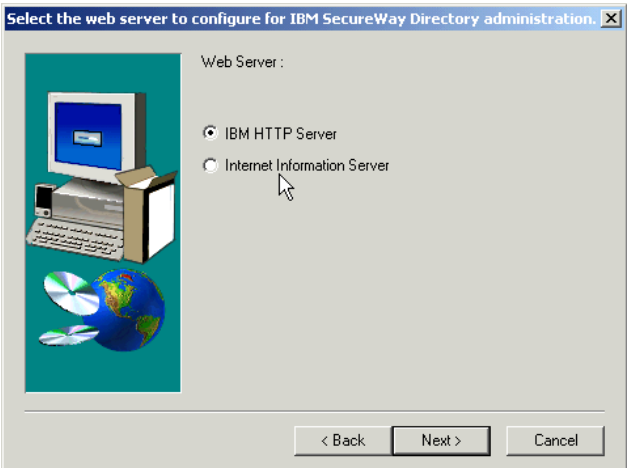
Enter *cn=root* and *passw0rd* for the Administrator DN and password. Click Next.



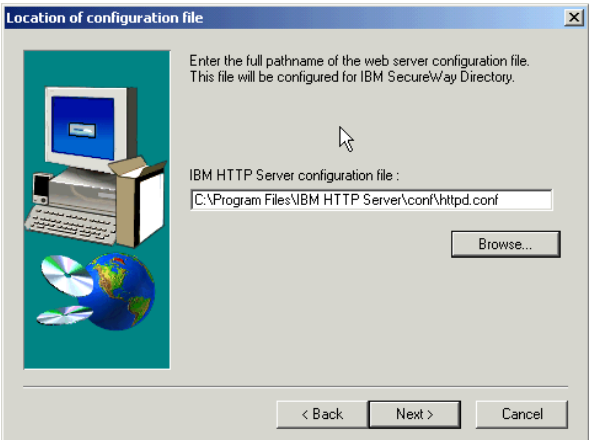
Select the default DB2 database (non-UTF8) and click Next.

? What is UTF-8 and how does it affect the format of the database contents?

If you've got multiple drives available, select drive C if there is enough space free.



Since you may have multiple Web servers configured on your machine (IBM HTTP Server, Internet Information Server and/or Domino) select IBM HTTP Server for directory administration. Click Next.

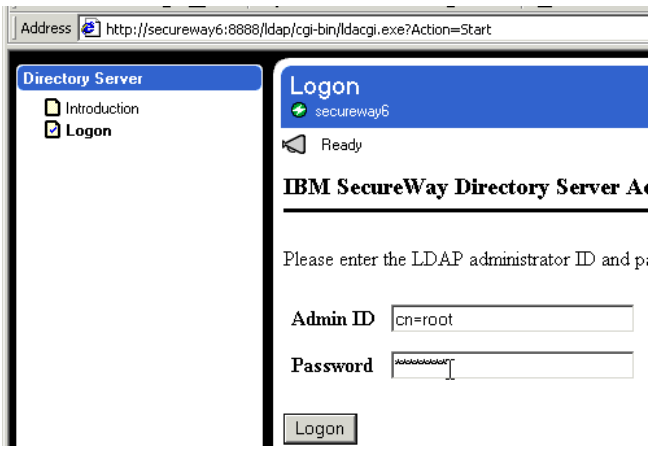


Verify that the IHS configuration file is in the right path. Click Next and proceed with the installation.

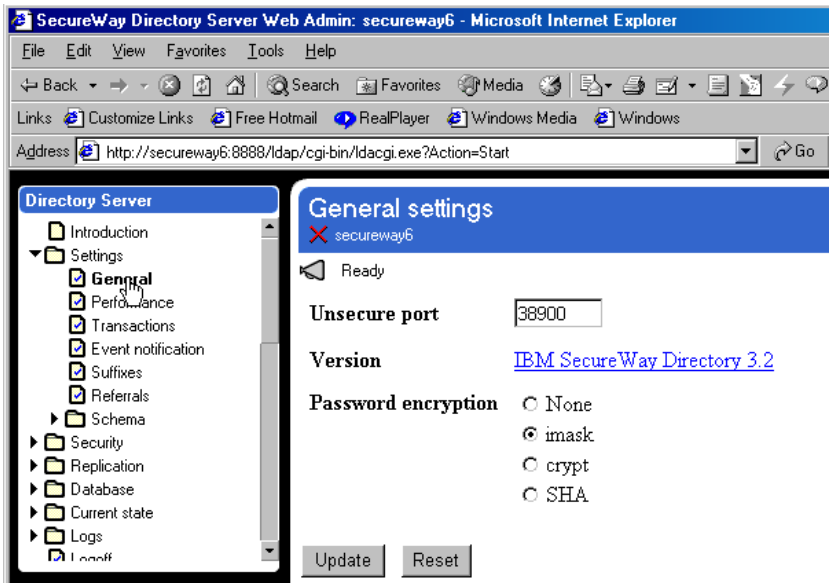
Restart the machine and after rebooting, log in as *Administrator*. You will see that the configuration of the LDAP database takes some time. If the configuration completes successfully you can go on to configure of the directory for Policy Director. If not, run the installation again using Start->Programs->IBM SecureWay Directory->Directory Configuration. Select the same options you selected in this lab. And good luck!

Configuring IBM SecureWay Directory Server 3.2.2 for PD 3.9

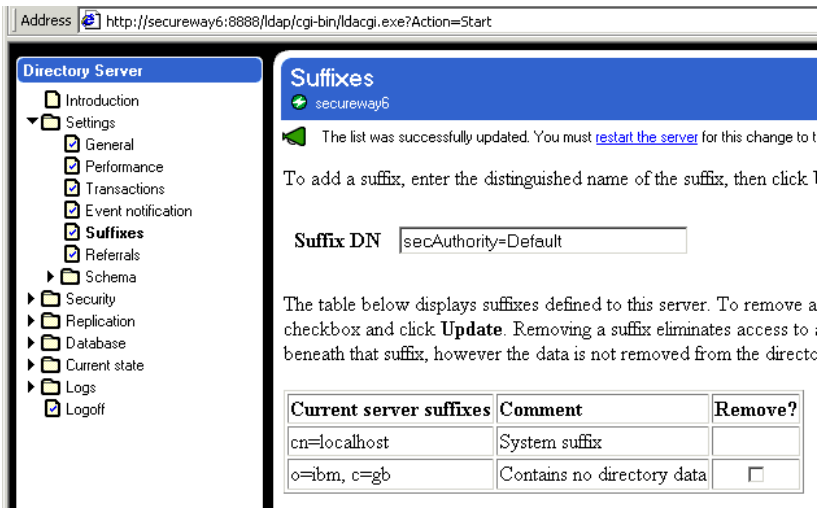
Now it's time to perform some management tasks on the LDAP server. Ensure that IBM HTTP Server and the LDAP Server are running



Point a browser to *http://yourhost:8888/ldap* and Logon as *cn=root* and *passw0rd.*



Expand Settings and click on General. In the General Settings page change the port the Server listens on from the default 389 to 38900, as per the table in section 31.5 IBM Directory Server Configuration Options. Click Update. Then on the left click on Suffixes.



Add the Suffix DN *o=ibm,c=gb* (as per conventions for this lab) and the Policy Director suffix, *secAuthority=Default*. Click Add after entering each one.

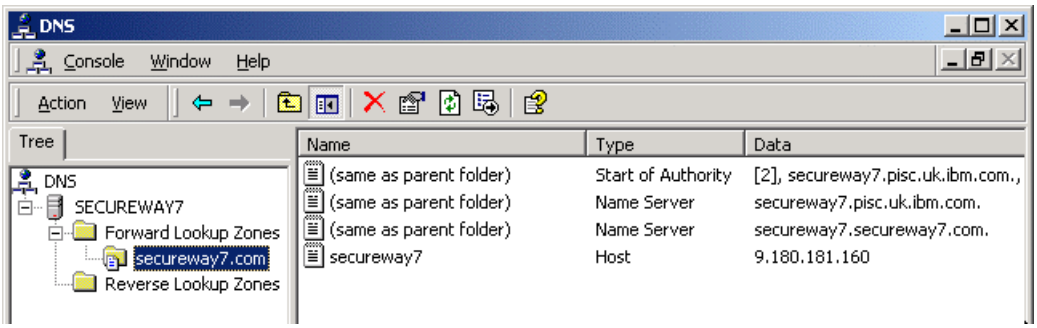
Restart the server by clicking on the restart the server link. The LDAP server is ready to be used by Policy Director 3.9.

46.5 Installing Active Directory

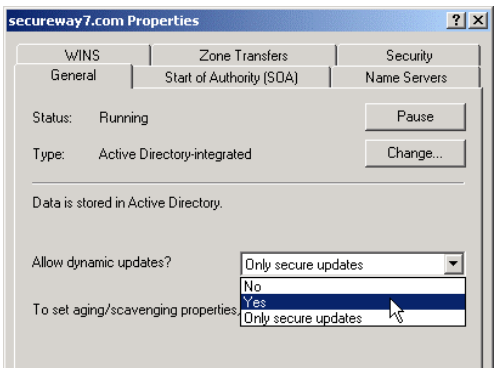
Before You Start Installation

Active Directory can be used as the user registry with Policy Director

It is best to have the Active Directory installation process create and configure the DNS automatically. If you've already created a DNS manually that you want AD to use, you must change the DNS to allow dynamic updates before starting the AD install. The default is to only allow secure updates and the AD installation will not be able to update the DNS. To change this, select the DNS management console from Start->Programs->Administrative Tools->DNS.



From the right mouse click Properties.



Change Allow dynamic updates to Yes and click OK. Now the Active Directory install wizard should be able to properly configure the DNS.

