Web Express Logon for IBM WebSphere Host On-Demand Version 9

Contents

About this book

Description of book

This document is written for administrators who are interested in understanding, planning for, implementing, and troubleshooting Web Express Logon. It provides step-by-step instructions for configuring Host On-Demand Version 9 for Web Express Logon. For details about configuring other applications such as your network security application, refer to the Web Express Logon for Host On-Demand Version 8 white paper, located at http://gwareview.boulder.ibm.com/software/network/library/whitepapers/wel.pdf.

This book contains the following parts:

- Overview of Web Express Logon
- Planning
- Implementing connection-based automation
- Implementing macro-based automation
- API programming guide
- Troubleshooting error messages
- Appendices
  - Recording the Web Express Logon macro
  - Web Express Logon using the Configuration server-based model
  - Password encryption tool
  - Glossary of terms
  - Sources for more information
  - Notices
  - Trademarks

Conventions used in this book

The following typographic conventions are used in this document:

Table 1. Conventions used in this book

Convention	Meaning
`Monospace`	Indicates text you must enter at a command prompt and values you must use literally, such as commands, functions, and resource definition attributes and their values. Monospace also indicates screen text and code examples.
Italics	Indicates variable values you must provide (for example, you supply the name of a file for *file_name*). Italics also indicates emphasis and the titles of books.
>	When used to describe a menu, shows a series of menu selections. For example, "Click File > New" means "From the File menu, click the New command." When used to describe a tree view, shows a series of folder or object expansions. For example, "Expand HODConfig Servlet > Sysplexes > Plex1 > J2EE Servers > BBOARS2" means: 1. Expand the HODConfig Servlet folder 2. Expand the Sysplexes folder 3. Expand the Plex1 folder 4. Expand the J2EE Servers folder 5. Expand the BBOARS2 folder

This graphic is used to highlight notes to the reader.

This graphic is used to highlight tips for the reader.

This graphic refers to information that is specific to Certificate-based Web Express Logon.

Overview of Web Express Logon

Introduction

In the age of e-business on demand, finding ways to simplify the user experience while maintaining company security can be a real challenge. For example, many companies would like to decrease the number of IDs and passwords that their users have to manage, but they also realize that allowing users to access company resources without proper identification risks company security.

Several products exist in the marketplace that claim to solve the multiple logon issue and maintain security at the same time. However, these products generally apply to Web-based applications only and do not address logon processes for legacy hosts and host-based applications. In other words, in host-based applications that do not use HTML or XML, automating the logon process requires being able to intercept the telnet data stream. Because of its unique position to work with individual screens and the ability to substitute fields in the data stream, Host On-Demand is an ideal candidate to address multiple logon issues in companies where users access host systems via browser-based terminal emulation.

Web Express Logon works in conjunction with your company's network security application to maintain company security while allowing users to log on to host systems without having to re-enter their user IDs and passwords. It has several benefits, including the following:

- **Ease of use**: Users can log on to their network security application and access host applications without having to re-enter their IDs and passwords.
- **Reduced password-related support calls**: Users are less likely to call the company support line because of forgotten or misplaced passwords.
- **Increased productivity**: Users can log on only once in an environment that has multiple methodologies for defining user IDs, passwords, and authentications.

What is the difference between Web Express Logon and Certificate Express Logon?

Host On-Demand offers two types of Express Logon:

- Web Express Logon
- Certificate Express Logon

Web Express Logon has been available since Host On-Demand Version 8, and Certificate Express Logon, formerly known as Express Logon Feature (ELF), has been available since Host On-Demand Version 5. Although the name has changed, Certificate Express Logon functions the same as ELF did in earlier versions and requires the same configuration.

Although both Web Express Logon and Certificate Express Logon allow users to log on to host systems without having to enter their user IDs and passwords, the two types of Express Logon have different requirements. For example, Web Express Logon can function with most session types and may or may not require client certificates, depending on the environment. Certificate Express Logon, however, requires client-side certificates for user authentication and works exclusively with 3270 session types. In order to use Certificate Express Logon, the client must have a valid certificate, and the SSL connection must be made to a supported TN3270 server. Which type of Express Logon you choose depends on your environment and your company needs.

Using client certificates with Web Express Logon

DCAS and z/OS environments that use client certificates for user authentication are no longer limited to Certificate Express Logon. Starting with Host On-Demand V9, Web Express Logon offers a type of logon automation that uses client-side certificates known as Certificate-based Web Express Logon. Although both Certificate Express Logon and Certificate-based Web Express Logon work exclusively with 3270 host sessions and require a DCAS server, the client certificates in the two models are used differently and the automation process requires different components. With Certificate Express Logon, client certificates are used to authenticate users to an Express Logon-enabled TN3270 server, and the Host On-Demand client and a TN3270 server are configured to automate the login process. With Certificate-based Web Express Logon, however, client certificates are used to authenticate users to a secure Web server, and a Host Credential Mapper plug-in and a macro are used to automate the login process.

Certificate-based Web Express Logon is a more flexible solution than Certificate Express Logon because it provides more implementation options. For more information about Certificate-based Web Express Logon, refer to Configuring macro-based automation in a z/OS and DCAS environment.

Can I migrate from Certificate Express Logon to Certificate-based Web Express Logon?

Host On-Demand V9 offers a new DCASELF plug-in that allows users of Certificate Express Logon to migrate to the more scalable certificate-based Web Express Logon architecture. This plug-in allows you to move SSL client authentication from the TN3270 server to a secure Web server.

How does Web Express Logon work?

The overall goal of Web Express Logon is to provide an automated way for users to log on to hosts and host-based applications without having to provide an additional ID and password. In order to accommodate the wide range of supported computing environments, Web Express Logon offers two styles of logon automation:

- macro-based automation
- connection-based automation

The style of logon automation that best suits your needs depends on your environment, including your host type, session type, and your current method for authenticating users. If the host does not allow the client to supply the needed credentials at the time the connection is established, for example, if the client must authenticate to the host after the host connection is established, macro-based automation is the appropriate style. In this model, the host must send a login screen to authenticate the client. The macro automates the login screen, populates the screen's credential fields with the appropriate user information, and then transmits this information to the host for authentication. However, if your host allows the client to supply the needed host credentials at the time the host connection is established, for example, using Kerberos authentication or FTP login, connection-based automation is the appropriate style.

The following sections provide more details about macro- and connection-based automation, including high-level overviews of some example environments supported by Web Express Logon. These examples are discussed in more detail throughout the remainder of this document.

Macro-based automation

As the name implies, macro-based automation requires a macro to automate the login process. The macro is responsible for obtaining the user's host credentials and passing that information to the host for authentication. The host credentials are based on one of the following user identity types:

- local system ID: the user's local operating system ID. Web Express Logon currently supports Microsoft Active Directory (Windows Domain).
- network ID: the user's network security application ID or client certificate. Web Express Logon currently

supports IBM Tivoli Access Manager and Netegrity Siteminder.
- Portal ID: the user's Portal Server ID. Web Express Logon currently supports Portal Server, a component of IBM WebSphere Portal.

User identity type is a configurable option in session properties.

If you plan for Host On-Demand to acquire the user's credentials from a different application than the ones supported by Web Express Logon, you will need to create your own plug-in. For more information, refer to Customizing Web Express Logon.

Macro-based automation relies on the following four key components and the interactions that take place among them. Not all environments that use macro-based automation use all four components:

- login macro
- Credential Mapper Servlet (CMS)
- Network Security plug-in
- Host Credential Mapper (HCM) database

The login macro automates the end-to-end process of the client sending the HTTPS request to the CMS, the CMS responding with the needed credentials, and the macro inserting the user's credentials in the proper fields to allow authenticated logon. You must record the login macro while you are in an active session. It initiates at the time the user attempts to access the host session, either automatically or manually (depending on your configuration).

The CMS is supplied with Host On-Demand and must be deployed to a J2EE-compliant HTTP server. At a high level, the CMS is responsible for determining the client's identity and returning the host credentials to the client as an XML document.

The CMS is not required if using the Portal Credential Vault as your HCM database. This is because the Host On-Demand portlet is designed to allow the Web Express Logon macro to acquire the user's credentials directly from Portal Server.

Host On-Demand provides two Network Security plug-ins, one for each of the two supported network security applications -- IBM Tivoli Access Manager and Netegrity Siteminder. The primary function of the Network Security plug-in is to acquire the user's network ID, which may be gleaned from the HTTP header of the incoming HTTP request object.

The Network Security plug-in does not apply to Microsoft Active Directory (Windows Domain), Portal Server, or Certificate-based Web Express Logon. For Microsoft Active Directory, the Windows login ID is used to identify the user. For Portal Server, the Portal ID is used to identify the user. For Certificate-based Web Express Logon, the client certificate is used to identify the user.

The HCM database is a back-end repository that maps users' network IDs to their host credentials. This repository can be one of the following:

- a JDBC database such as one created with IBM WebSphere DB2
- Portal Server Credential Vault

The Digital Certificate Access Server (DCAS) and Vault plug-ins provided with Web Express Logon and Host On-Demand portlets are designed to work with these repositories. Another possibility for a repository is an LDAP directory. However, using LDAP as your HCM database requires you to write your own plug-in. For more information, refer to Customizing Web Express Logon.

The following examples show you how the key components discussed above interact together, beginning at the point the user attempts to open a Host On-Demand session and initiate the login macro. If the macro is not configured to auto-start, the user will need to start it manually.

Supported environments

The following three Web Express Logon-supported environments use macro-based automation:

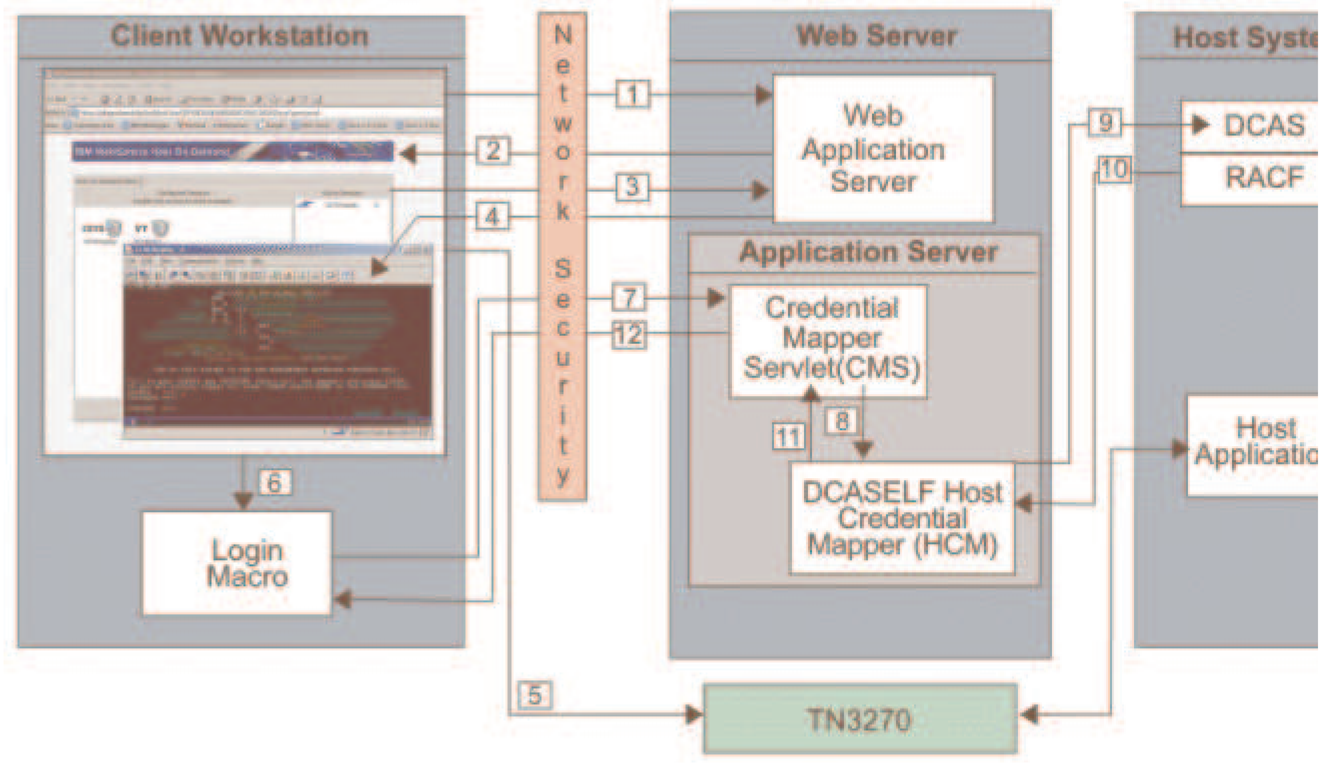
- z/OS and DCAS host authentication
- z/OS with vault-style credential mapping
- Authentication via Portal Server's Credential Vault Service

z/OS and DCAS host authentication

In a z/OS and DCAS environment, Web Express Logon supports two different models--one in which users are identified via client certificates (called Certificate-based Web Express Logon) and one in which users are identified via a network security application. Since both of these models have their own requirements for user identification, the Web Express Logon configuration steps are different for each model. In a certificate-based environment, you must configure your HTTP server as well as the browser and Java 2 keystore on each Host On-Demand client. In a non-certificate-based environment, you must configure your network security application and create your HCM database. Both models require you to configure the Digital Certificate Access Server (DCAS).

Figure 1 and Figure 2 along with the accompanying steps illustrate how Certificate-based and non-Certificate-based Web Express Logon work in a z/OS and DCAS environment:

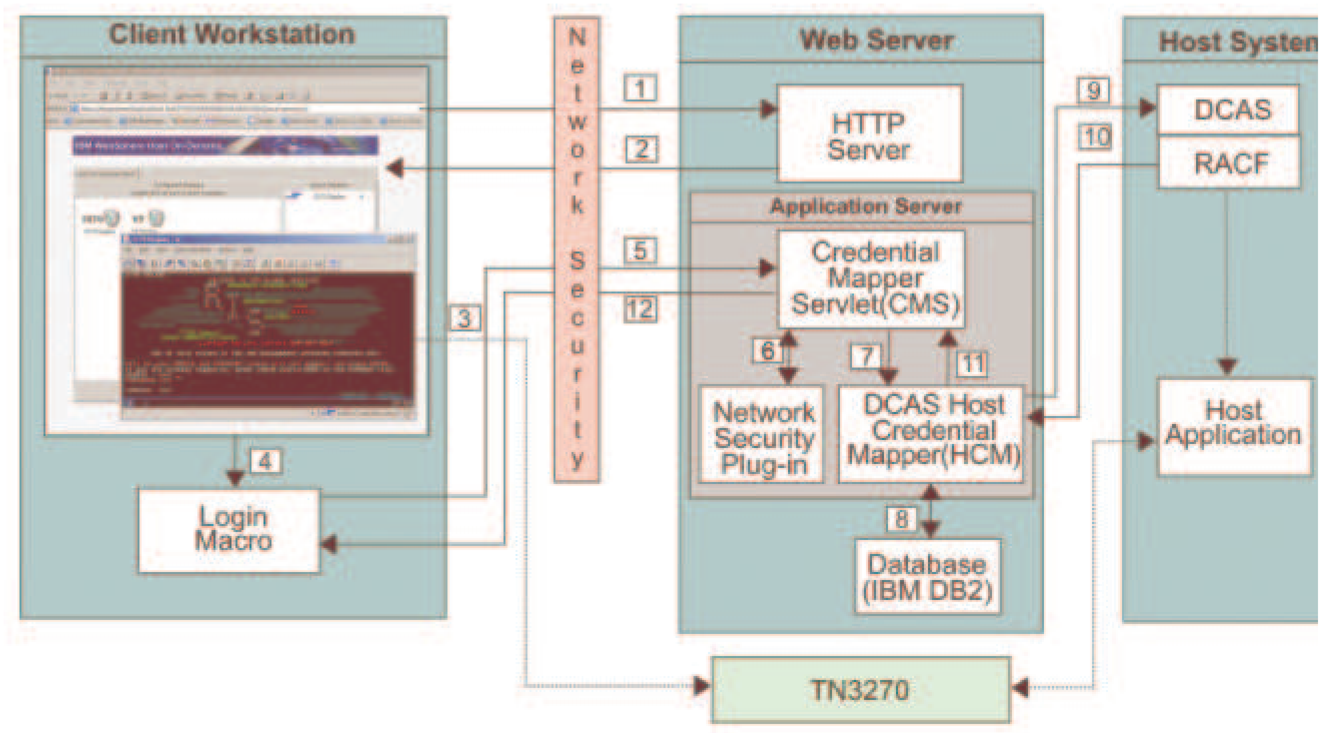
Figure 1. Certificate-based Web Express Logon in a z/OS and DCAS environment



1. The user clicks a link to launch the Host On-Demand desktop, which sends an HTTP request to the Web server.
2. The server requests a client certificate to perform client authentication. The client certificate must be stored in the browser's keyring.
3. The user sends the client certificate to the server.
4. The Web server returns the HTTPS request, and the Host On-Demand desktop displays.
5. The user launches a host session.
6. The login macro executes.

7. The macro sends an HTTPS request to the CMS to obtain the host credentials.
8. The CMS passes the application ID to the DCASELF HCM plug-in.
9. The DCASELF HCM retrieves the user's certificate from the Web application server.
10. The host (RACF) identifies the client, checks the client's authorization, and returns the passticket to the DCASELF HCM plug-in.
11. The DCASELF HCM plug-in returns the host ID and passticket to the CMS.
12. The CMS returns the host credentials to the client as an XML document.

Figure 2. Non-certificate-based Web Express Logon in a z/OS and DCAS environment



1. The user clicks a link to launch the Host On-Demand desktop, which sends an HTTPS request through the network security application to the HTTP server.
2. The Web server returns the HTTPS request, and the Host On-Demand desktop displays.
3. The user launches a host session.
4. The login macro executes.
5. The macro sends an HTTPS request to the CMS to obtain the host credentials.
6. The CMS retrieves the user's network ID from the Network Security plug-in.
7. The CMS passes the network ID and application ID to the DCAS HCM plug-in.
8. Using the network ID and application ID, the DCAS HCM plug-in calls upon a database, such as IBM DB2, to map the user's host ID.
9. The DCAS HCM plug-in passes the user's host ID and application ID to Digital Certificate Access Server (DCAS) and requests a passticket.
10. The host (RACF) identifies the client, checks the client's authorization, and returns the passticket to the DCAS HCM plug-in.
11. The DCAS HCM plug-in returns the host ID and passticket to the CMS.
12. The CMS returns the host credentials to the client as an XML document.

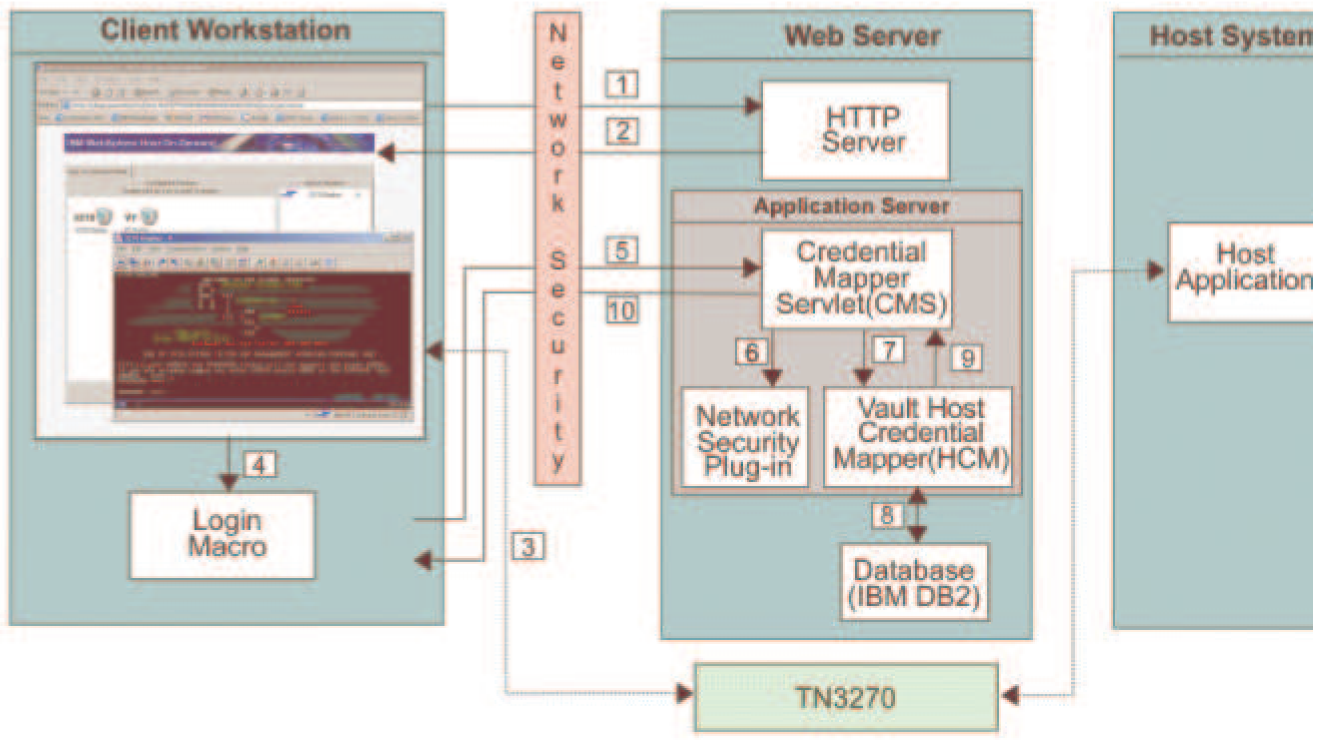
The login macro automatically inserts the user's credentials in the logon screen fields without user intervention. Now the user is fully authenticated and can proceed with the session.

For more information, refer to Configuring macro-based automation in a z/OS and DCAS environment.

z/OS with vault-style credential mapping

In this model, users are authenticated in a vault-style environment. Figure 3 illustrates this environment:

Figure 3. Web Express Logon in a vault-style environment

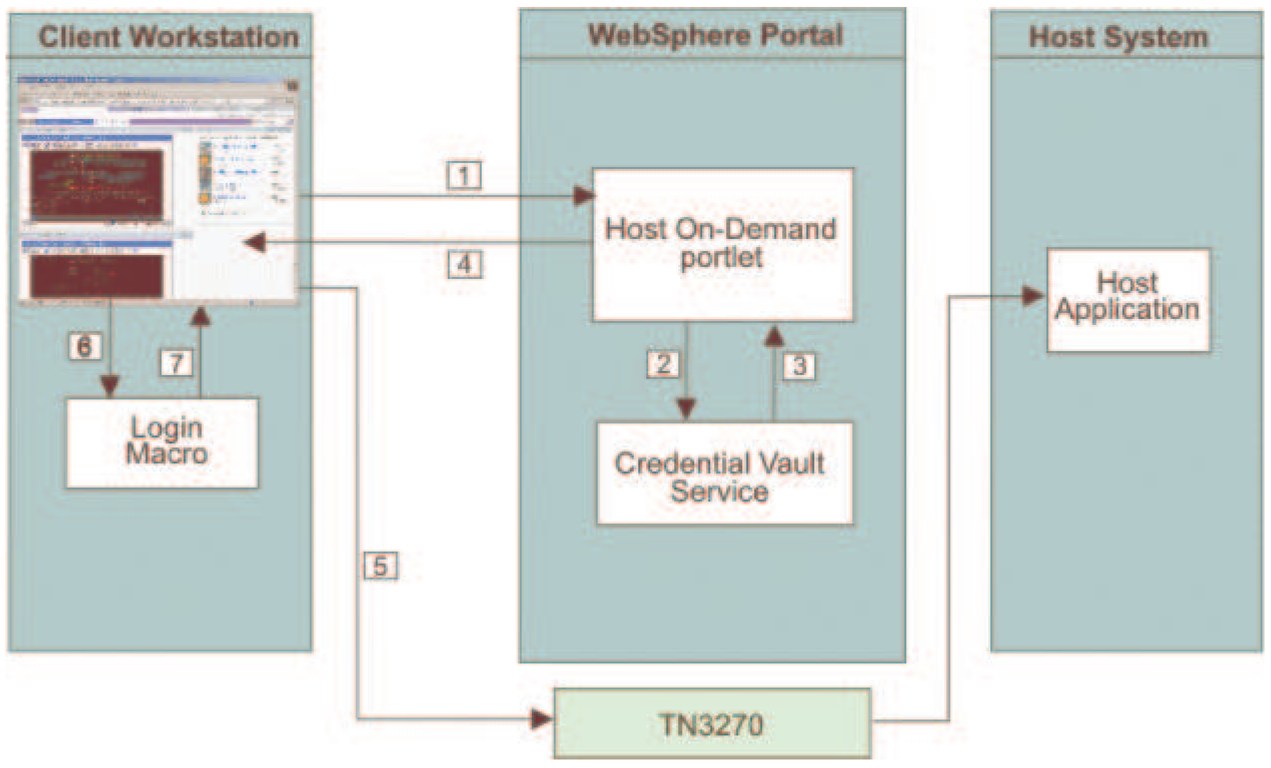


1. The user clicks a link to launch the Host On-Demand desktop, which sends an HTTPS request through the network security application to the Web server.
2. The Web server returns the HTTPS request and the Host On-Demand desktop displays.
3. The user launches a host session.
4. The login macro executes.
5. The macro sends an HTTPS request to the CMS to obtain the host credentials.
6. The CMS retrieves the user's network ID from the Network Security plug-in.
7. The CMS passes the network ID and application ID to the Vault HCM plug-in.
8. Using the network ID and application ID, the Vault HCM plug-in calls upon a database, such as IBM DB2, to map the user's host ID and password.
9. The Vault HCM plug-in passes the user's host ID and password to the CMS.
10. The CMS returns the host credentials to the client as an XML document.

Authentication via Portal Server's Credential Vault Service

In this model, users are authenticated via Portal Server, a component of IBM WebSphere Portal. Figure 4 illustrates this environment:

Figure 4. Web Express Logon in a Portal Server environment



1. The user logs on to IBM WebSphere Portal and chooses a portal page that includes the Host On-Demand portlet.
2. The Host On-Demand portlet initiates the Credential Vault Service.
3. The Credential Vault Service retrieves all the credentials that are accessible to the Portal user.
4. The Host On-Demand portlet sends the credentials to the client workstation and displays the Host On-Demand applet.
5. The user launches a host session.
6. The login macro executes.
7. The login macro retrieves the credentials from the data received from the Host On-Demand portlet and performs the logon operation.

Macro-based automation has been successfully tested with the following applications:

- IBM Tivoli Access Manager for e-business Versions 4.1 and 5.1
- Microsoft Active Directory
- Netegrity Siteminder Version 5.5
- IBM WebSphere Portal Server Version 5.02
- WebSphere Application Server Version 5.02, Version 5.02 Enterprise, and 5.0.2.5
- IBM DB2 Universal Database Version 7
- z/OS V1R4 with APAR PQ74457

The macro-based automation version of Web Express Logon can function with other applications that are not listed here.

Connection-based automation

Unlike macro-based automation, connection-based automation does not require a macro because the client and the host are able to connect without having to provide the user with a login screen.

Supported environments

The following two Web Express Logon-supported environments use connection-based automation:

- IBM i5/OS or OS/400 host with Kerberos passticket authentication
- FTP login

IBM i5/OS or OS/400 host with Kerberos passticket authentication

Currently, Web Express Logon supports i5/OS and OS/400 (V5R2 and later) telnet-negotiated environments that have Kerberos authentication enabled. It does not require the CMS, a login macro, a Network Security plug-in, nor the HCM database. Instead, it extends the existing single sign-on capability of the i5/OS and OS/400 operating systems.