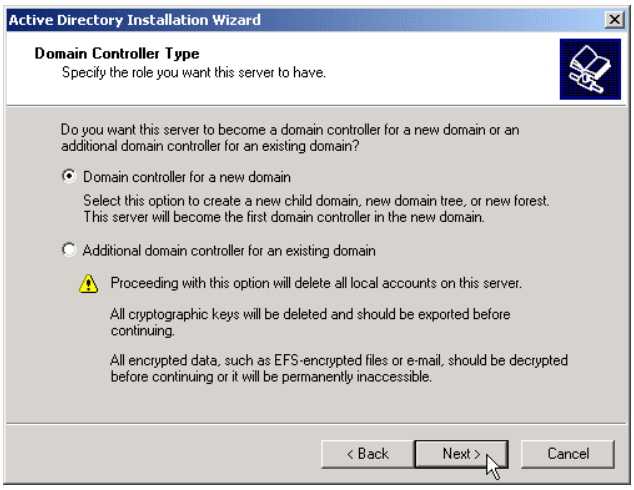
> Note that if you proceed through Active Directory installation with a manually created DNS and you have not made this change, you may see the following dialog at the end of AD installation:
>
> **Error! Objects cannot be created from editing field codes.**
>
> Active Directory installation was successful but has not been able to finish the DNS configuration. However, it will have created a text file with all the necessary information you need to update the DNS yourself. The file is *C:\WINNT\system32\config\netlogon.dns*. The information in this file must be concatenated with the existing DNS settings and the combination used to reconfigure the DNS. *C:\WINNT\system32\dns\samples192.DNS* is a sample file you can use to see which entries must be set for your DNS.

Installation of Active Directory

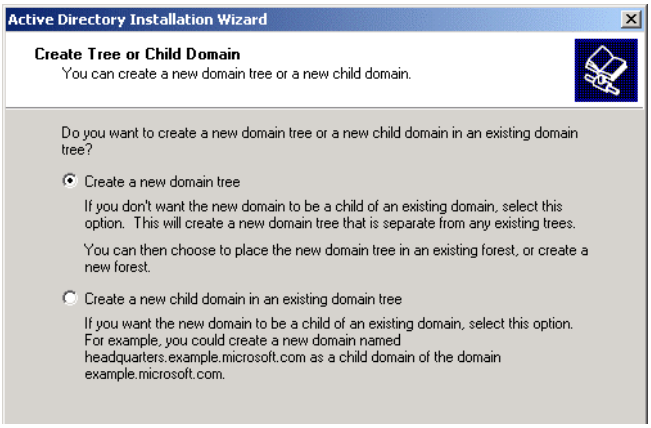
Now, to begin the Active Directory installation, select

START->Programs->Administrative Tools->Configure Your Server. When the dialog comes up click on Active Directory on the left side.

Scroll down and click on Start the Active Directory wizard. The wizard leads you through Active Directory installation. When the Welcome to Active Directory Installation wizard opens, click Next.

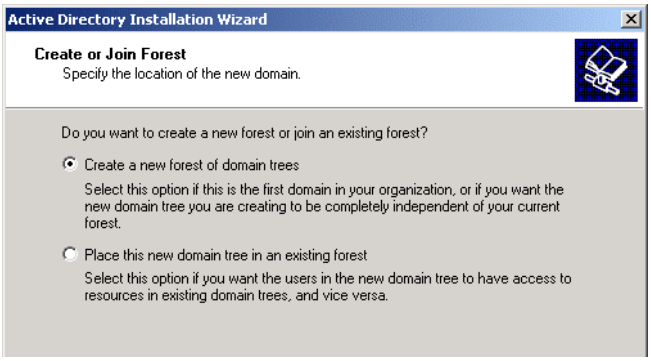


Select Domain controller for a new domain and click Next.



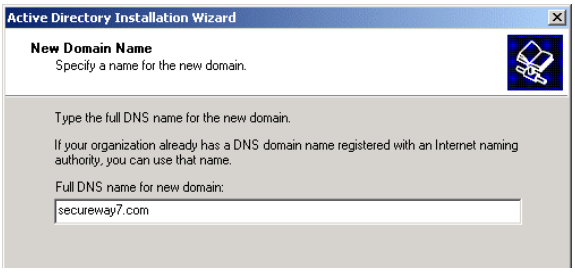
Select Create a new domain tree and click Next.

> A domain tree is a hierarchical grouping of domains that have contiguous DNS domain names, e.g. tivoli.com, child.tivoli.com, grandchild.child.tivoli.com, etc.



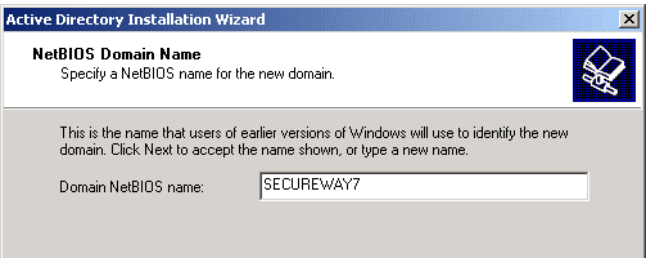
Select Create a new forest of domain trees.

> A forest is one or more domains that share a common schema and global catalog. A forest can contain one or more domain trees.

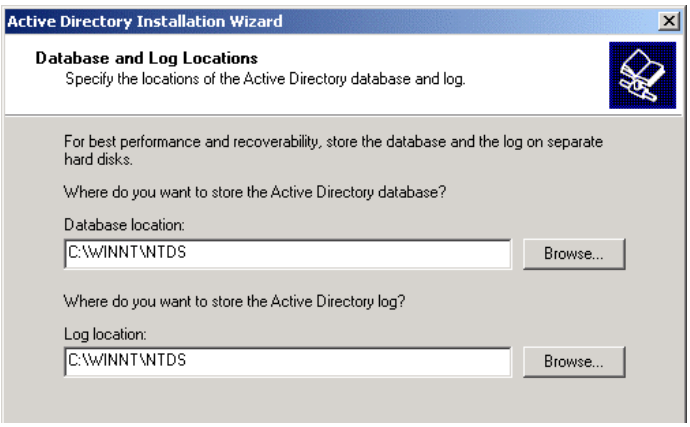


Enter a name, such as <yourhost>.com, for the DNS of the new domain and click Next.

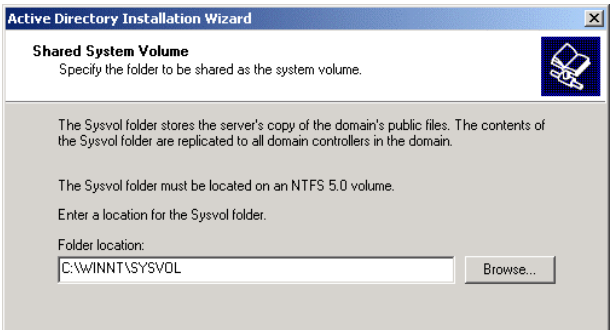
> You might see a message that another NetBIOS name was selected due to name conflicts on the network. Accept this by clicking OK.



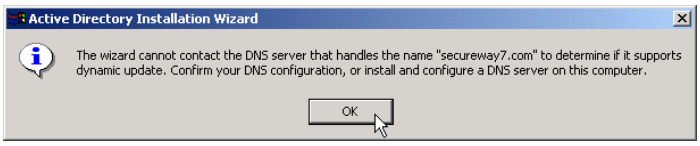
You may see this dialog. Click Next.



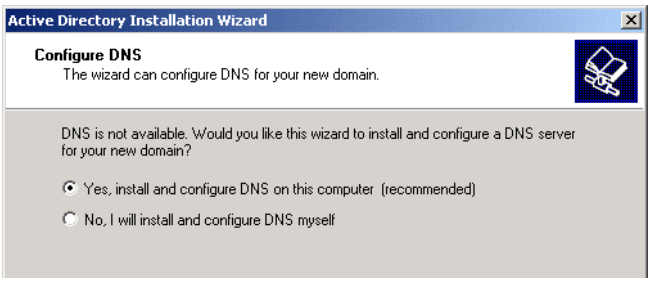
Take the defaults for the database and log locations, and click Next.



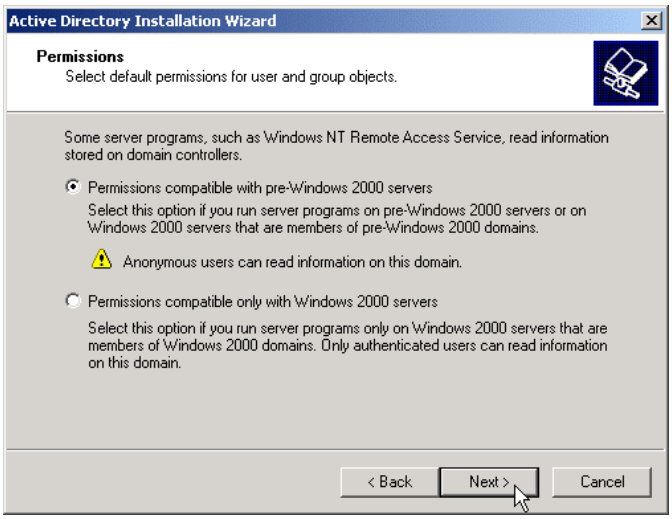
Take the defaults for the Shared System Volume folder location and click Next.



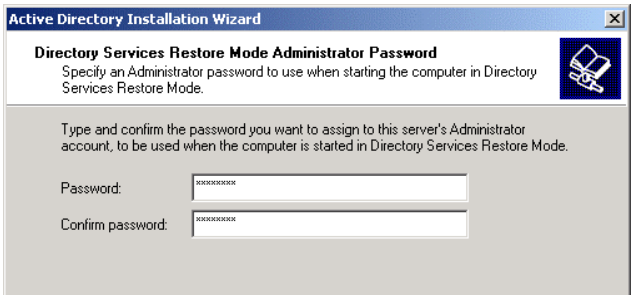
The DNS server is not yet available and configured, so just click OK.