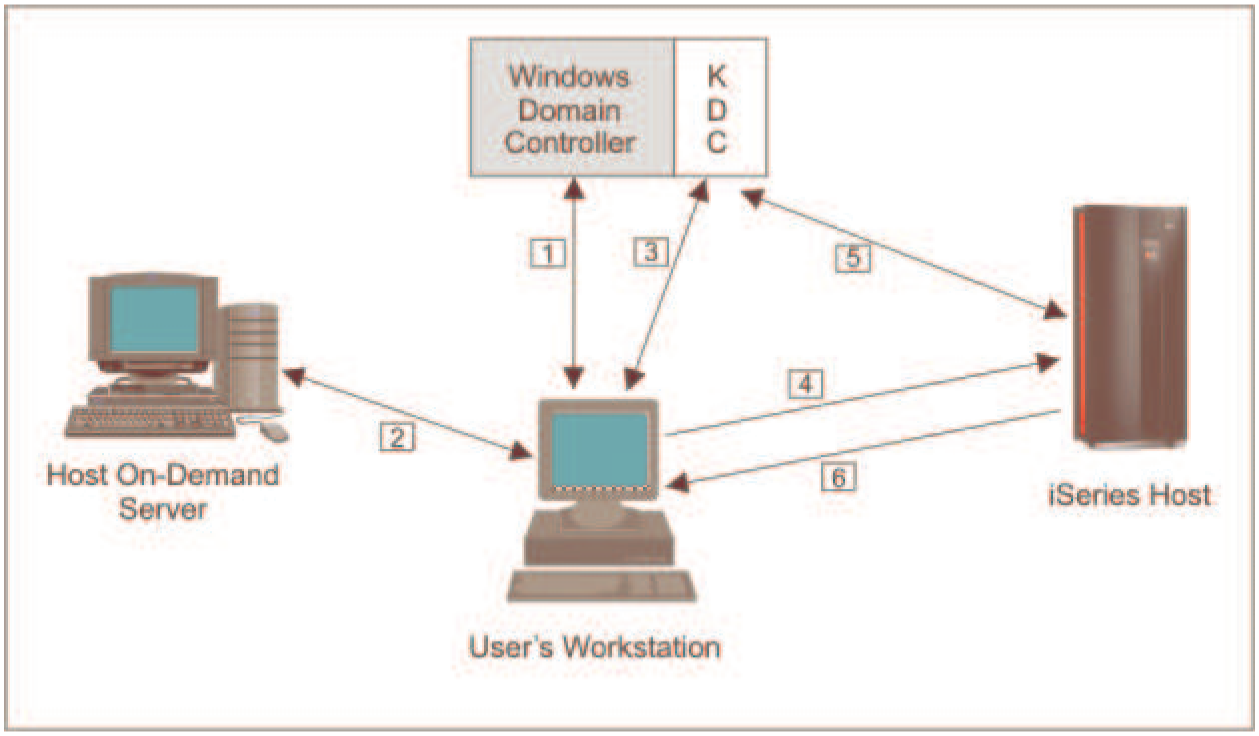
In order for connection-based automation to function in this environment, you must have the following prerequisites in place:

- Windows Domain Controller (Microsoft Active Directory)
- key distribution center (KDC)
- Kerberos network authentication enabled on each target i5/OS or OS/400 system
- i5/OS or OS/400 V5R2 (5722-SS1) or later as the host operating system
- one or more of the following client operating systems:
  - Windows 2000 Professional and Server
  - Windows XP Professional
  - Windows Server 2003

You must configure your i5/OS or OS/400 environment to use single sign-on capability in order to implement connection-based logon automation. The i5/OS or OS/400 environment provides single sign-on capability through a combination of network authentication service and an IBM technology called Enterprise Identity Mapping (EIM). Host On-Demand uses this existing methodology for acquiring credentials to allow users to bypass the 5250 session login screen. Both network authentication service and EIM technology are available with the i5/OS and OS/400 (V5R2 and later) operating systems.

Figure 5 illustrates the overall process of connection-based automation in an i5/OS or OS/400 environment with Kerberos authentication enabled:

Figure 5. Web Express Logon in an i5/OS or OS/400 and Kerberos environment



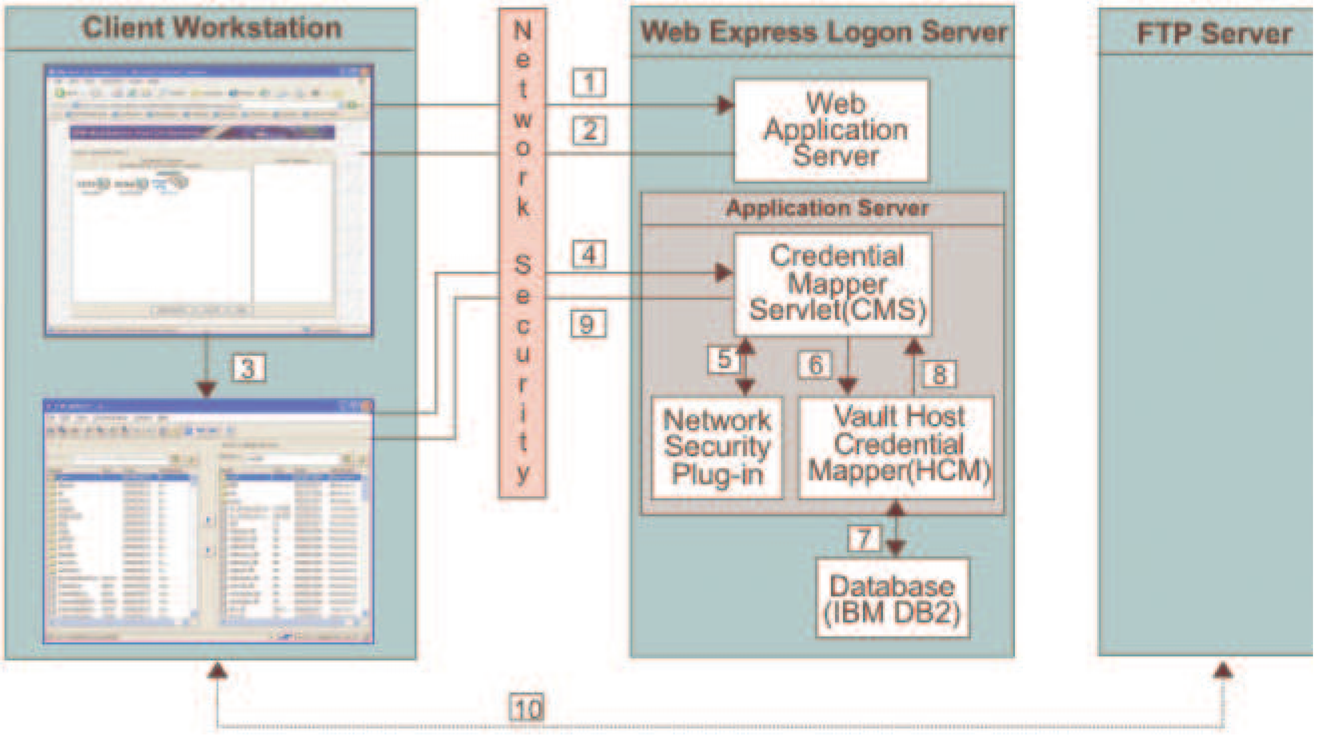
1. A user logs on to the Windows domain. The Windows domain gives users access to the network.
2. The user requests a Host On-Demand session from the Host On-Demand server.
3. The Host On-Demand session initializes and requests a Kerberos ticket from the KDC.
4. The user attempts to create a connection with the identified session using the Kerberos ticket as the credential.
5. The i5/OS or OS/400 host validates the ticket with the KDC.
6. The user is successfully logged in

FTP login

Web Express Logon provides an automated way for users to log on to FTP hosts by providing a central repository for storing and retrieving user's credentials. Although this process is similar to configuring Web Express Logon in a vault-style environment , this type of automation is different because the user's credentials are retrieved from the CMS at the time the connection is established. In other words, it does not require a macro. Currently, Host On-Demand allows you to store a user's ID and password statically in the FTP configuration; however, Web Express Logon extends this approach by automating the user credential retrieval process.

Figure 6 illustrates the overall process of connection-based automation in an FTP login environment:

Figure 6. Web Express Logon in an FTP login environment



1. The user clicks a link to launch the Host On-Demand desktop, which sends an HTTPS request through the network security application to the Web server.
2. The Web server returns the HTTPS request, and the Host On-Demand desktop displays.
3. The user attempts to launch an FTP session.
4. The FTP session sends an HTTPS request to the CMS to obtain the FTP credentials.
5. The CMS retrieves the user's network ID from the Network Security plug-in.
6. The CMS passes the network ID to the Vault HCM plug-in.
7. Using the network ID, the Vault HCM plug-in calls upon a database, such as IBM DB2, to map the user's host ID and request the user's password.
8. The Vault HCM plug-in returns the FTP user ID and password to the CMS.
9. The CMS returns the FTP credentials to the client as an XML document.
10. The FTP login completes and displays the FTP server's file listings.

Planning

Planning for implementation

Having a clear understanding of your environment and how you plan to implement Web Express Logon in your environment will save you valuable time in the implementation phase. Be sure that you take time to develop your strategy and gather the necessary resources and skills. A firm plan is key to a successful implementation.

We recommend that you begin planning by taking the following steps:

Step 1: Choose your style of logon automation.

As described in the introduction, Host On-Demand offers two styles of logon automation:

- macro-based automation
- connection-based automation

The style of logon automation that best suits your environment depends on your host and session type. If your host allows the client to supply the needed host credentials at the time the connection is established (for example, during the telnet negotiation via a Kerberos passticket), connection-based automation is the appropriate style to use. However, if the client does not receive the needed credentials at time the connection is established, the host must send a login screen to authenticate the client. Since automating this login screen requires a macro, macro-based automation is the appropriate style. The macro populates the screen's credential fields with the appropriate user information and then transmits this information to the host for authentication.

Step 2: Identify areas of credential challenges.

Credential challenges are the times at which users are prompted to provide IDs and passwords. The first step is to evaluate your existing network infrastructure and identify which credential challenges exist for your users. Approach this step by simulating a typical day and identifying all the points at which users are prompted to provide credentials. For example, in a corporate environment, users may have to provide credentials when attempting to access any of the following resources:

- operating system
- corporate home page
- Web-based applications
- host-based applications

Step 3: Take an inventory of your environment.

At this point, you should know which style of logon automation is appropriate for your environment and what components are necessary to implement Web Express Logon. Before you can successfully plan your deployment strategy and estimate the scope of implementation, take a moment to take an inventory of your environment and answer the following questions according to your style of logon automation:

Macro-based automation

- What is your host type?
- What application do users go through to access the network? Tivoli Access Manager? Netegrity Siteminder? Microsoft Active Directory (Windows Domain)? Portal Server?
- Are you planning to customize your own Network Security plug-in? If so, do you have someone on hand who has some J2EE knowledge and experience working with J2EE-compliant servlets?
- What Web application server are you using? IBM WebSphere Application Server? BEA WebLogic? Apache Tomcat?
- For non-Portal environments, do you have a J2EE-compliant Web application server to deploy the Credential Mapper Servlet (CMS) to your Web server?
- What will you use as your Host Credential Mapper (HCM) database? IBM DB2? Portal Server Credential Vault? LDAP?
- Do you plan to use DCAS on a z/OS platform?
- Are you using client certificates for security?

Connection-based automation

- What level of i5/OS or OS/400 are you running on your IBM eServer i5, iSeries, or AS/400 host or hosts? You must be running i5/OS V5R3 or OS/400 V5R2 or later in order to use Web Express Logon.
- Are your Host On-Demand clients authenticated using Windows Domain?
- What are you using as your Key Distribution Center (KDC)?
- Are your clients running one or more of the following operating systems?
  - Windows 2000 Professional, Server, or Advanced Server
  - Windows XP Professional
  - Windows 2003 Server

  If not, you will need to upgrade, since other versions of Windows do not support Kerberos authentication.

Step 4: Develop your deployment strategy.

Now that you have evaluated your need for a Web Express Logon solution, chosen the style of logon automation that best works in your environment, and taken an inventory of your company's environment and resources, you can begin developing your deployment strategy. Consider issues such as how many/which users will be affected by this implementation, which skills are required for a successful implementation, and how many people you will need to participate in the setup process.

Step 5: Establish an HCM database.

This step does not apply to Certificate-based Web Express Logon or i5/OS or OS/400 environments that support Kerberos authentication. An HCM database is required for all other environments discussed in this document.

This document does not provide details about how to establish an HCM database. For these details, refer to the Web Express Logon for Host On-Demand Version 8 white paper, located at http://gwareview.boulder.ibm.com/software/network/library/whitepapers/wel.pdf .

An HCM is a back-end repository that associates users' network IDs to their host IDs. The CMS queries this repository during the logon process. Web Express Logon supports the following two types of HCM databases:

- a JDBC database such as one created using IBM DB2
- the Portal Server Credential Vault

Another possibility for a repository is an LDAP directory. However, using LDAP as your HCM database requires you to write your own plug-in. For more information, refer to Customizing Web Express Logon.

Implementing macro-based automation

The way in which you implement macro-based automation depends on your environment. In this chapter, we focus on the following three environments:

- z/OS and DCAS (with or without client certificates)
- vault-style
- Portal Server

This document does not provide details for configuring other applications to work with Host On-Demand Web Express Logon. For more information regarding configuring other applications, refer to the Web Express Logon for Host On-Demand Version 8 white paper, located at http://gwareview.boulder.ibm.com/software/network/library/whitepapers/wel.pdf.

Configuring macro-based automation in a z/OS and DCAS environment

The DCAS is a TCP/IP server application that runs on OS/390 V2R10 and later (z/OS included). It interfaces with a Security Access Facility (SAF)-compliant server product to assist with express logon services such as Certificate-based Web Express Logon. In this example, this SAF-compliant server product is IBM Resource Access Control Facility (RACF).

Web Express Logon supports two different models for z/OS and DCAS environments--one in which users are identified via a network security application and one in which users are identified via client certificates (called Certificate-based Web Express Logon). The configuration steps defined in this chapter cover both models with certain information that is specific to Certificate-based Web highlighted with the following icon:

Refers to information that is specific to Certificate-based Web Express Logon.

The following steps show you how to edit and deploy the CMS provided with Host On-Demand, create an SSL key database so that Host On-Demand can communicate with the DCAS, and use the Deployment Wizard to create your HTML file, configure your 3270 host session, and record your login macro. In a certificate-based environment, you must also configure your HTTP server as well as the browser and Java 2 keystore on each Host On-Demand client. In a non-certificate-based environment, you must configure your network security application and create your HCM database. Both models require you to configure the Digital Certificate Access Server (DCAS).

For more information about configuring Host On-Demand clients for HTTPS and client authentication, refer to the *Planning, Installing, and Configuring Host On-Demand* guide located in the Host On-Demand Information Center at Start > Programs > IBM WebSphere Host On-Demand > Information Center or on the Web at http://publib.boulder.ibm.com/infocenter/hod9help.

Steps 5-8 are designed for administrators who are planning to use the Deployment Wizard to create the HTML file, configure the host session to use Web Express Logon, and record the Web Express Logon macro all in one sitting. However, you may decide to create your HTML file first and then configure your session and create your macro later.

Step 1: Configure the Credential Mapper Servlet (CMS).

We recommend using a J2EE-compliant Web application server such as IBM WebSphere Application Server to configure and deploy the Credential Mapper Servlet (CMS). The CMS is supplied with Host On-Demand and must be deployed to a J2EE-compliant Web application server. At a high level, the CMS is responsible for determining the client's identity and returning the host credentials to the client as an XML document.

A. Locate the WAR files on the Host On-Demand Version 9 CD

The three WAR files are located in the `cdimage\apps\wel` subdirectory. Choose the one that matches your network security application:

- IBM Tivoli Access Manager: amcms.war
- Netegrity Siteminder: smcms.war
- Microsoft Active Directory (Windows Domain): wincms.war

If you have a different network security application, you will need to customize your own version of the CMS. For more information about how to do this, refer to Customizing Web Express Logon.

In addition to several other files, the WAR file contains the following files:

- web.xml: the servlet configuration file that you will edit in a later step
- DCAS.xml: for non-Certificate-based Web Express Logon, a sample file to help you better understand DCAS parameters and their values
- DCASELF.xml: for Certificate-based Web Express Logon, a sample file to help you better understand DCAS parameters and their values
- was.policy: for IBM WebSphere Application Server users only, this file contains the required permissions for the CMS when Java 2 security is enabled (refer to Troubleshooting Web Express Logon for more information)

B. Become familiar with the INIT parameters in the web.xml file.

In this step, you will become familiar with the three default INIT parameters in the web.xml file.

- **Host Credential Mapper (HCM) plug-in**: The name of the parameter is CMPICredentialMappers, and the parameter value is a compound value that contains the list of all available HCM plug-ins, for example, CMPIDCASPlugin CMPIVaultPlugin, and CMPIDCASELFPlugin. Currently, the value is echo, but you will eventually replace this with the name of your HCM plug-in.

  Code example:

```
<init-param>
   <param-name>CMPICredentialMappers</param-name>
   <param-value>echo</param-value>
</init-param>
```

- **Network Security plug-in**: The name of the parameter is CMPINetworkSecurity, and the parameter value is the full path name of the class that handles the CMS interface into the network security application. This example is taken from the amcms.war file, which is for Tivoli Access Manager:

  Code example:

  ```
  <init-param>
       <param-name>CMPINetworkSecurity</param-name>
       <param-value>com.ibm.eNetwork.security.sso.cms.CMNPIAccessManager
                          </param-value>
  </init-param>
  ```

  The Network Security plug-in does not apply to Microsoft Active Directory (Windows Domain), Portal Server, or Certificate-based Web Express Logon. For Microsoft Active Directory, the Windows login ID is used to identify the user. For Portal Server, the Portal ID is used to identify the user. For Certificate-based Web Express Logon, the client certificate is used to identify the user.

- **echo plug-in**: The name of this INIT parameter (echo) is the same as the value for the HCM plug-in. In a future step, you will replace echo with the name of your HCM plug-in.

  Host On-Demand provides this optional echo plug-in in case you want to confirm that you are able to deploy the CMS correctly before you begin editing the web.xml file. For example, after you deploy your CMS to a Web server, you can test it by entering the following syntax in a workstation's browser address bar: `https://web_application_server_name/context_root/CredMapper`, where *web_application_server_name* is the name of the Web application server, *context_root* is the name of the context root that you specify when deploying the CMS, and *CredMapper* is the name of the CMS itself.

  Some Web application server products allow you to deploy the servlet first and then edit the XML file. Other products, such as WebSphere Application Server V5, work best when you deploy the servlet after you edit the XML code. Refer to your product's documentation for details.

  Code example:

  ```
  <init-param>
     <param-name>echo</param-name>
     <param-value>com.ibm.eNetwork.security.sso.cms.CMPINetEcho,AuthType_All
                  </param-value>
  </init-param>
  ```

C. Edit the CMS-related parameters.

In this step, you will edit two of the three INIT parameters in the web.xml file. INIT parameters adapt the servlet to your environment. You will not edit the CMPINetworkSecurity parameter name or value.

1. Locate the CMPICredentialMappers parameter and change the name of its current value (echo) to the name of the DCAS HCM plug-in--CMPIDCASPlugin:

   ```
   <init-param>
     <param-name>CMPICredentialMappers</param-name>
     <param-value>CMPIDCASPlugin</param-value>
   ```

```
    </init-param>
```

2. Locate the echo parameter and change the name of its current value (echo) to the name of the parameter value that you specified for the HCM plug-in--CMPIDCASPlugin.

   Now, replace the parameter value with a compound value that contains the full class path name of the implementing class, the authentication type to be used by the DCAS HCM plug-in, and the host mask. Separate these values with commas. In this example, com.ibm.eNetwork.security.sso.cms.CMPIDCAS is the full class path name, AuthType_3270Host is the authentication type, and * is the host mask.

   Full class path name

   The CMS uses the value of the full class path name to create a class object of the specified type. That object is then used to handle CMS or HCM plug-in requests. The specified class file must be in the `...\WEB-INF\classes` subdirectory in a loose file (not as a JAR file). From this location, the CMS will be able to access and use it whenever the need arises.

   Authentication type

   This value is used to identify the type of authentication that the requestor needs. Once you specify the desired authentication type, the CMS can better identify which credential mapper to select to handle the request. You can pair multiple authentication types together to give HCM plug-ins the freedom to support multiple authentication types. Use the vertical bar character to join multiple authentication types.

   The five identified authentication types are listed in the Table 2:

   Authentication used in Secure Shell (SSH) on VT emulation or sftp sessions are not supported by the HCM plug-in.

Table 2. Authentication types and descriptions

Authentication type	Description
`AuthType_3270Host`	Identifies the credentials to be used with a 3270 emulation
`AuthType_5250Host`	Identifies the credentials to be used with 5250 emulation
`AuthType_VTHost`	Identifies the credentials to be used with VT emulation
`AuthType_FTPPassword`	Credentials used to access an FTP host
`AuthType_ConfigServer`	Credentials identified by the token used to identify the user to the Host On-Demand configuration server (if you are using the Configuration server-based model
`AuthType_All`	Identifies the credentials to be used for all authentication types

   Host mask

   The host mask is a secondary selection criteria used by the CMS to identify the most appropriate credential mapper. This value can contain one or more host addresses. Use the vertical bar character to join multiple addresses. Use the asterisks character to wildcard a host address. The wildcard character may start, end, or start and end a host address.

   Table 3 lists valid wild-carded addresses:

Table 3. Host masks and values matched

Host mask	Value matched
`*.raleigh.ibm.com`	Matches all addresses that end with `.raleigh.ibm.com`
`ralvm*`	Matches all addresses that start with `ralvm`

`*`	Matches all
`*xyz*`	Matches any host address that contains `xyz`

Code example:

```
    <init-param>
      <param-name>CMPIDCASPlugin</param-name>
      <param-value>com.ibm.eNetwork.security.sso.cms.CMPIDCAS,
                   AuthType_3270Host, *</param-value>
      </init-param>
```

D. Add optional CMS-related debugging parameters.

Add the following two optional debugging parameters to help you troubleshoot:

CMPI_TRACE_LOG_FILE
This parameter specifies the name of the log file. The value should be the full path to the log file, for example C:\Program Files\IBM\HostOnDemand\HODWEL.log on a Windows platform.

Code example:

```
<init-param>
   <param-name>CMPI_TRACE_LOG_FILE</param-name>
   <param-value>C:\Program Files\IBM\HostOnDemand\HOD\HODWEL.log
                </param-value>
</init-param>
```

CMPI_CMS_TRACE_LEVEL
This parameter specifies the trace level for the CMS. The trace messages are logged to the log file specified by CMPI_TRACE_LOG_FILE parameter. Depending on your Web application server, they may or may not be logged to the console. Trace level values include the following:

- **0 = None**: No tracing. This is the default.
- **1 = Minimum**: Trace APIs and parameters, return values, and errors.
- **2 = Normal**: Trace Minimum plus internal APIs and parameters and informational messages.
- **3 = Maximum**: Trace Normal plus Java exceptions.

Code example:

```
<init-param>
   <param-name>CMPI_CMS_TRACE_LEVEL</param-name>
   <param-value>3</param-value>
</init-param>
```

E. Add the required DCAS client parameters for the CMPIDCASPlugin.

Add the required DCAS client parameters to allow the HCM database to map the user ID to the host ID and get a passticket from the DCAS application running on the host. A passticket is a credential that is similar to a password, however a passticket expires after a certain amount of time and is used only one time. DCAS requires a Security Access Facility (SAF)-compliant server product, such as an IBM Resource Access Control Facility (RACF) security server, that supports passticket generation.

To use the DCAS HCM plug-in, you must configure the DCAS. For information about configuring the DCAS, refer to documentation for z/OS V1R4.0 Communications Server at http://publibz.boulder.ibm.com/cgi-bin/bookmgr_OS390/Shelves/F1A1BK33, specifically the *z/OS V1R4.0 Communications Server IP Configuration Reference* (publication number SC31-8776-03) and the *z/OS V1R4.0 Communications Server IP Configuration Guide* (publication number SC31-8775-02). Also refer to the z/OS V1R4 APAR PQ74457 for information about how to configure the DCAS to function with Web Express Logon.

For non-Certificate-based Web Express Logon, use DCAS.xml located in the WAR file as a reference for adding parameters when editing the web.xml file. For Certificate-based Web Express Logon, use DCASELF.xml as a reference.

1. Add the following two HCM database parameters to allow the client to connect to the DCAS securely:

   CMPI_DCAS_KEYRING_FILE
   This parameter references an SSL keyring database file that provides access to the DCAS client certificate as well as the DCAS server's certificate. The certificates establish a client-authenticated, secure connection with the DCAS server. The DCAS plug-in serves as the DCAS client. You will create a keyring database file called HODDCAS.p12 in Step 3: Create the SSL key database..

   Code example:

```
<init-param>
    <param-name>CMPI_DCAS_KEYRING_FILE</param-name>
    <param-value>C:\Program Files\IBM\HostOnDemand\HOD\HODDCAS.p12
                </param-value>
</init-param>
```

   CMPI_DCAS_KEYRING_PASSWORD
   This parameter specifies the password for the keyring database.

   This parameter should be encrypted using the password encryption tool. It is decrypted by the HCM before using it. For more information about the password encryption tool, refer to Appendix C. Password encryption tool.

   Code example:

```
<init-param>
          <param-name>CMPI_DCAS_KEYRING_PASSWORD</param-name>
          <param-value>45ie8WciVu</param-value>
</init-param>
```

2. The following parameters contain all the relevant information needed to connect to your HCM database, which in this example is a JDBC database table. You can either configure access to an existing database or point to a newly created database. The level of security for the database varies according to database vendor. Refer to the database application's documentation for details.

   The following parameters are not used for Certificate-based Web Express Logon:
   - CMPI_DCAS_DB_ADDRESS
   - CMPI_DCAS_DB_NET_DRIVER
   - CMPI_DCAS_DB_USERID
   - CMPI_DCAS_DB_TABLE
   - CMPI_DCAS_DB_PASSWORD

   CMPI_DCAS_DB_ADDRESS
   This is a URL string that provides the address of the database. An example of this string is jdbc:db2://dtagw:6789/HODSSO.

   Code example:

```
<init-param>
   <param-name>CMPI_DCAS_DB_ADDRESS</param-name>
         <param-value>jdbc:db2://dtagw.raleigh.ibm.com:6789/HODSSO
                </param-value>
</init-param>
```

CMPI_DCAS_DB_NET_DRIVER

This string contains the name of the class that acts as the network database driver. An example of this string is COM.ibm.db2.jdbc.net.DB2Driver. The location of this class is assumed to be in the existing class path.

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_DB_NET_DRIVER</param-name>
   <param-value>COM.ibm.db2.jdbc.net.DB2Driver</param-value>
</init-param>
```

CMPI_DCAS_DB_USERID

This is the ID of the user account to use when accessing the database.

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_DB_USERID</param-name>
   <param-value>admin</param-value>
</init-param>
```

CMPI_DCAS_DB_PASSWORD

This is the password of the user account to use when accessing the database.

This parameter should be encrypted using the encrypt password tool. It is decrypted by the HCM plug-in before using it. For more information about the password encryption tool, refer to Appendix C. Password encryption tool.

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_DB_PASSWORD</param-name>
   <param-value>tuBu9v8lHiJi1jt08UgHzA==</param-value>
</init-param>
```

CMPI_DCAS_DB_TABLE

This entry identifies the table to use for the needed query.

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_DB_TABLE</param-name>
   <param-value>HACP</param-value>
</init-param>
```

3. The following parameters should correspond directly to the column headings in your HCM database and should clearly indicate the contents of the columns. With some databases, such as IBM DB2, the column headings must be in all upper-case letters, for example, NETWORKID, HOSTADDRESS,

APPLICATIONID, and HOSTID.

Based on the information provided by the first three of these parameters (network ID, host address, and the host application ID), you can make a SQL query of the database to get the host ID. The result of the query is entered in the host ID (HOSTID) column. Assuming that the query is successful, a call is made to the DCAS to request the passticket.

The following parameters are not used for Certificate-based Web Express Logon:

- CMPI_DCAS_DB_NETID_COL_NAME
- CMPI_DCAS_DB_HOSTADDR_COL_NAME
- CMPI_DCAS_DB_HOSTAPP_COL_NAME
- CMPI_DCAS_DB_HOSTID_COL_NAME

CMPI_DCAS_DB_NETID_COL_NAME

This entry identifies the name of the column that contains the network ID value (NETWORKID).

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_DB_NETID_COL_NAME</param-name>
   <param-value>NETWORKID</param-value>
</init-param>
```

CMPI_DCAS_DB_HOSTADDR_COL_NAME

This entry identifies the name of the column that contains the host address value (HOSTADDRESS).

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_DB_HOSTADDR_COL_NAME</param-name>
   <param-value>HOSTADDRESS</param-value>
</init-param>
```

CMPI_DCAS_DB_HOSTAPP_COL_NAME

This entry identifies the name of the column that contains the host application value (APPLICATIONID).