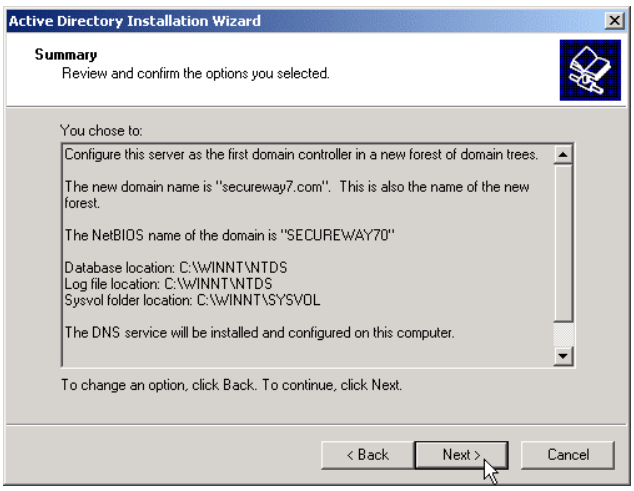
Accept the default to configure the DNS and click Next.



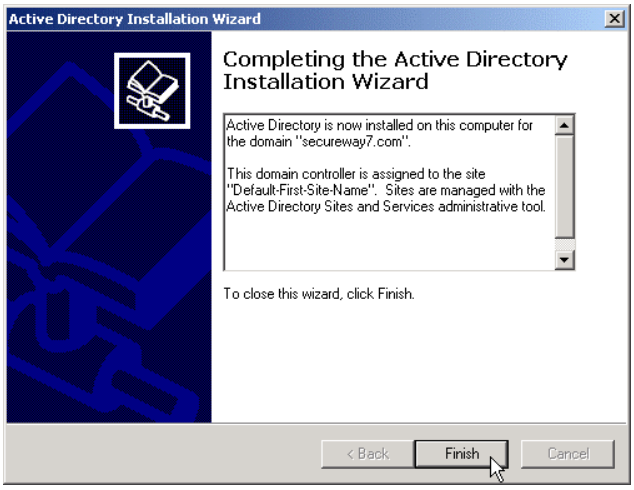
Accept the default permissions and click Next.



Enter "passw0rd" twice and click next.



Review the summary and click Next. Wait while the configuration process runs.



Congratulations! You've installed Active Directory. Click Finish.

46.6 Installing Domino Server

Domino Server Configuration Options

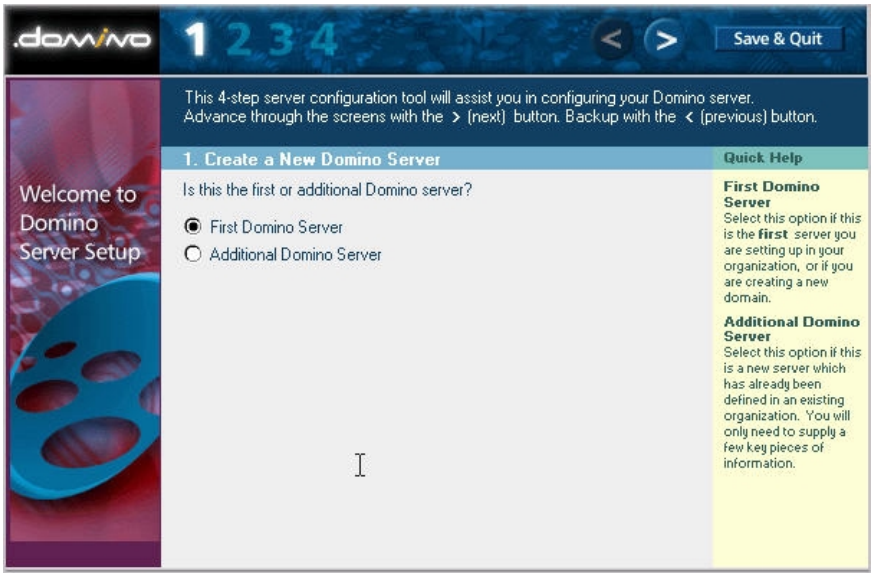
Install the Domino Server 5.0.9 on Windows 2000 Server using the defaults. It installs the package into *C:\Lotus\Domino* and creates a menu in the "Start-Menu:"

Start -> Programs -> Lotus Applications -> Domino

> In order to configure Domino Server and run it with Policy Director it is necessary to have these components installed:
> Lotus Domino Server
> Lotus Domino Administrator (usually, but not necessarily, a part of the Lotus Notes Client package)
> Lotus Notes Client (usually part of the Lotus Notes Client package)

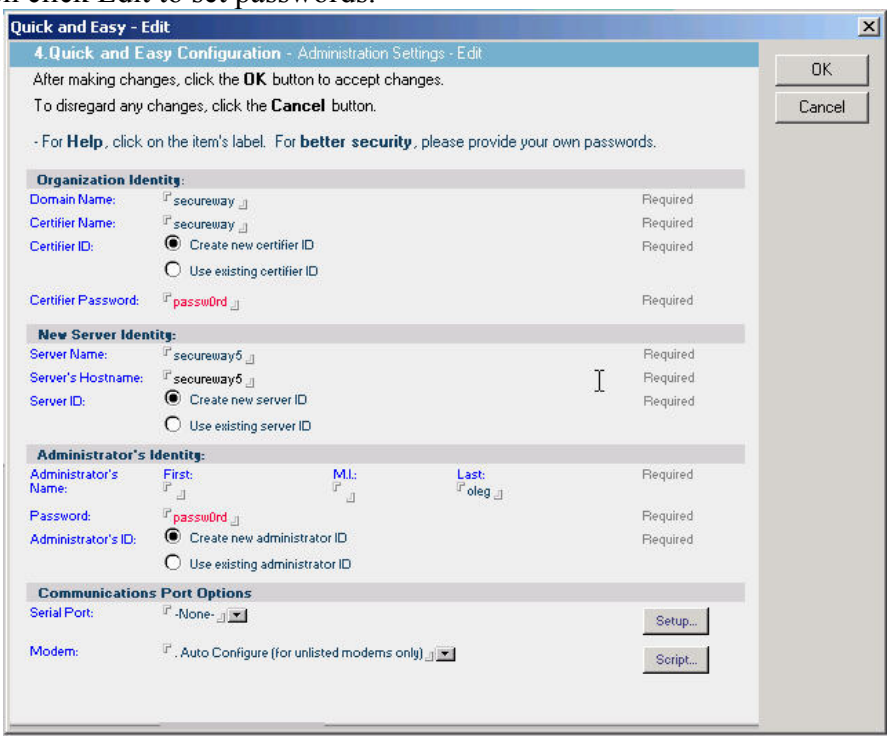
Basic Configuration of Domino Server

Run Start -> Programs -> Lotus Applications -> Domino -> Lotus Domino Server.



Select First Domino Server and click the right-arrow button. For the purposes of a test installation it is sufficient to choose "Quick and Easy Installation" and to leave the check boxes in the 3rd screen unchecked.

On the 4th screen click Edit to set passwords.



Enter *passw0rd* twice, and fill in other required parameters and note them for the future use.

Domain Name: _____

Certifier Name (the same as Domain Name): _____

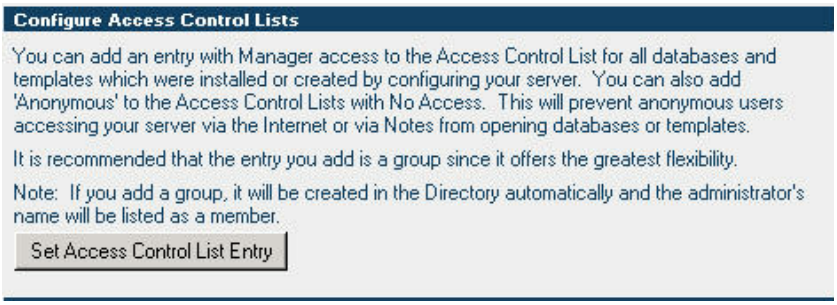
Server Name: _____

Server's Hostname (the same as the Server Name): _____

Administrator's Name: _____

Important: The Domain Name, Certifier Name, Server Name, Server's Hostname as well as Administrator's Name should be yours.

Click OK. Then click Finish.

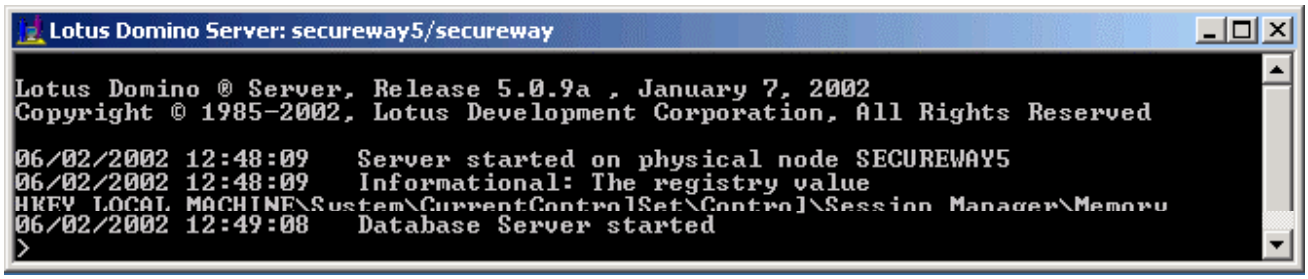


Note the location of the ID files created during the configuration of the Domino Server. By default they are located in *C:\Lotus\Domino\Data*. You can prohibit anonymous access to the Domino Server resources by setting an ACL. Click on the button "Set Access Control List Entry" and check the appropriate checkbox.

The Domino configuration will finish. Click Exit. The Domino Server process will start. You can also start it manually at any time by running

Start -> Programs -> Lotus Applications -> Domino -> Lotus Domino Server

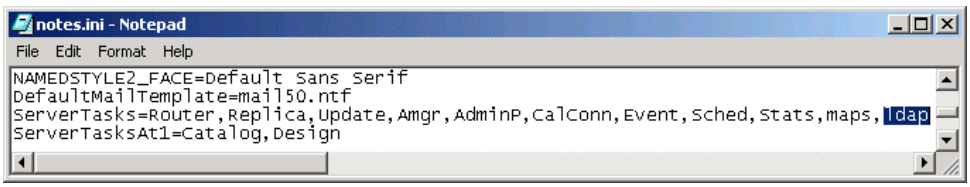
A healthy Domino Server provides console output like this:



The LDAP server (in Domino, the LDAP task) does not start automatically by default.
To start the LDAP task manually issue this command from the Domino Server console:

```
>load ldap
```

To set the LDAP task to autostart, modify *notes.ini* located in *C:\Lotus\Domino.*



Configuration of Domino Administrator

To manage Lotus Domino you need to install and configure Lotus Domino Administrator. In this section, the Domino Administrator client application. In this section, the example Domino administrator user account name is "oleg." The application is usually, but *not necessarily*, a part of the Lotus Notes client package.

To configure Lotus Domino Administrator run

Start -> Program Files -> Lotus Applications -> Lotus Domino Administrator

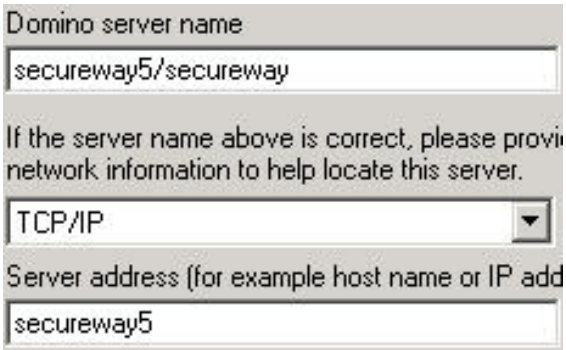
This will present a number of dialog windows, where you choose the following:

I want to connect to a Domino server, and

Set up a connection to a local area network (LAN)

Domino server name:
<Server name>/<Domain name>

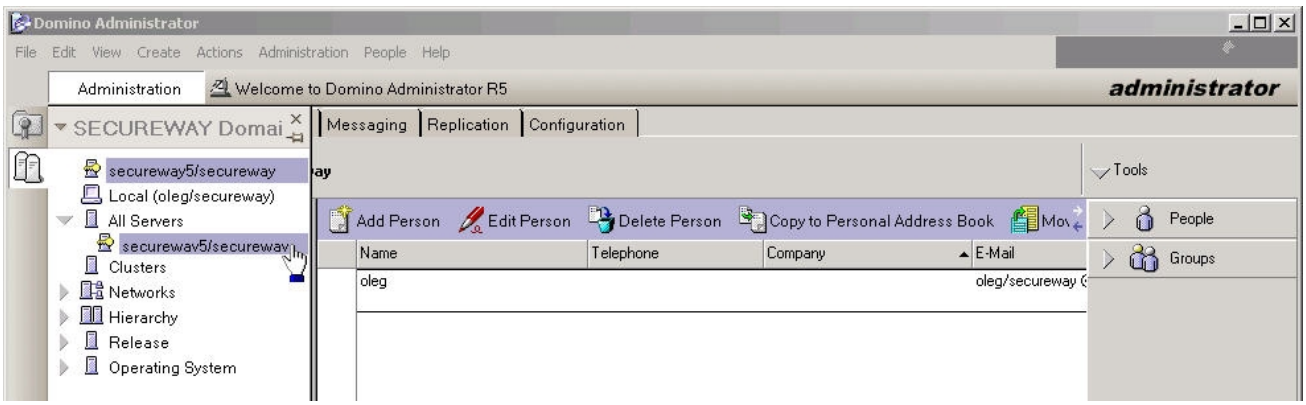
Use a name as identification. User name:
<Administrator's name>



If Domino server could not be contacted, fill in the server name or IP address manually in the window (this option may not appear). Click Next after each of these.

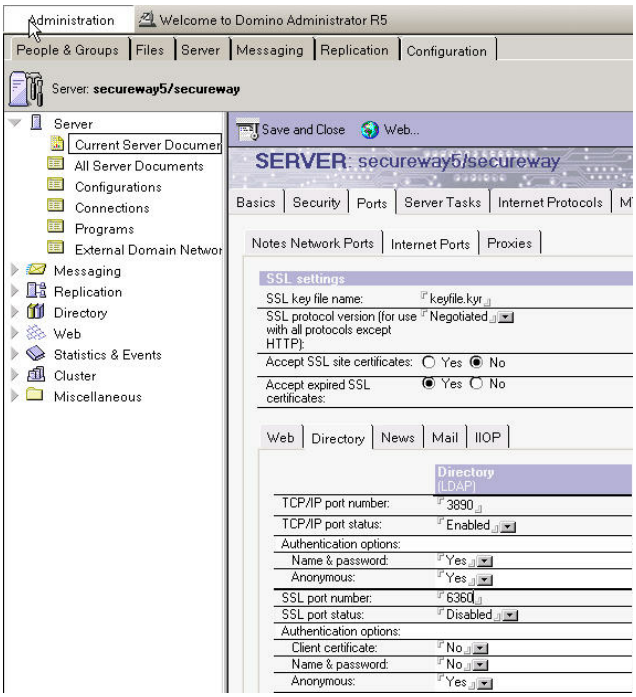
After the connection to a Domino server is set up, the client connects to the Domino server and retrieves the ID file of the administrator. You will be prompted for the password to logon as the administrator (user ID that was filled in in the previous step, e.g. "oleg").

Configuring Lotus Domino Server to Run with Policy Director



Modify Domino LDAP configuration

You may want to modify the LDAP configuration of the Domino LDAP server. If you have configured Active Directory, it always listens on port 389, and so does Domino LDAP by default. It is easier to modify the port used by Domino LDAP, rather than AD.

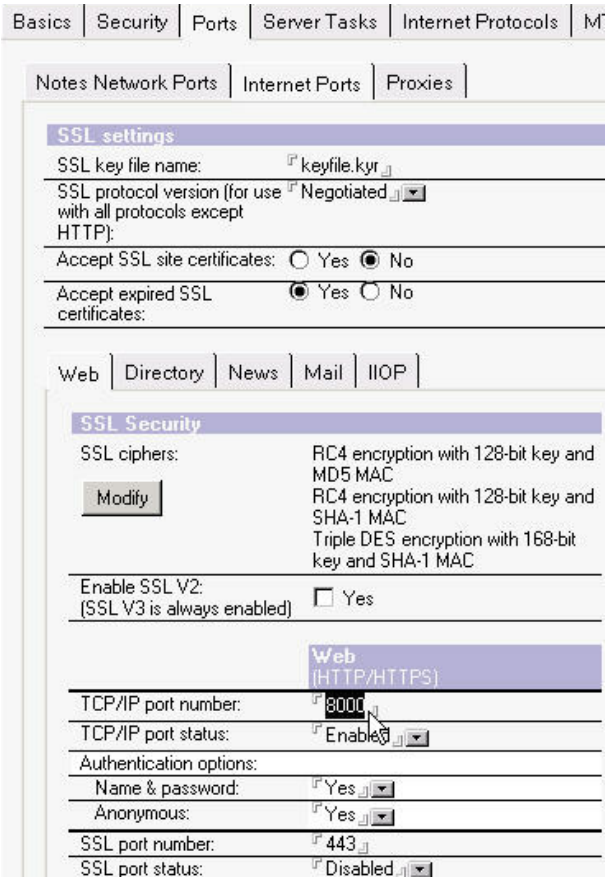


Change the TCP/IP port number to 3890, the port you will use for Domino throughout the labs. Apply the change by restarting the Domino LDAP task using the Domino Server Console:

```
> tell ldap quit
> load ldap
```

Modify Domino HTTP Server Configuration

You may want to modify the HTTP server configuration that is set to autostart by default. The SSL port is disabled by default, so it does not need to be modified.



Set the TCP/IP port number to 8000 and restart the HTTP task using the Domino Server Console:

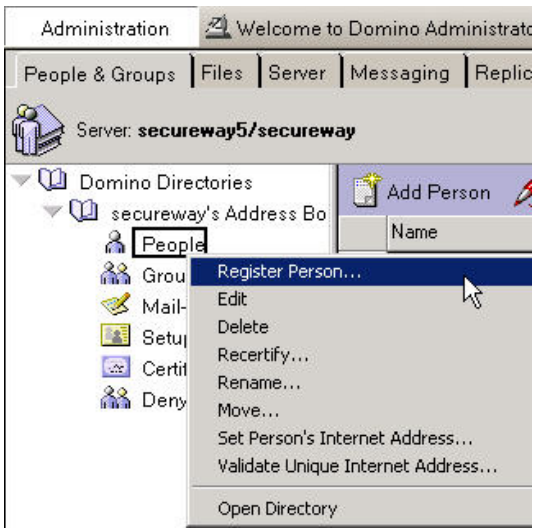
```
> tell http quit
> load http
```

Configure the PD Privileged User in Domino

In order to give Policy Director the authority it requires to configure itself in the Domino domain, a user must be created in the Domino environment. This user, whom we will call the PD *Privileged User*, must be configured before Policy Director configuration is started.

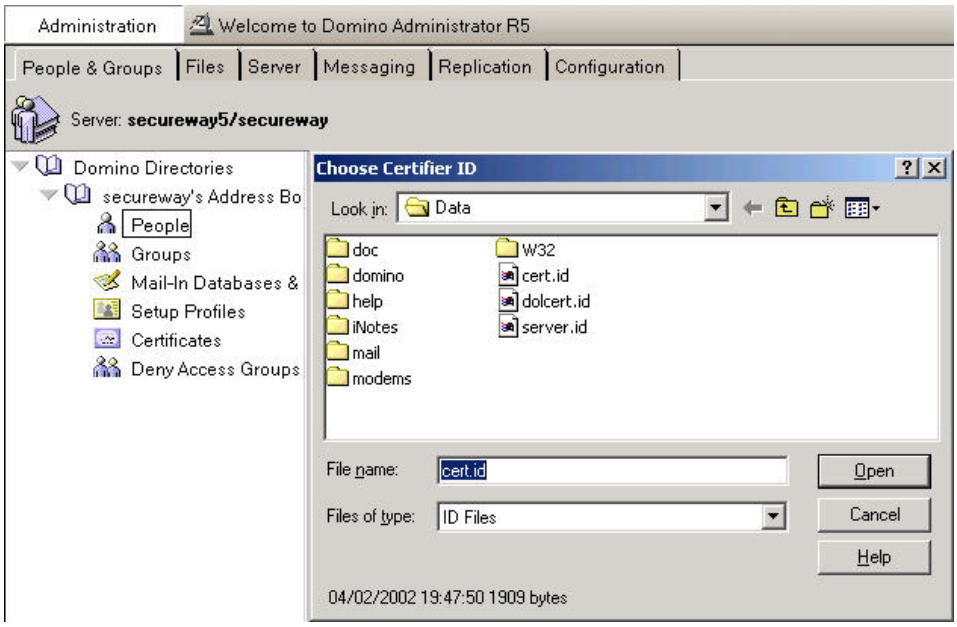
The PD Privileged User identity is used during configuration. All Policy Director servers also use this identity in order to access the Domino environment – this is different from an LDAP environment where each server has its own identity to access the registry.