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_DB_HOSTAPP_COL_NAME</param-name>
   <param-value>APPLICATIONID</param-value>
</init-param>
```

CMPI_DCAS_DB_HOSTID_COL_NAME

This entry identifies the name of the column that contains the user's host identification value (HOSTID).

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_DB_HOSTID_COL_NAME</param-name>
   <param-value>HOSTID</param-value>
</init-param>
```

F. Add the optional DCAS client parameters (if desired).

Unlike the previous set of DCAS parameters, the following parameters are optional. Which of these parameters you add to the web.ml file depends on your environment and your objectives as an administrator:

CMPI_DCAS_TRACE_LEVEL

This parameter specifies the trace level for the DCAS plug-in. The trace messages are logged to the log file specified by CMPI_TRACE_LOG_FILE parameter. Depending on your Web application server, they may or may not be logged to the console. Trace level values include the following:

- **0 = None**: No tracing. This is the default.
- **1 = Minimum**: Trace APIs and parameters, return values, and errors.
- **2 = Normal**: Trace Minimum plus internal APIs and parameters and informational messages.
- **3 = Maximum**: Trace Normal plus Java exceptions.

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_TRACE_LEVEL</param-name>
   <param-value>3</param-value>
</init-param>
```

CMPI_DCAS_HOST_PORT

The DCAS host address is determined based on the destination host specified in the request. The default port address of 8990 is used, but you may override it using this parameter.

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_HOST_PORT</param-name>
   <param-value>8990</param-value>
</init-param>
```

CMPI_DCAS_USE_WELLKNOWN_KEYS

This parameter indicates whether the WellKnownTrustedCAs.p12 should be used to look up the DCAS server certificate or not. The WellKnownTrustedCAs.p12 file must be in the root directory of the CMS. The default is true.

Code example:

```
<init-param>
   <param-name>CMPI_DCAS_USE_WELLKNOWN_KEYS</param-name>
   <param-value>true</param-value>
</init-param>
```

CMPI_DCAS_WELLKNOWN_PASSWORD

If you choose to replace the provided WellKnownTrustedCAs.p12 with your own, you will need to specify the password here. Place your WellKnownTrustedCAs.p12 file in the same directory where the provided version was located.

This password should be encrypted using the encrypt password tool. For more information about the password encryption tool, refer to Appendix C. Password encryption tool.

Code example:

```
<init-param>
```

```
        <param-name>CMPI_DCAS_WELLKNOWN_PASSWORD</param-name>
        <param-value>tuBu9v8lHiJi1jt08UgHzA==</param-value>
    </init-param>
```

CMPI_DCAS_VERIFY_SERVER_NAME

This parameter indicates if the server host name in the certificate must be verified in addition to the certificate validation. The default is false.

Code example:

```
    <init-param>
        <param-name>CMPI_DCAS_VERIFY_SERVER_NAME</param-name>
        <param-value>false</param-value>
    </init-param>
```

CMPI_DCAS_REQUEST_TIMEOUT

This parameter specifies the passticket request timeout in milliseconds. It should be less than the Host On-Demand macro time-out value. The default is 50000.

Code example:

```
    <init-param>
        <param-name>CMPI_DCAS_REQUEST_TIMEOUT</param-name>
        <param-value>50000</param-value>
    </init-param>
```

The CMPI_DCAS_DB_PRESERVE_WHITESPACE and CMPI_DCAS_DB_CASE_SENSITIVE parameters are not used for Certificate-based Web Express Logon.

CMPI_DCAS_DB_PRESERVE_WHITESPACE

This parameter indicates whether to trim white spaces from the credential request parameters or not. If true, the white spaces are not trimmed. The default is false.

Code example:

```
    <init-param>
        <param-name>CMPI_DCAS_DB_PRESERVE_WHITESPACE</param-name>
        <param-value>false</param-value>
    </init-param>
```

CMPI_DCAS_DB_CASE_SENSITIVE

This parameter specifies whether or not the DCAS plug-in converts the application ID and network ID of the user to lowercase characters and then uses the lcase() method to make SQL queries to the HCM database. This parameter should be set to true when using SQL applications that do not support the lcase() method.

Code example:

```
    <init-param>
        <param-name>CMPI_DCAS_DB_CASE_SENSITIVE</param-name>
        <param-value>false</param-value>
    </init-param>
```

Step 2: Save the WAR file and deploy the CMS.

Once you save the WAR file with your edits, you are ready to deploy the servlet to the Web server. Refer to your Web server application's documentation for details of how to deploy the servlet.

Step 3: Create the SSL key database.

In order to communicate with a DCAS server, an SSL connection must be established using client authentication. This requires you to create a key database file, for example, HODDCAS.p12. To create the file, use the Host On-Demand Certificate Management GUI on Windows and AIX platforms, or use a P12 keyring tool for other platforms. This key database file must contain the DCAS client's personal certificate and the DCAS server's certificate (public key) information. Also, the DCAS client certificate must be added/imported to the DCAS server's keyring for SSL client authentication.

For more information about creating this key database file, refer to the *Planning, Installing, and Configuring Host On-Demand* guide, which is located in the Host On-Demand Information Center at Start > Programs > IBM WebSphere Host On-Demand > Information Center or on the Web at http://publib.boulder.ibm.com/infocenter/hod9help.

To create a keyring database called HODDCAS.p12 file that will be specified in the CMPI_DCAS_KEYRING_FILE parameter in your web.xml file, take the following steps on a Windows machine:

1. Click Start > Programs > IBM WebSphere Host On-Demand > Administration > Certificate Management.
2. Click Key Database File > New. For the Key database type, select PKCS12. For File Name, type HODDCAS.p12. For Location, type C:\Program Files\IBM\HostOnDemand.

   You may choose a different name and location, if you prefer.

3. Click OK.
4. Type the password and make a note of it.
5. Click OK.
6. Add the DCAS's certificate to the key database. Be sure that the key database content is for the signer certificate. If it is not, select the pull-down menu and change it. Then select Add.
7. Select Binary DER data for the data type. If the server certificate is in ASCII format, select Base64-encoded ASCII data.
8. Type the file name in the For Certificate File Name field.
9. Type the path name in the Location field.
10. Click OK.
11. Enter a label for the certificate and click OK.
12. Add the DCAS client's certificate to the key database.
13. Change the Key database content to Personal Certificates and click Export/Import.
14. Select Import Key as the Action Type.
15. Select PKCS12 for the Key file type.
16. Type the client certificate's p12 file name in the File Name field and the path name in the Location field.
17. Click OK and enter the client certificate PIN.
18. Click OK.
19. Exit the Certificate Management GUI.

Step 4: Add the Web server's certificate to the Java keyring (Java 2 clients only).

This step *only* applies to Certificate-based Web Express Logon. If you are not using client certificates to authenticate users to a secure Web server, skip to the next step.

For Java 2 clients, if the Web Server's certificate is self-signed or has not been issued by a trusted Certificate Authority (CA), you must add the Web server's certificate to the Java keyring in order to for clients to make secure HTTPS connections to the Web server. This is not required for Java 1 clients.

To add the certificate to the keyring for Java 2 clients, take the following steps:

1. Open a Windows command prompt and input the following command. Note that the syntax of the command remains the same, regardless of the location of the library, which may vary depending on the vendor and version of the JRE:

   ```
   C:\Program Files\IBM\Java14\jre\bin>keytool -import -alias "HOD HTTP Serve
   ```

2. If you input your command successfully, the output should look similar to the following:

   ```
   Owner: CN=hodnotnet.raleigh.ibm.com, OU=Test, O=HACP, L=Chapel Hill, ST=NC
   ALCODE=27514, C=US
   Issuer: CN=hodnotnet.raleigh.ibm.com, OU=Test, O=HACP, L=Chapel Hill, ST=N
   TALCODE=27514, C=US
   Serial number: 40a27eaf Valid from: Tue May 11 15:44:47 EDT 2004 until: Th
   Certificate fingerprints:
           MD5:  97:A9:31:88:4E:DC:77:08:C2:1D:1E:22:79:E8:4C:E8
           SHA1: 16:26:88:91:67:4D:71:FD:2A:D4:9B:47:0C:96:07:C3:8D:3F:CC:37
   Trust this certificate? [no]:  yes
   Certificate was added to keystore
   ```

3. Certificate-based Web Express Logon also requires a client certificate. This client certificate must be available to both the Web browser (usually stored in the browser keystore) as well as to Java 2. To make the certificate available, take these steps:
   a. Start the Java Control Panel for the JRE.
   b. On the Java Control Panel, go to the 'Advanced' tab and enter the following line for 'Java Runtime Parameters':

      ```
      -Djavax.net.ssl.keyStore=<C:\path\cert_name.pfx> -Djavax.net.ssl.keyS
      <certficate password> -Djavax.net.ssl.keyStoreType=pkcs12
      ```

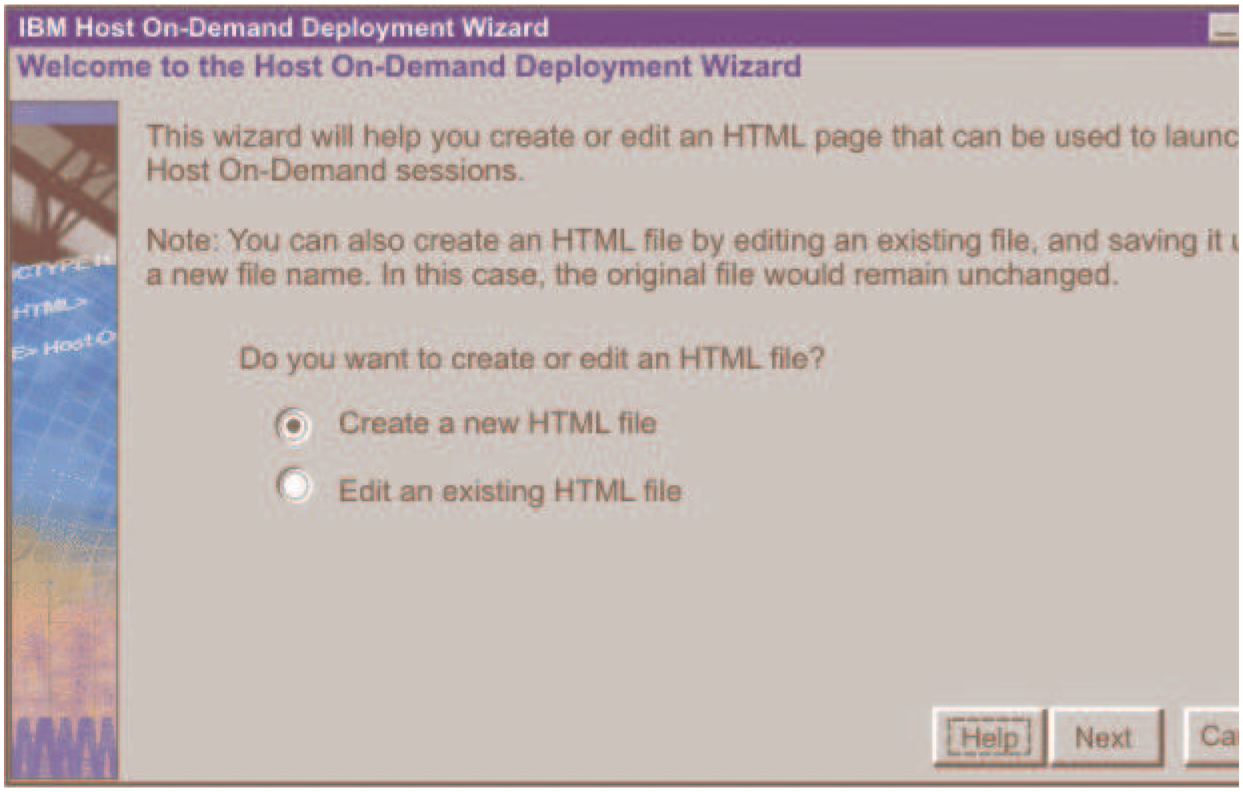
Step 5: Begin creating your HTML file.

The Host On-Demand Deployment Wizard allows you to create an HTML file that is used to launch Host On-Demand sessions. Within the Deployment Wizard, you can add, delete, configure, and start sessions. It guides you configuration choices and provides comprehensive help for the features. When you have finished selecting features, it creates the HTML and supporting files for you.

To begin creating your HTML file on a Windows machine, take the following steps:

1. Open the Deployment Wizard:
   - If you automatically installed the Deployment Wizard as part of the Windows Host On-Demand server, click Start > Programs > IBM WebSphere Host On-Demand > Administration > Deployment Wizard.
   - If you installed the Deployment Wizard from the Host On-Demand CD separately, click Start > Programs > IBM WebSphere Host On-Demand Deployment Wizard > Deployment Wizard.
2. On the Welcome to the Deployment Wizard window (Figure 7), select either to create a new HTML file or edit an existing file. Click Next.

   Figure 7. Welcome to the Host On-Demand Deployment Wizard window


IBM Host On-Demand Deployment Wizard

Welcome to the Host On-Demand Deployment Wizard

This wizard will help you create or edit an HTML page that can be used to launc
Host On-Demand sessions.

Note: You can also create an HTML file by editing an existing file, and saving it u
a new file name. In this case, the original file would remain unchanged.

Do you want to create or edit an HTML file?