To create the PD Privileged User, use Lotus Domino Administrator (GUI).

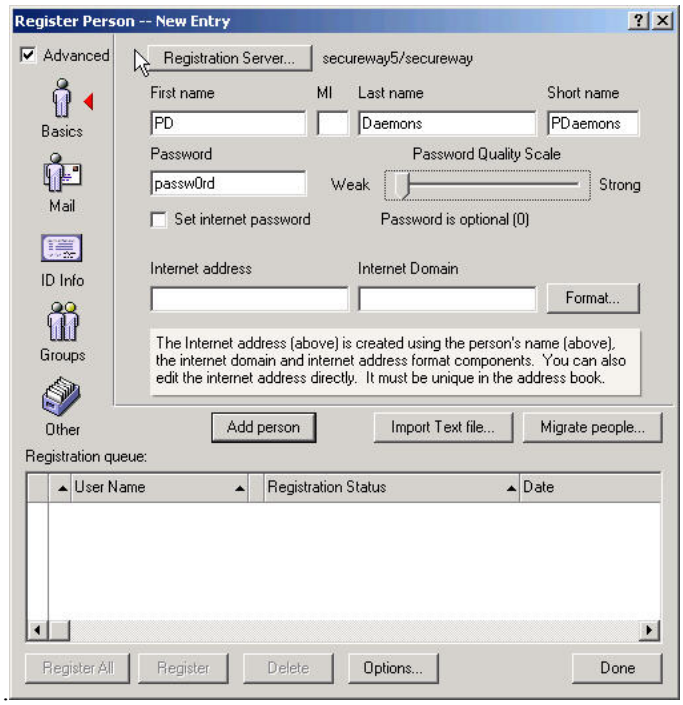


Navigate to the Domino server, go to the "People & Groups" tab and right click on the People object in the domain's Address Book (there also may be the personal Address Book, we don't want use that). Select "Register Person…."

You may be asked for the ID file of the certifier (essentially the Certification Authority in Domino).

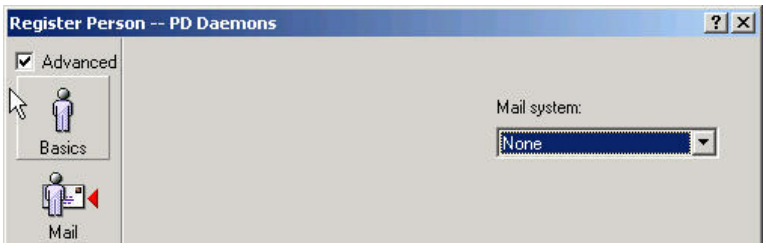


Find the ID file in *C:\Lotus\Domino\Data*. The password for this ID file corresponds to Certifier Password provided for the Organisation Identity (4th step while configuring Domino Server – see earlier screenshot). Click Open.

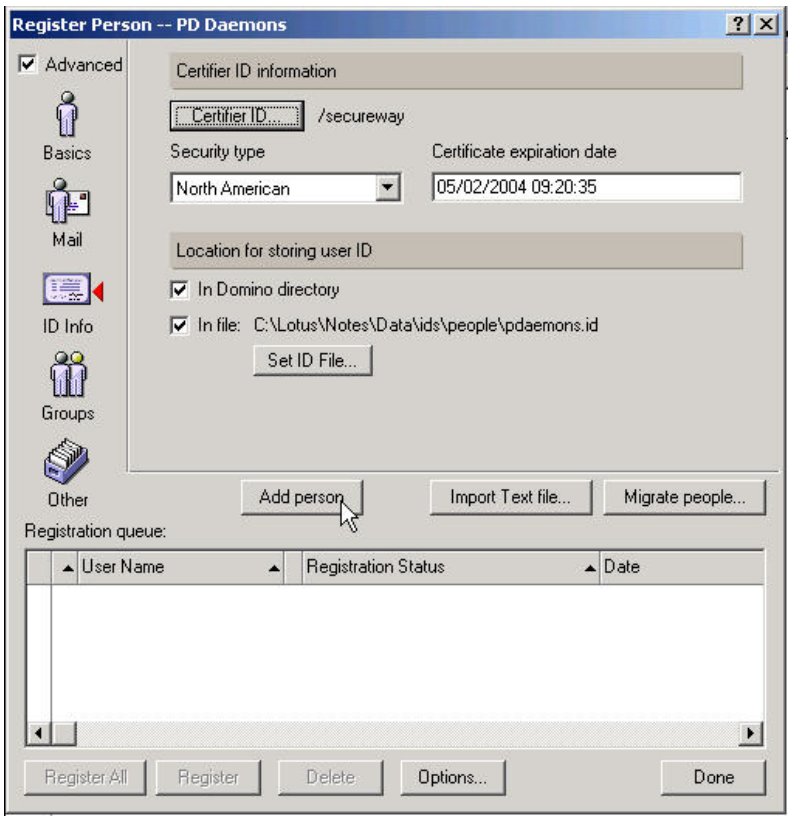


Fill in the basic information about the new user as shown. The name of the PD Privileged User is not restricted – it can be anything that is valid in Domino. In this example, PDaemons is the identity of Policy Director in Domino.

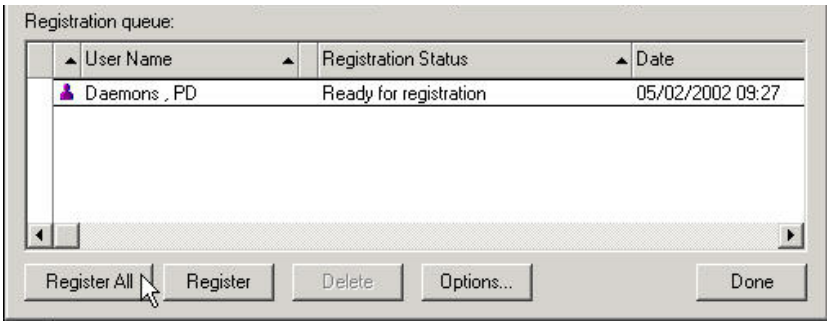
To disable Mail for that user, click on the Mail button.



Select None in the Mail system drop-down. Then click the ID Info button.

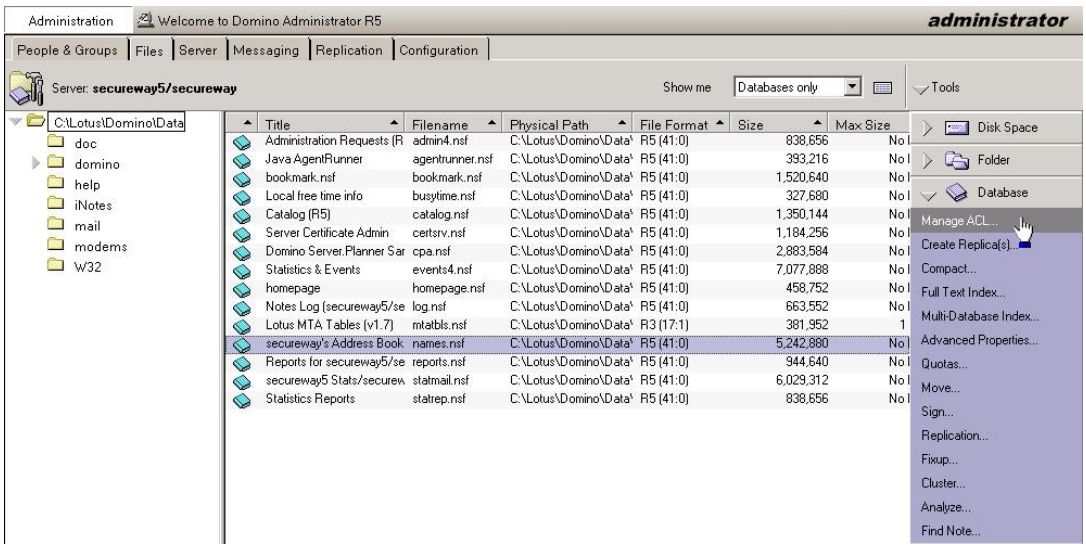


Select the option to save the ID file to disk and put the registration into the queue. Click the "Add person" button.