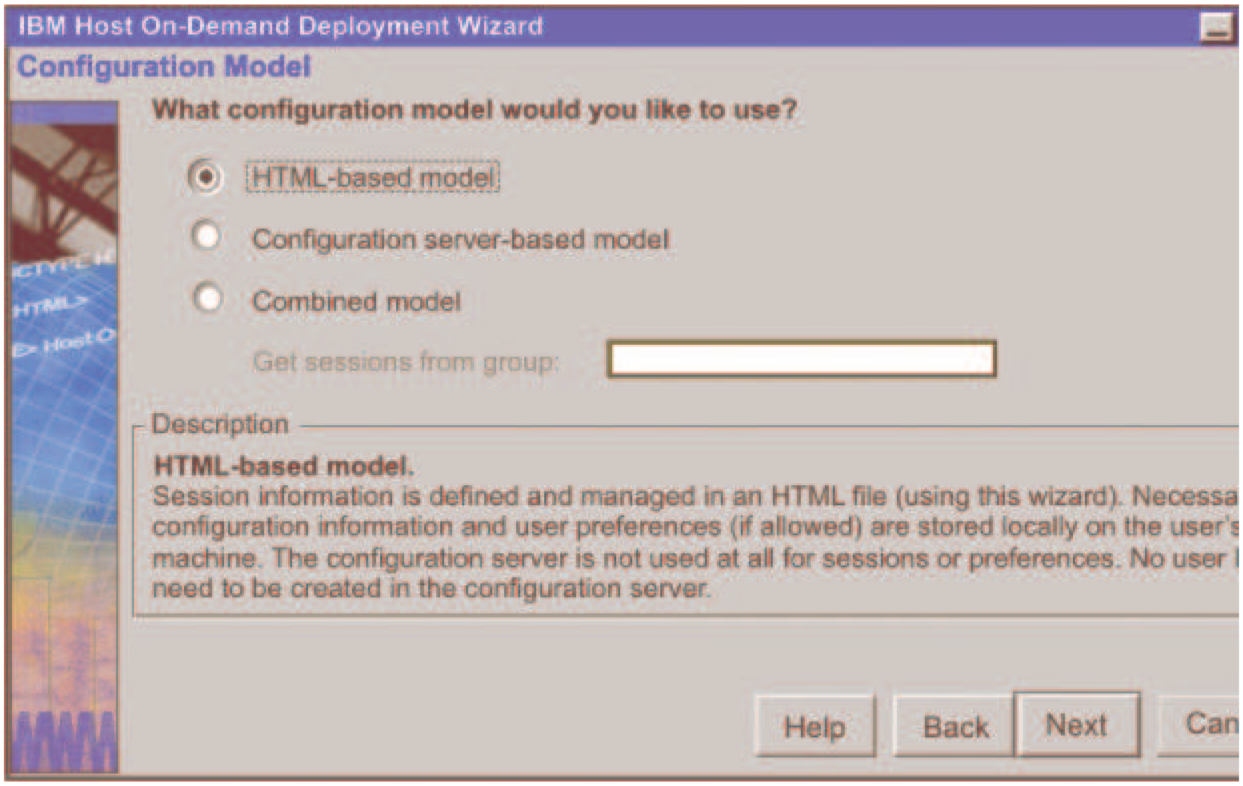
[✓ Create a new HTML file]

Edit an existing HTML file

3. If you are creating a new HTML file, select one of the following three configuration models on the Configuration Model window (Figure 8) and click Next:
   - HTML-based model
   - Configuration server-based model
   - Combined model

If you are using the HTML-based or Combined models, you can create your HTML file as normal. However, if you are using the Configuration server-based model, you must configure the HTML file with additional steps. Refer to Appendix B. Web Express Logon using the Configuration server-based model for more information.

Figure 8. Configuration Model window



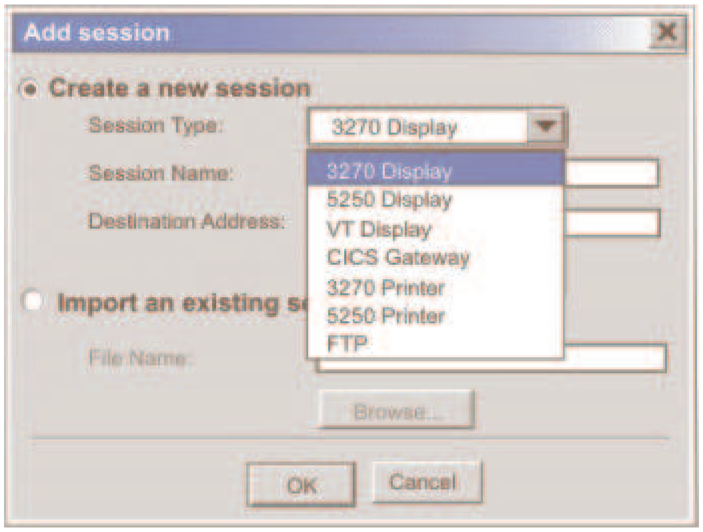
What configuration model would you like to use?

[✓ HTML-based model]
Configuration server-based model
Combined model
Get sessions from group:

Description
HTML-based model.
Session information is defined and managed in an HTML file (using this wizard). Necessa
configuration information and user preferences (if allowed) are stored locally on the user's
machine. The configuration server is not used at all for sessions or preferences. No user
need to be created in the configuration server.

4. On the Host Sessions window, click New/Import to open the Add session window (Figure 9). This window allows you to either create a new session (default) or import an existing session. To create a new session, select a host type, enter a session name, and a destination address. Click OK to return to the Host Sessions window.

Figure 9. Add session window



[✓ Create a new session]
Session Type: 3270 Display
Session Name:
Destination Address:

Import an existing se
File Name:

Step 6: Configure the Host On-Demand session to use Web Express Logon.

Take the following steps to configure your Host On-Demand session to use Web Express Logon.

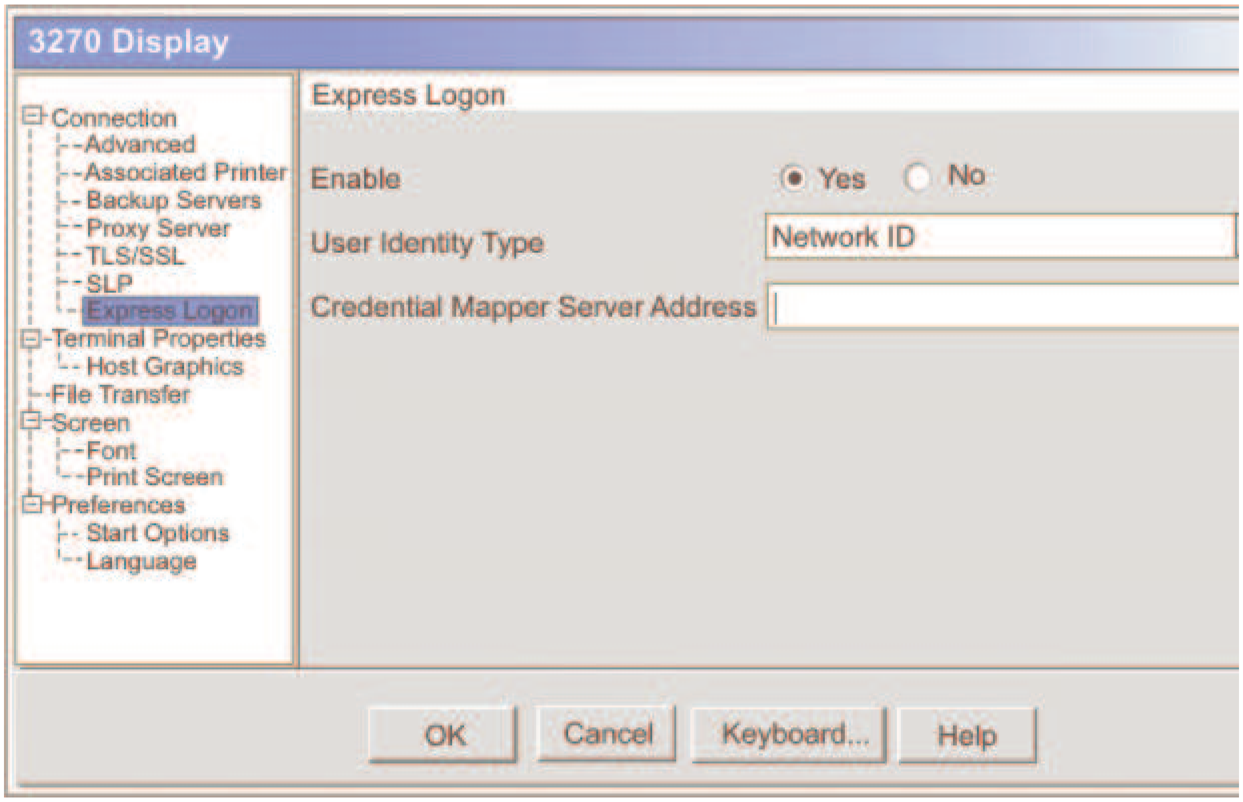
1. Using the Host Sessions window, highlight your session and select Properties under the Configure drop-

down menu. On the left side of the window, select Express Logon under Connection.

You may also open session properties by right-clicking a session icon and selecting Properties.

2. On the Express Logon window (see Figure 10), select Yes to enable Express Logon.

Figure 10. 3270 Express Logon



Enable [✓ Yes] No
User Identity Type: Network ID
Credential Mapper Server Address:

3. Select the User Identity Type:
   - Local System ID: the user's local operating system ID. Web Express Logon currently supports Microsoft Active Directory (Windows Domain).
   - Network ID: the user's network security application ID. Web Express Logon currently supports IBM Tivoli Access Manager and Netegrity Siteminder.
   - Portal ID: the user's Portal Server ID. Web Express Logon currently supports Portal Server, a component of IBM WebSphere Portal.
4. Type the full URL of the credential mapper server, for example, https://server_name/junction/cm/CredMapper, where
   - *server_name* is the name of the authentication server
   - *junction* is the name of the junction (optional)
   - *cm* is the credential mapper servlet space
   - *CredMapper* is the servlet name

   Be sure that the servlet name matches the name in your XML file. For example, if you specify the servlet name in your host session as CredMapper, the code in your XML should look like the following:

```
<servlet>
      <servlet-name>CredMapper</servlet-name>
      <display-name>CredMapper</display-name>
<servlet-class>com.ibm.eNetwork.security.sso.cms.CredMapper</servlet-class
```

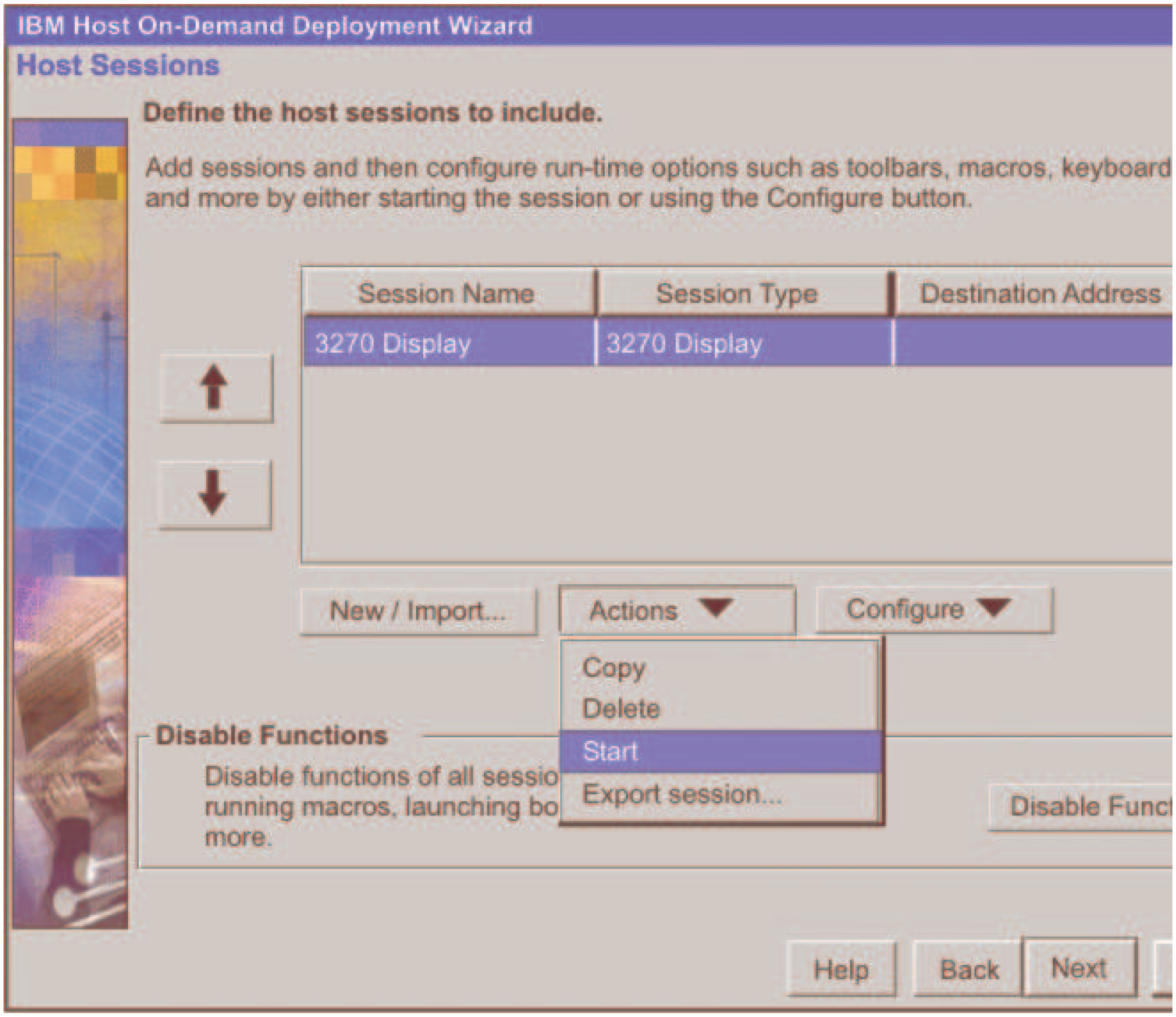
   The servlet that resides at this URL processes the HTTPS request from the user, performs a lookup, and returns the user's credentials. The Host On-Demand client uses the obtained credentials to automate the

login process.
5. Click OK.

Step 7: Record the Web Express Logon macro.

To record a macro, you must first start a host session. To start a session from within the Deployment Wizard, highlight your session on the Host Sessions window (Figure 11) and click Actions > Start.

Figure 11. Host Sessions window



Define the host sessions to include.

Add sessions and then configure run-time options such as toolbars, macros, keyboard
and more by either starting the session or using the Configure button.

Session Name	Session Type	Destination Address
3270 Display	3270 Display	

Disable functions of all sessio
running macros, launching bo
more.

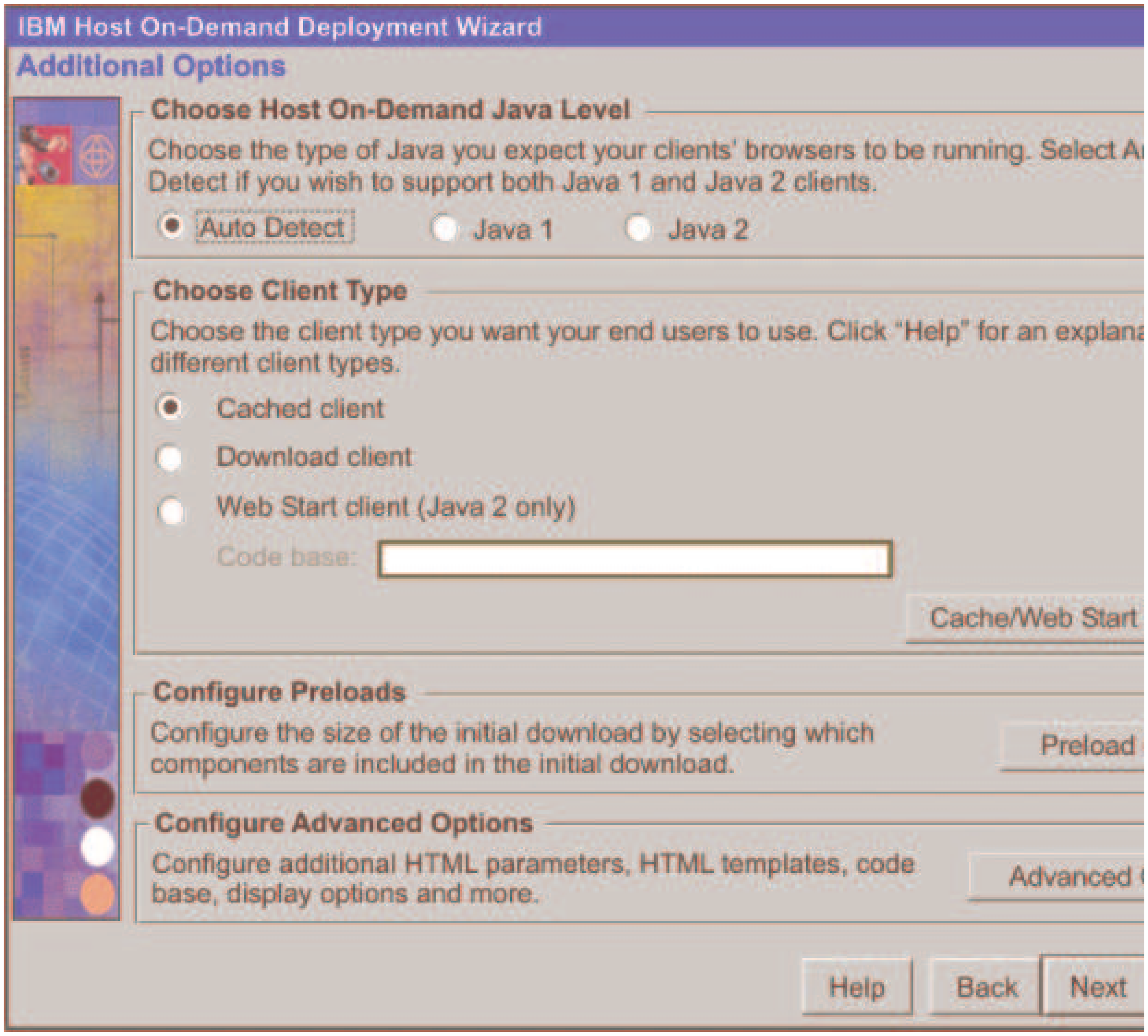
For details about how to record the Web Express Logon macro, refer to Appendix A. Recording the Web Express Logon macro.

Step 8: Finish creating your HTML file.

Now that you have configured your Host On-Demand session to use Web Express Logon and have recorded your login macro, you are ready to finish creating your HTML file using the Deployment Wizard. To finish creating the file, take the following steps:

1. On the Host Sessions window, click Next to open the Additional Options window (Figure 12). Make any changes that you desire and click Next.

Figure 12. Additional Options window



IBM Host On-Demand Deployment Wizard

Additional Options

Choose Host On-Demand Java Level

Choose the type of Java you expect your clients' browsers to be running. Select A
Detect if you wish to support both Java 1 and Java 2 clients.

[✓ Auto Detect] Java 1 Java 2

Choose Client Type

Choose the client type you want your end users to use. Click "Help" for an explana
different client types.

[✓ Cached client]
Download client
Web Start client (Java 2 only)

Code base:

Configure Preloads

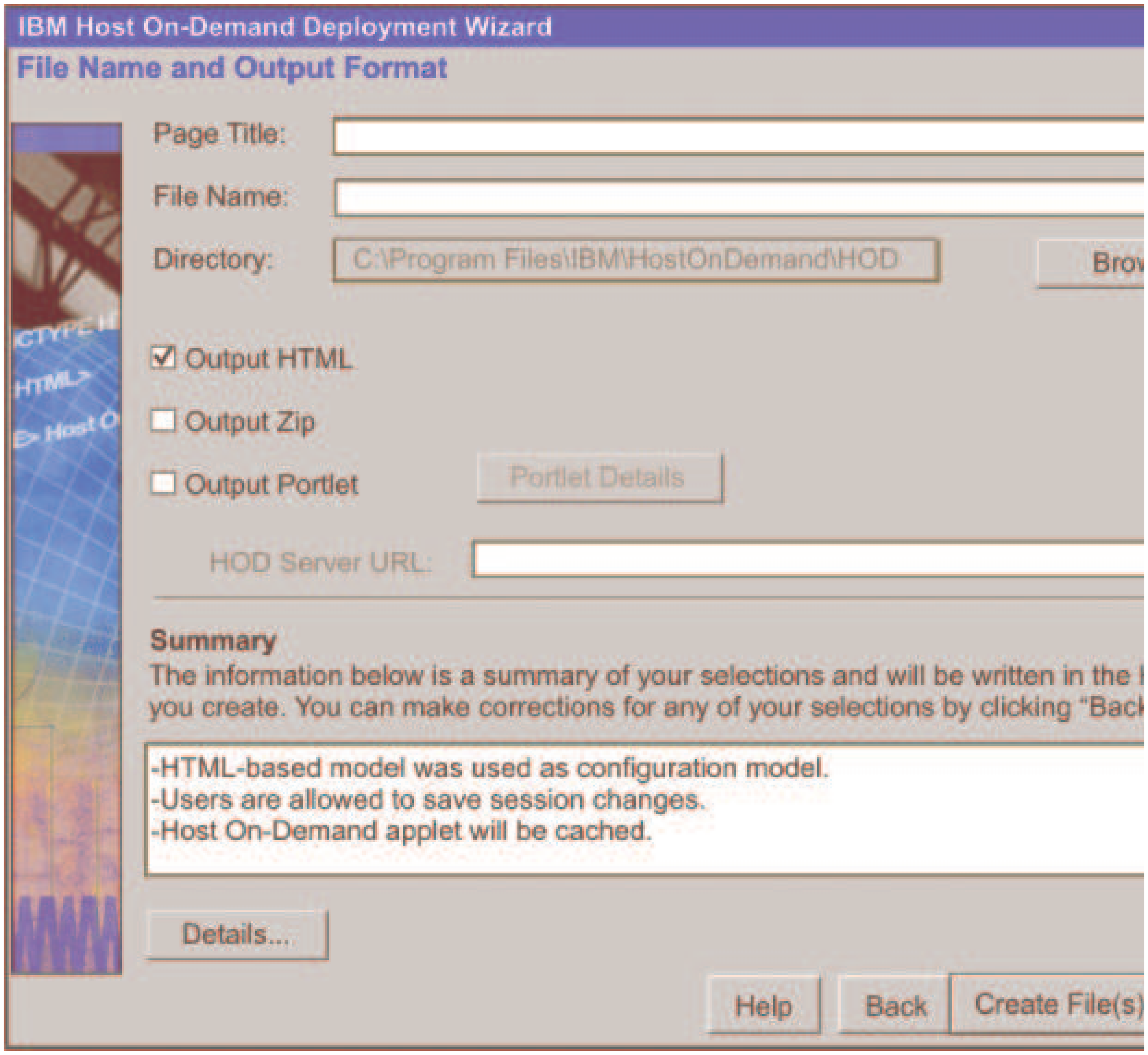
Configure the size of the initial download by selecting which components are included in the initial download.

Configure Advanced Options

Configure additional HTML parameters, HTML templates, code base, display options and more.

2. On the File Name and Output Format window (Figure 13), enter the page title, the file name, choose the directory where you want to save your file, and check the Output HTML box. You should save your file to the Host On-Demand server in a directory known to your Web server; usually, this directory is your Host On-Demand server's publish directory. Click Create File(s) to finish creating your HTML file.

Figure 13. File Name and Output Format window


IBM Host On-Demand Deployment Wizard
File Name and Output Format
Portlet Details
Details...
Help
Back
Create File(s)
Brow

Page Title:

File Name:

Directory: C:\Program Files\IBM\HostOnDemand\HOD

[✓] Output HTML

[ ] Output Zip

[ ] Output Portlet

HOD Server URL:

Summary

The information below is a summary of your selections and will be written in the
you create. You can make corrections for any of your selections by clicking "Bac

-HTML-based model was used as configuration model.
-Users are allowed to save session changes.
-Host On-Demand applet will be cached.

Congratulations! You have taken all the necessary steps to implement Web Express Logon in a z/OS and DCAS environment. Your next step is to test the logon automation. If logon automation is not successful, that is, you are still being prompted with the host logon screen, refer to Troubleshooting Web Express Logon.

Configuring macro-based automation in a vault-style environment

In order to implement macro-based automation in a vault-style environment, you must configure your network security application and create your HCM database. For details about these steps, refer to the Web Express Logon for Host On-Demand Version 8 white paper, located at http://gwareview.boulder.ibm.com/software/network/library/whitepapers/wel.pdf.

The following steps show you how to edit and deploy the CMS provided with Host On-Demand and use the Deployment Wizard to create your HTML file, configure your 3270 host session, and record your login macro.

Steps 3-6 are designed for administrators who are planning to use the Deployment Wizard to create the HTML file, configure the host session to use Web Express Logon, and record the Web Express Logon macro all in one sitting. However, you may decide to create your HTML file first and then configure your session and create your macro later.

Step 1: Configure the Credential Mapper Servlet (CMS).

We recommend using a J2EE-compliant Web application server such as IBM WebSphere Application Server to configure and deploy the Credential Mapper Servlet (CMS). The CMS is supplied with Host On-Demand and must be deployed to a J2EE-compliant Web application server. At a high level, the CMS is responsible for the following tasks: (1) determine the client's identity by means of the local system ID, network ID, or Portal ID, (2) map the user's ID to the host ID, and (3) return the host credentials to the client as an XML document.

A. Locate the WAR files on the Host On-Demand Version 9 CD

The three WAR files are located in the `cdimage\apps\wel` subdirectory. Choose the one that matches your network security application:

- IBM Tivoli Access Manager: amcms.war
- Netegrity Siteminder: smcms.war
- Microsoft Active Directory (Windows Domain): wincms.war

If you have a different network security application, you will need to customize your own version of the CMS. For more information about how to do this, refer to Customizing Web Express Logon.

In addition to several other files, the WAR file contains the following files:

- web.xml: the servlet configuration file that you will edit in a later step
- Vault.xml: a sample file to help you better understand Vault parameters and their values
- was.policy: for IBM WebSphere Application Server users only, this file contains the required permissions for the CMS when Java 2 security is enabled (refer to Troubleshooting Web Express Logon for more information)

B. Become familiar with the INIT parameters in the web.xml file.

In this step, you will become familiar with the three default INIT parameters in the web.xml file.

- **Host Credential Mapper (HCM) plug-in**: The name of the parameter is CMPICredentialMappers, and the parameter value is a compound value that contains the list of all available HCM plug-ins, for example, CMPIDCASPlugin CMPIVaultPlugin, and CMPIDCASELFPlugin. Currently, the value is echo, but you will eventually replace this with the name of your HCM plug-in.

  Code example:

  ```
  <init-param>
     <param-name>CMPICredentialMappers</param-name>
     <param-value>echo</param-value>
  </init-param>
  ```

- **Network Security plug-in**: The name of the parameter is CMPINetworkSecurity, and the parameter value is the full path name of the class that handles the CMS interface into the network security application. This example is taken from the amcms.war file, which is based on the Tivoli Access Manager network security application:

  Code example:

  ```
  <init-param>
       <param-name>CMPINetworkSecurity</param-name>
       <param-value>com.ibm.eNetwork.security.sso.cms.CMNPIAccessManager</pa
  </init-param>
  ```

The Network Security plug-in does not apply to Microsoft Active Directory (Windows Domain), Portal Server, or Certificate-based Web Express Logon. For Microsoft Active Directory, the Windows login ID is used to identify the user. For Portal Server, the Portal ID is used to identify the user. For Certificate-based Web Express Logon, the client certificate is used to identify the user.

- **echo plug-in**: The name of this INIT parameter (echo) is the same as the value for the HCM plug-in. In a future step, you will replace echo with the name of your HCM plug-in.

  Host On-Demand provides this optional echo plug-in in case you want to confirm that you are able to deploy the CMS correctly before you begin editing the web.xml file. For example, after you deploy your CMS to a Web server, you can test it by entering the following syntax in a workstation's browser address bar: `https://web_application_server_name/context_root/CredMapper`, where *web_application_server_name* is the name of the Web application server, *context_root* is the name of the context root that you specify when deploying the CMS, and *CredMapper* is the name of the CMS itself.

  Some Web application server products allow you to deploy the servlet first and then edit the XML file. Other products, such as WebSphere Application Server V5, work best when you deploy the servlet after you edit the XML code. Refer to your product's documentation for details.

  Code example:

```
<init-param>
   <param-name>echo</param-name>
   <param-value>com.ibm.eNetwork.security.sso.cms.CMPINetEcho,AuthType_All
                </param-value>
</init-param>
```

C. Edit the CMS-related parameters.

In this step, you will edit two of the three INIT parameters in the web.xml file. INIT parameters adapt the servlet to your environment. You will not edit the CMPINetworkSecurity parameter name or value.

1. Locate the CMPICredentialMappers parameter and change the name of its current value (echo) to the name of your HCM plug-in. In this example, the HCM plug-in is CMPIVaultPlugin:

```
<init-param>
  <param-name>CMPICredentialMappers</param-name>
  <param-value>CMPIVaultPlugin</param-value>
</init-param>
```

2. Locate the echo parameter and change the name of its current value (echo) with the name of the parameter value that you specified for the HCM plug-in (CMPIVaultPlugin).