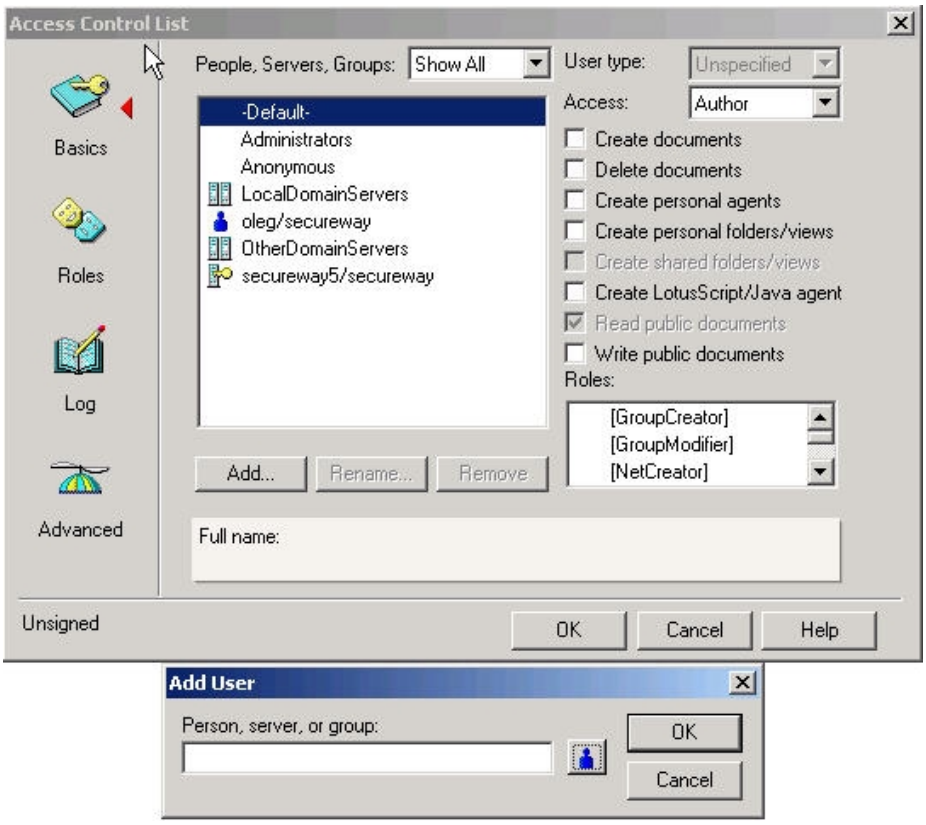


Next register the user by pushing the "Register All" button.

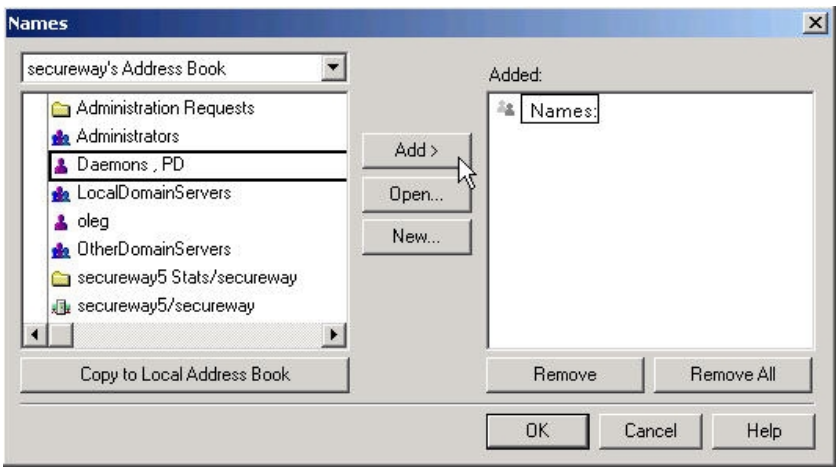
The PD Privileged User requires Manager access (including delete) to the domain NAB. To grant this user the permissions, navigate to the "Files" tab. (You were previously in the "People & Groups" tab.)



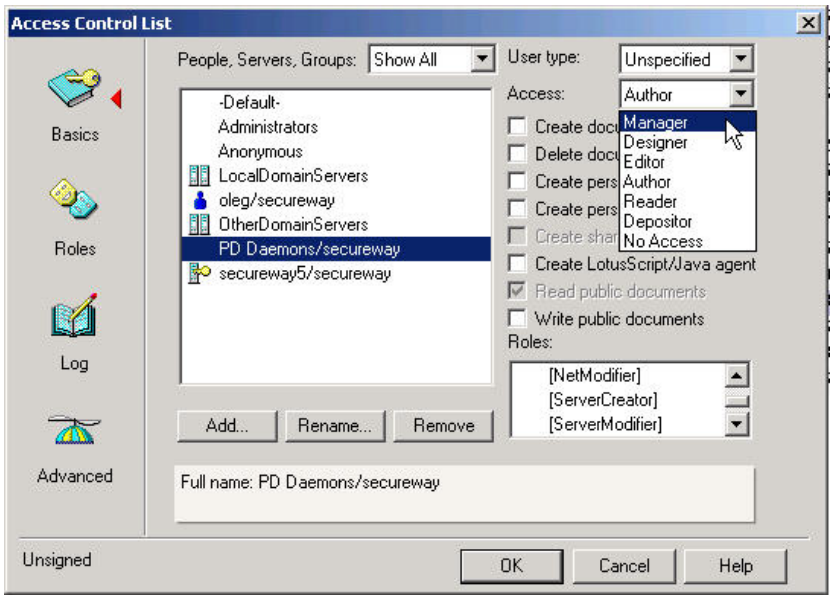
Highlight your domain's Address Book, and select “Manage ACLs” from Tools. In the next dialog click “Add” under the list of People, Servers, and Groups.



Then select the PD Privileged User from the **Domain** Address Book by clicking the small Person button.



Click on the "Add" button, then OK on the Names dialog, and then OK again on the small Add User dialog.



Grant the Administrator user Manager access level as shown. After you select Manager make sure all the Access: checkboxes are checked. Click OK. Domino is now ready to host PD.

47. Appendix B -- WebSphere Installation

47.1 Prerequisites and Preparations

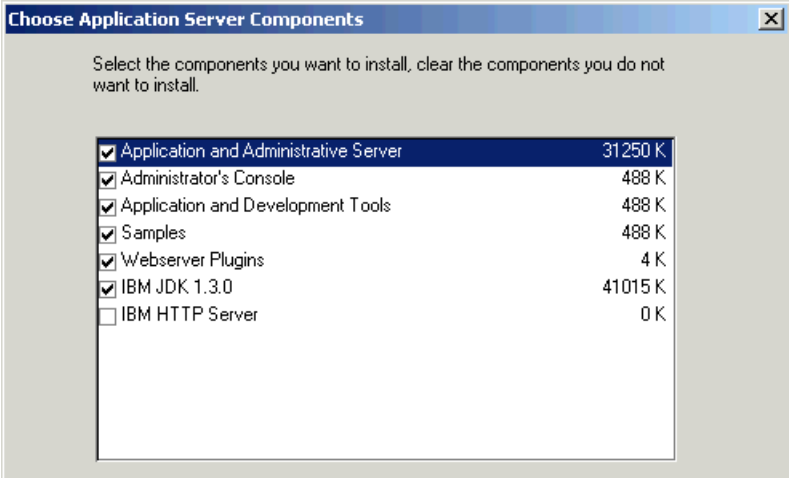
In order to successfully install WebSphere 4.02, verify that you already have the prerequisite software installed and configured. (In these labs we need latest GSKIT, currently 5.0.56 and DB2 7.2 FP4.) In case you have not updated the DB2 drivers to JDBC 2.0, do so following the instructions provided in section 46.3 Configure DB2 to use JDBC 2.

Before proceeding with the installation it is good practice to stop all Web servers you want to configure with WebSphere. In the labs you will use IBM HTTP Server. To stop it run

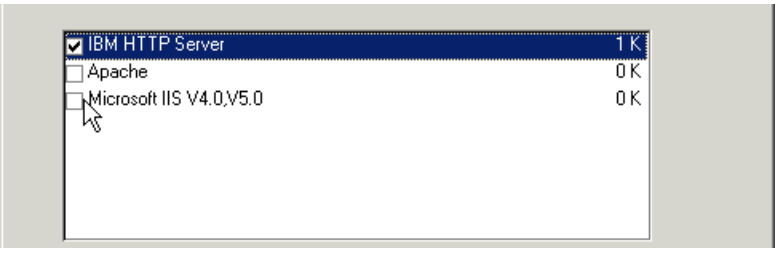
Start->Programs->IBM HTTP Server->Stop HTTP Server

47.2 Procedure

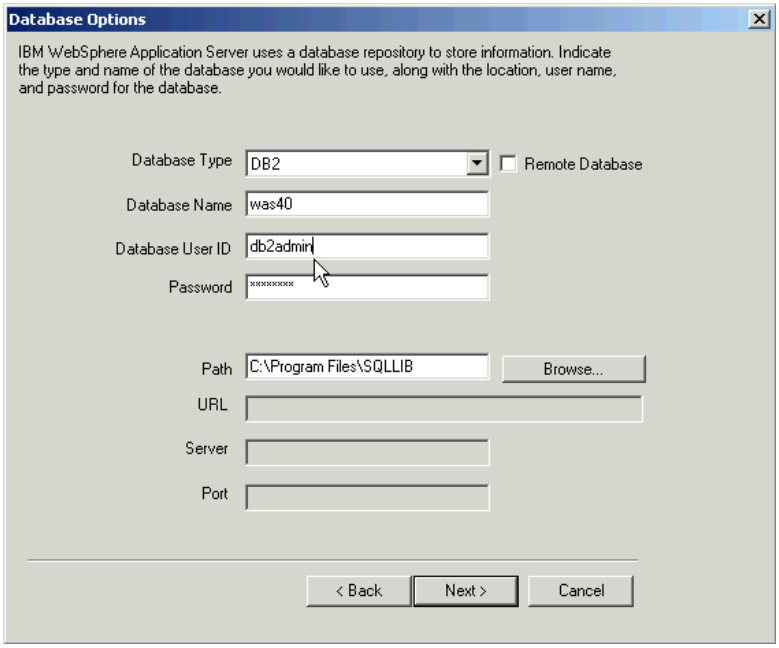
Use Windows Explorer to *D:\Lab Setup\WAS402WIN* and launch *setup.exe*. Accept English as installation language and continue until you are asked to choose the installation option. Select a *Custom Installation*. Click Next.



Choose to install all components except the IBM HTTP Server, previously installed. Click Next.



Select the IBM HTTP Server as the Web server to use with WebSphere so that the proper plug-in is installed. Click Next. When asked to specify a username and password for starting the services use *Administrator* and *passw0rd*. Accept the default installation folder *C:\WebSphere\AppServer* unless you have some other reason to change it.



Enter *db2admin* and *passw0rd* for the Database User ID and Password and fill in the other fields as shown.

Accept the default for creating a Program Folder and click on Next until the installation starts to copy all the files. When it completes accept to restart the machine.

After rebooting the machine the DB2 database *was40* is created and it will takes some minutes to complete initialization.

If everything is fine a "First Steps" control window appears, and from there you can start the Administrative Server. You can also start it with

Start->Programs->IBM WebSphere->Application Server V4.0 AE->Start Admin Server

or from the Services console by starting **IBM WS AdminServer 4.0**.

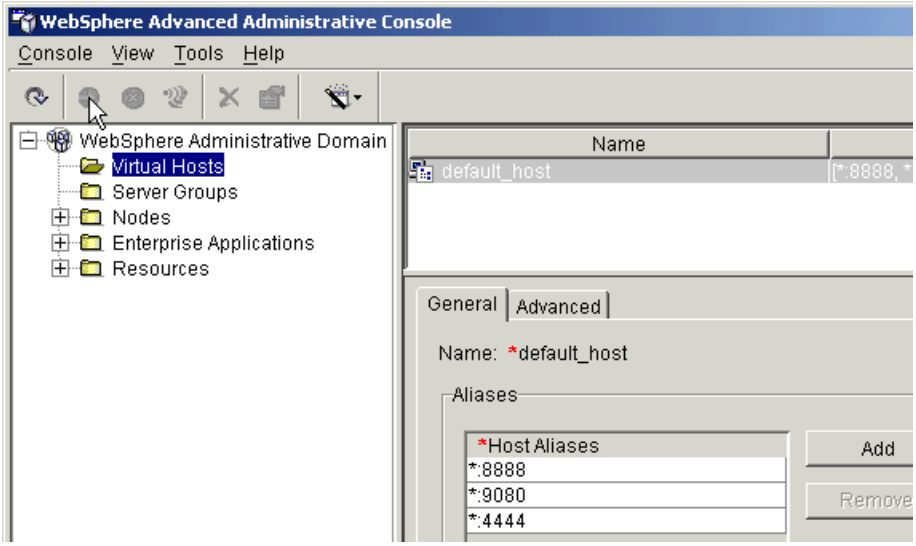
47.3 Configuring and Testing Your WebSphere Installation

After the server is started you can launch the Administrator's Console either using
The First Steps window or in the following way:

Start->Programs->IBM WebSphere->Application Server V4.0 AE->Administrator's Console

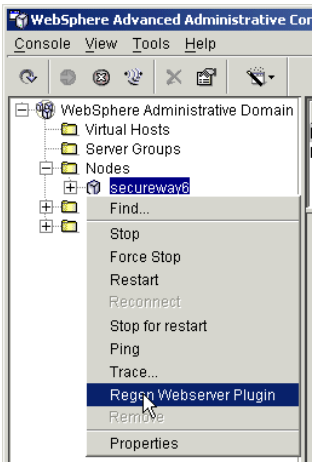
Depending on the power of your machine, the console can take some seconds before it appears, so be careful not to launch multiple consoles. Just be patient for a few moments!

On the Admin Console select expand WebSphere Administrative Domain. Click on Virtual Hosts.



Change the host alias from *:80 to *:8888 (use colons, not periods), the port on which your IBM HTTP Server is listening. Add a new host alias of *:4444. This will be for SSL access. Apply to make change to be effective. In general, when using the Admin Console, don't forget to click Apply to effect a change.

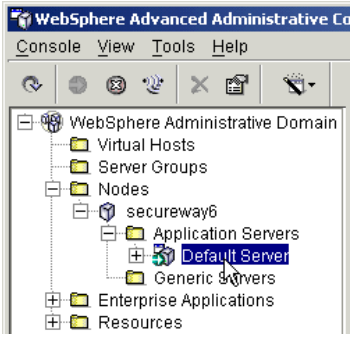
After this change you need to regenerate the Web server Plug-In.



Expanding Nodes and right-click on your *hostname* node. Select Regen Webserver Plugin. You will not receive a confirmation dialog for this, but there will be an event message in the message log box at the bottom of the screen.

From the Windows Services dialog, restart the IBM HTTP Server service to reload the new Web server plug-in.

In the WebSphere Admin Console, expand your hostname node, then Application Servers and you'll see the Default Server.



You can start it with a right-click and selection Start, or you can start by selecting it normally and then clicking on the green -> button in the button bar. Start the Default Server.

If it starts successfully you'll receive a confirmation message and next to the server's icon there will be a small green icon with an arrow.

The configuration is now complete. To check that is everything is working fine, open your browser and point it to *http://yourhost:8888/webapp/examples*. You should see a page with all the examples. If so, you have successfully installed WebSphere. Congratulations.

48. Appendix C -- Manual Installation of PD Web Portal Manager

48.1 Manually Installing PD WPM into WebSphere

This section is here for reference. This will normally be done in the labs using a BAT file. But if you would like to install the PD WPM manually, here are the instructions.

Considerations

This section describes how to install PDWPM into WAS manually using the WAS Admin Console application. You will still need to run the Configure... command in the Policy Director Configuration dialog because that adds the necessary stanzas to *httpd.conf*.

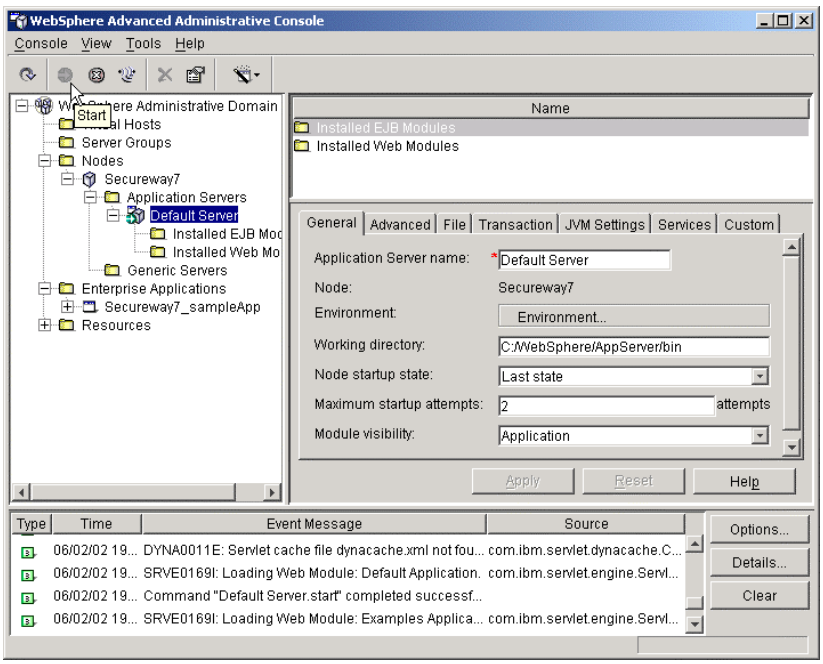
Procedure

Select Policy Director Web Portal Manager and click Configure... to setup the IBM HTTP Server's *httpd.conf* file.

> The Web Portal Manager is a Web application and does not use EJBs.

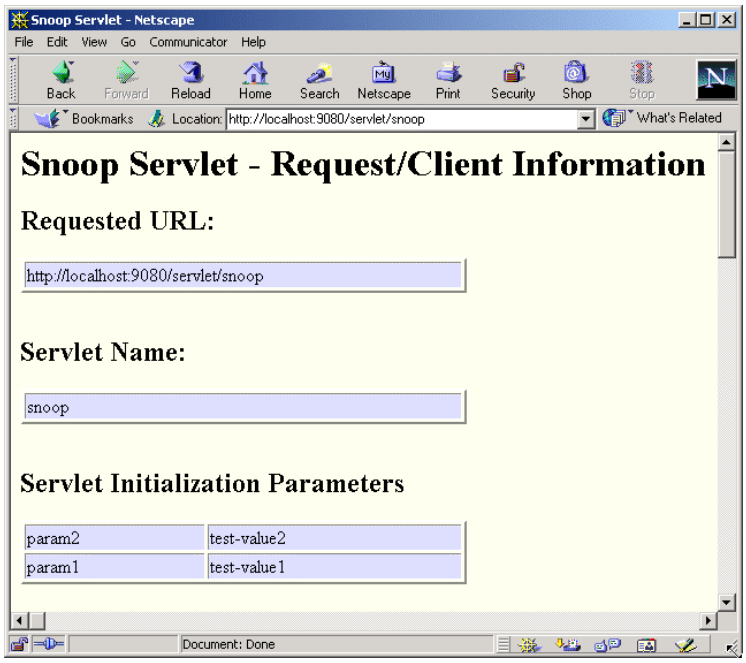
Start the WAS Admin Server by running Start->Programs->IBM WebSphere->Application Server V4.0 AE->Start Admin Server. (Note that you can also start the Admin Server from the Services window by running IBM WS AdminServer 4.0.) A DOS window will open and display messages as the Admin Server starts.

Next, start the WAS Admin Console by running Start->Programs->IBM WebSphere->Application Server V4.0 AE->Administrator's Console.

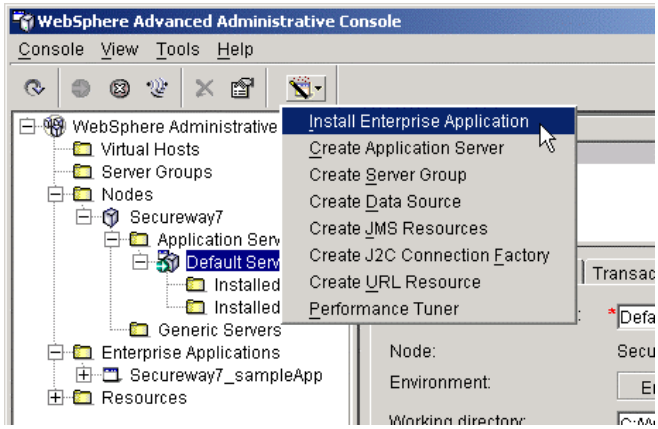


Expand WebSphere Administrative Domain, Nodes, <your host name>, and Application Servers. If there is a red X next to the Default Server instead of a green arrow, select the Default Server and click the green Start button as shown above. Click OK on the dialog that confirms starting the Default Server.

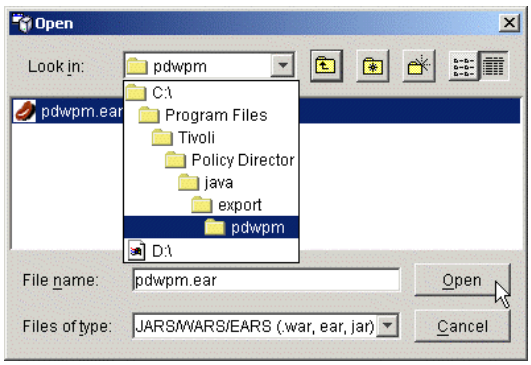
Test that WAS is running properly by opening Netscape (Netscape must be setup to not use a proxy for local addresses, etc.) or preferably IE and entering *http://localhost:9080/servlet/snoop*. You should see the output of the Snoop Servlet.



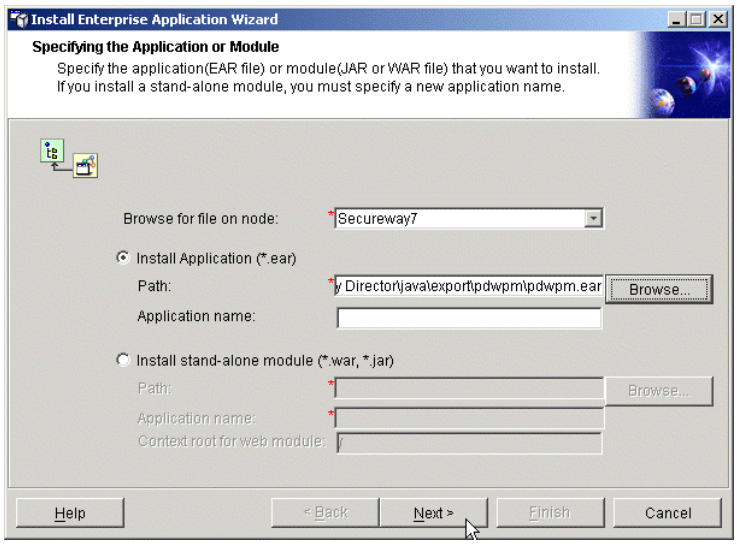
The port is 9080 because it is the port for WebSphere's own embedded Web server. Using the embedded Web server allows you to bypass the added complexity of a standalone Web server. Now to install Web Portal Manager....



Click on the toolbar button on the right and select Install Enterprise Application. Next click Browse for the Install Application (*.ear) Path:.



Navigate as shown, select *pdwpm.ear*, and click Open.

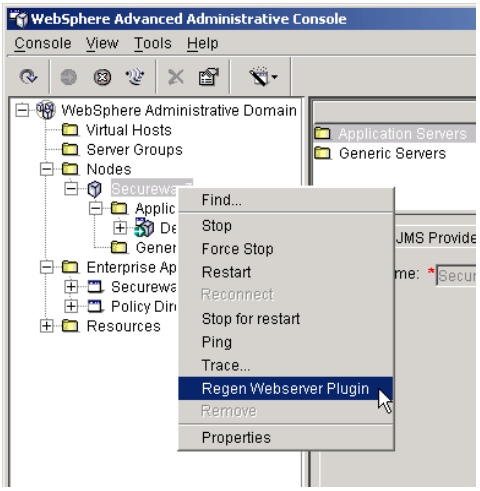


Click Next.

Click Next on the **Mapping Users to Roles** dialog.
Click Next on the **EJB RunAs Roles to Users** dialog.
Click Next on the **Binding Enterprise Beans to JNDI Names** dialog.
Click Next on the **Mapping EJB References to Enterprise Beans** dialog.

Click Next on the **Mapping Resource References to References** dialog.
Click Next on the **Specifying the Default Datasource for EJB Modules** dialog.
Click Next on the **Specifying Data Sources for Individual CMP Beans** dialog.
Click Next on the **Selecting Virtual Hosts for Web Modules** dialog.
Click Next on the **Selecting Application Servers** dialog. (Your host should be specified.)
Click Finish on the **Completing the Application Installation Wizard** dialog after reviewing it.
Click OK on the EnterpriseApp.Install completed successfully dialog.

Return to the Admin Console.



Right mouse click on your hostname node and select Regen Webserver Plugin. This will add the new application to *C:\WebSphere\AppServer\config\plugin-cfg.xml*, the file used by the Web server plug-in to determine whether a request should be sent to WebSphere.

The plug-in must now be reloaded by the Web server. From the Windows Services dialog, stop and restart the IBM HTTP Server.

49. Appendix D Banker 2001 Installation

49.1 Loading the Banker 2001 Application into Websphere

Importing the Application

In order to import the Banker2001 application into WebSphere it is be necessary to perform some operations manually. Because this application simulates a true banking environment it is necessary to create a DB2 database and tables for it. After doing this it is necessary to load the file *Banker2001.ear* into WebSphere and to regenerate the plug-in for your HTTP server so that your system is ready to run.

In order to automate all these steps there is a batch file that does all this good stuff for you. Before proceeding, make sure WebSphere is running, and use Windows Explorer to navigate to *D:\LabFiles\Banker2001*. Double-click on *setupBK2001.bat.*

The batch file will open another DOS shell and prompt you to continue for each sub-operation it is going to run. Of course monitor the proceedings and verify that each step completes successfully.

Don't worry if a window like the following shows you a warning about Restore, just proceed, and close it when the task has ended.

If everything goes fine an "installation completed" message will inform you of the end of the import procedure, and will remind you that the Banker 2001 application must be started in the WebSphere Admin Console.

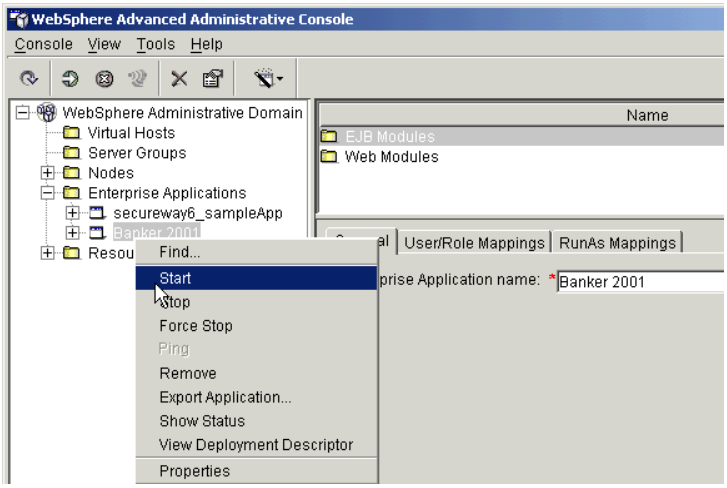
Remember to restart the IBM HTTP Server service.

Starting and Testing the Application

To start the application open the WAS Admin Console as follows:

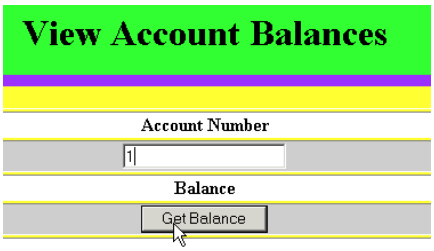
Start>Programs->IBM WebSphere->Application Server V4.0 AE->Administrator's Console

On the Admin Console expand the *Enterprise Applications* folder.



Right click on the Banker 2001 application and start it.

To check if everything is working point your browser to *http://yourhost:8888/Banker2001* and click on the View Balances link.



Be a little bit curious and get the balance for account number 1. Can the account 1 owner buy a round for everyone?

Part VII - Additional Information

50. Publications

The majority of these publications should be read ***before*** reading this document! The Access Manager technical documentation can be found at **http://www.tivoli.com/support/public/Prodman/public_manuals/td/TD_PROD_LIST.html** (which includes a link to the support pages for registered users). For internal users, the technical documents can be found at **http://www-internal.tivoli.com/support/public/Prodman/public_manuals/td/TD_PROD_LIST.html**

For Business Partners, there is information on Access Manager on TIPS at https://www.tivoli.com/teamtivoli/tips/products/enterprise/policy_dir_doc.html, and for internal users there is information on the MOT at http://mot.tivoli.com/product_info/enterprise/policy_dir.html.

It is worth referring to the Release Notes at one of those URLs, together with all the product documentation.

Highly recommended at the **Access Manager Field Guides** – they are available for download from this internal site: **`http://www-internal.tivoli.com/secure/support/documents/fieldguides/tech_info.html`** and (for registered users) from this external site: **`https://www.tivoli.com/secure/support/documents/fieldguides/tech_info.html`**

It is likely to be worth looking at the Policy Director red book:

SG24-6008 *Tivoli SecureWay Policy Director: Centrally Managing e-business Security*

In addition, there is the FirstSecure red book:

SG24-5498-00 *Understanding IBM SecureWay FirstSecure*

and the LDAP red books:

SG24-4986 *Understanding LDAP*
SG24-5110 *LDAP Implementation Cookbook*

WebSphere

There's lots of useful information on **WebSphere Application Server Advanced Edition** at `http://www.ibm.com/software/webservers/appserv/doc/v40/ae/infocenter/` and on **WebSphere Application Server Advanced Edition Single Server Edition** at `http://www.ibm.com/software/webservers/appserv/doc/v40/aes/infocenter/`.

and the WebSphere red books:

SG24-6176 *IBM WebSphere V4.0 Advanced Edition Handbook*
SG24-6520 *IBM WebSphere V4.0 Advanced Edition Security*

There is also an FAQ at `http://w3dev.austin.ibm.com/tech/faq/index.html`

And for lots of detail on SSL/TLS, try *SSL and TLS: Designing and Building Secure Systems*, by Eric Rescorla, pub. Addison-Wesley, 2000.

End of Document