   Now, replace the parameter value with a compound value that contains the full class path name of the implementing class, the authentication type to be used by the HCM plug-in, and the host mask. Separate these values with commas. In this example, com.ibm.eNetwork.security.sso.cms.CMPIVault is the full class path name, AuthType_All is the authentication type, and * is the host mask.

   Full class path name

   The CMS uses the value of the full class path name to create a class object of the specified type. That object is then used to handle CMS or HCM requests. The specified class file must be in the `...\WEB-INF\classes` subdirectory in a loose file (not as a JAR file). From this location, the CMS will be able to access and use it whenever the need arises.

Authentication type

This value is used to identify the type of authentication that the requestor needs. Once you specify the desired authentication type, the CMS can better identify which credential mapper to select to handle the request. You can pair multiple authentication types together to give HCM plug-ins the freedom to support multiple authentication types. Use the vertical bar character to join multiple authentication types.

The five identified authentication types are listed in Table 4:

Authentication used in Secure Shell (SSH) on VT emulation or sftp sessions are not supported by the HCM plug-in.

Table 4. Authentication types and descriptions

Authentication type	Description
`AuthType_3270Host`	Identifies the credentials to be used with a 3270 emulation
`AuthType_5250Host`	Identifies the credentials to be used with 5250 emulation
`AuthType_VTHost`	Identifies the credentials to be used with VT emulation
`AuthType_FTPPassword`	Credentials used to access an FTP host
`AuthType_ConfigServer`	Credentials identified by the token used to identify the user to the Host On-Demand configuration server (if you are using the Configuration server-based model
`AuthType_All`	Identifies the credentials to be used for all authentication types

Host mask

The host mask is a secondary selection criteria used by the CMS to identify the most appropriate credential mapper. This value can contain one or more host addresses. Use the vertical bar character to join multiple addresses. Use the asterisks character to wildcard a host address. The wildcard character may start, end, or start and end a host address.

Table 5 lists valid wild-carded addresses:

Table 5. Host masks and values matched

Host mask	Value matched
`*.raleigh.ibm.com`	Matches all addresses that end with `.raleigh.ibm.com`
`ralvm*`	Matches all addresses that start with `ralvm`
`*`	Matches all
`*xyz*`	Matches any host address that contains `xyz`

Code example:

```
<init-param>
  <param-name>CMPIVaultPlugin</param-name>
  <param-value>com.ibm.eNetwork.security.sso.cms.CMPIVault, AuthType_All,
                </param-value>
  </init-param>
```

D. Add optional CMS-related debugging parameters.

Add the following two optional debugging parameters to help you troubleshoot:

CMPI_TRACE_LOG_FILE

This parameter specifies the name of the log file. The value should be the full path to the log file, for example C:\Program Files\IBM\HostOnDemand\HODWEL.log on a Windows platform.

Code example:

```
<init-param>
   <param-name>CMPI_TRACE_LOG_FILE</param-name>
   <param-value>C:\Program Files\IBM\HostOnDemand\HOD\HODWEL.log
                </param-value>
</init-param>
```

CMPI_CMS_TRACE_LEVEL

This parameter specifies the trace level for the CMS. The trace messages are logged to the log file specified by CMPI_TRACE_LOG_FILE parameter. Depending on your Web application server, they may or may not be logged to the console. Trace level values include the following:

- **0 = None**: No tracing. This is the default.
- **1 = Minimum**: Trace APIs and parameters, return values, and errors.
- **2 = Normal**: Trace Minimum plus internal APIs and parameters and informational messages.
- **3 = Maximum**: Trace Normal plus Java exceptions.

Code example:

```
<init-param>
   <param-name>CMPI_CMS_TRACE_LEVEL</param-name>
   <param-value>3</param-value>
</init-param>
```

E. Add the required Vault parameters for the CMPIVaultPlugin.

Add the required Vault parameters to allow the HCM database to map the user ID to the host ID.

Use the Vault.xml file located in the WAR file as a reference for adding parameters when editing the web.xml file.

1. The following parameters contain all the relevant information needed to connect to your HCM database, which in this example is a JDBC database table. You can either configure access to an existing database or point to a newly created database. The level of security for the database varies according to database vendor. Refer to the database application's documentation for details.

   CMPI_VAULT_DB_ADDRESS

   This is a URL string that provides the address of the database. An example of this string is jdbc:db2://dtagw:6789/HODSSO.

   Code example:

   ```
   <init-param>
      <param-name>CMPI_VAULT_DB_ADDRESS</param-name>
            <param-value>jdbc:db2://dtagw.raleigh.ibm.com:6789/HODSSO</para
   </init-param>
   ```

   CMPI_VAULT_DB_NET_DRIVER

   This string contains the name of the class that acts as the network database driver. An example of this string is COM.ibm.db2.jdbc.net.DB2Driver. The location of this class is assumed to be in the existing class path.

Code example:

```
<init-param>
   <param-name>CMPI_VAULT_DB_NET_DRIVER</param-name>
   <param-value>COM.ibm.db2.jdbc.net.DB2Driver</param-value>
</init-param>
```

CMPI_VAULT_DB_USERID
This is the ID of the user account to use when accessing the database.

Code example:

```
<init-param>
   <param-name>CMPI_VAULT_DB_USERID</param-name>
   <param-value>admin</param-value>
</init-param>
```

CMPI_VAULT_DB_PASSWORD
This is the password of the user account to use when accessing the database.

This parameter should be encrypted using the encrypt password tool. It is decrypted by the HCM plug-in before using it. For more information about the password encryption tool, refer to Appendix C. Password encryption tool.

Code example:

```
<init-param>
   <param-name>CMPI_VAULT_DB_PASSWORD</param-name>
   <param-value>tuBu9v8lHiJi1jt08UgHzA==</param-value>
</init-param>
```

CMPI_VAULT_DB_TABLE
This entry identifies the table to use for the needed query.

Code example:

```
<init-param>
   <param-name>CMPI_VAULT_DB_TABLE</param-name>
   <param-value>HACP</param-value>
</init-param>
```

2. The following parameters should correspond directly to the column headings in your HCM database and should clearly indicate the contents of the columns. With some databases, such as IBM DB2, the column headings must be in all upper-case letters, for example, NETWORKID, HOSTADDRESS, APPLICATIONID, HOSTID, and PASSWORD.

   Based on the information provided by the first three of these parameters (network ID, host address, and the host application ID), you can make a SQL query of the database to get the host ID. The result of the query is entered in the host ID (HOSTID) column. Assuming that the query is successful, a call is made to the DCAS to request the passticket.

   CMPI_VAULT_DB_NETID_COL_NAME
   This entry identifies the name of the column that contains the network ID value (NETWORKID).

   Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_DB_NETID_COL_NAME</param-name>
       <param-value>NETWORKID</param-value>
    </init-param>
```

CMPI_VAULT_DB_HOSTADDR_COL_NAME
This entry identifies the name of the column that contains the host address value (HOSTADDRESS).

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_DB_HOSTADDR_COL_NAME</param-name>
       <param-value>HOSTADDRESS</param-value>
    </init-param>
```

CMPI_VAULT_DB_HOSTADDR_COL_NAME
This entry identifies the name of the column that contains the host address value (HOSTADDRESS).

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_DB_HOSTADDR_COL_NAME</param-name>
       <param-value>HOSTADDRESS</param-value>
    </init-param>
```

CMPI_VAULT_DB_HOSTAPP_COL_NAME
This entry identifies the name of the column that contains the host application value (APPLICATIONID).

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_DB_HOSTAPP_COL_NAME</param-name>
       <param-value>APPLICATIONID</param-value>
    </init-param>
```

CMPI_VAULT_DB_HOSTID_COL_NAME
This entry identifies the name of the column that contains the user's host identification value (HOSTID).

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_DB_HOSTID_COL_NAME</param-name>
       <param-value>HOSTID</param-value>
    </init-param>
```

CMPI_VAULT_DB_HOSTPW_COL_NAME
This entry identifies the name of the column that contains the host password value (PASSWORD).

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_DB_HOSTPW_COL_NAME</param-name>
       <param-value>PASSWORD</param-value>
```

```
        </init-param>
```

F. Add the optional Vault parameters (if desired).

Unlike the previous set of Vault parameters, the following parameters are optional. Which of these parameters you add to the web.ml file depends on your environment and your objectives as an administrator:

CMPI_VAULT_TRACE_LEVEL
This parameter specifies the trace level for the Vault plug-in. The trace messages are logged to the log file specified by CMPI_TRACE_LOG_FILE parameter. Depending on your Web application server, they may or may not be logged to the console. Trace level values include the following:

- **0 = None**: No tracing. This is the default.
- **1 = Minimum**: Trace APIs and parameters, return values, and errors.
- **2 = Normal**: Trace Minimum plus internal APIs and parameters and informational messages.
- **3 = Maximum**: Trace Normal plus Java exceptions.

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_TRACE_LEVEL</param-name>
       <param-value>3</param-value>
    </init-param>
```

CMPI_VAULT_DB_PRESERVE_WHITESPACE
This parameter indicates whether to trim white spaces from the credential request parameters or not. If true, the white spaces are not trimmed. The default is false.

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_DB_PRESERVE_WHITESPACE</param-name>
       <param-value>false</param-value>
    </init-param>
```

CMPI_VAULT_DB_CASE_SENSITIVE
This parameter specifies whether or not the Vault plug-in converts the application ID and network ID of the user to lowercase characters and then uses the lcase() method to make SQL queries to the HCM database. This parameter should be set to true when using SQL applications that do not support the lcase() method.

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_DB_CASE_SENSITIVE</param-name>
       <param-value>false</param-value>
    </init-param>
```

Step 2: Save the WAR file and deploy the CMS.

Once you save the WAR file with your edits, you are ready to deploy the servlet to the Web server. Refer to your Web server application's documentation for details of how to deploy the servlet.

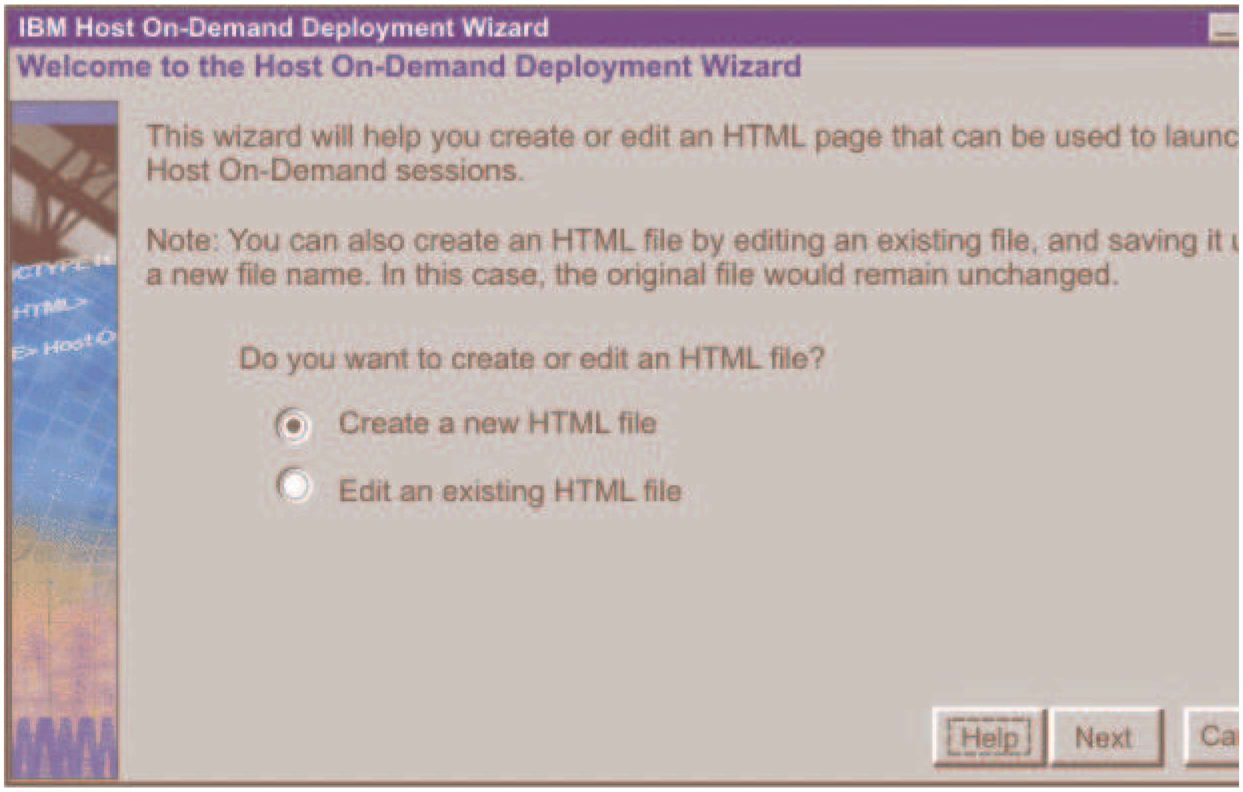
Step 3: Begin creating your HTML file.

The Host On-Demand Deployment Wizard allows you to create an HTML file that is used to launch Host On-Demand sessions. Within the Deployment Wizard, you can add, delete, configure, and start sessions. It guides you configuration choices and provides comprehensive help for the features. When you have finished selecting features, it creates the HTML and supporting files for you.

To begin creating your HTML file on a Windows machine, take the following steps:

1. Open the Deployment Wizard:
   - If you automatically installed the Deployment Wizard as part of the Windows Host On-Demand server, click Start > Programs > IBM WebSphere Host On-Demand > Administration > Deployment Wizard.
   - If you installed the Deployment Wizard from the Host On-Demand CD separately, click Start > Programs > IBM WebSphere Host On-Demand Deployment Wizard > Deployment Wizard.
2. On the Welcome to the Deployment Wizard window (Figure 14), select either to create a new HTML file or edit an existing file. Click Next.

   Figure 14. Welcome to the Host On-Demand Deployment Wizard window



IBM Host On-Demand Deployment Wizard

Welcome to the Host On-Demand Deployment Wizard

This wizard will help you create or edit an HTML page that can be used to launc
Host On-Demand sessions.

Note: You can also create an HTML file by editing an existing file, and saving it u
a new file name. In this case, the original file would remain unchanged.

Do you want to create or edit an HTML file?

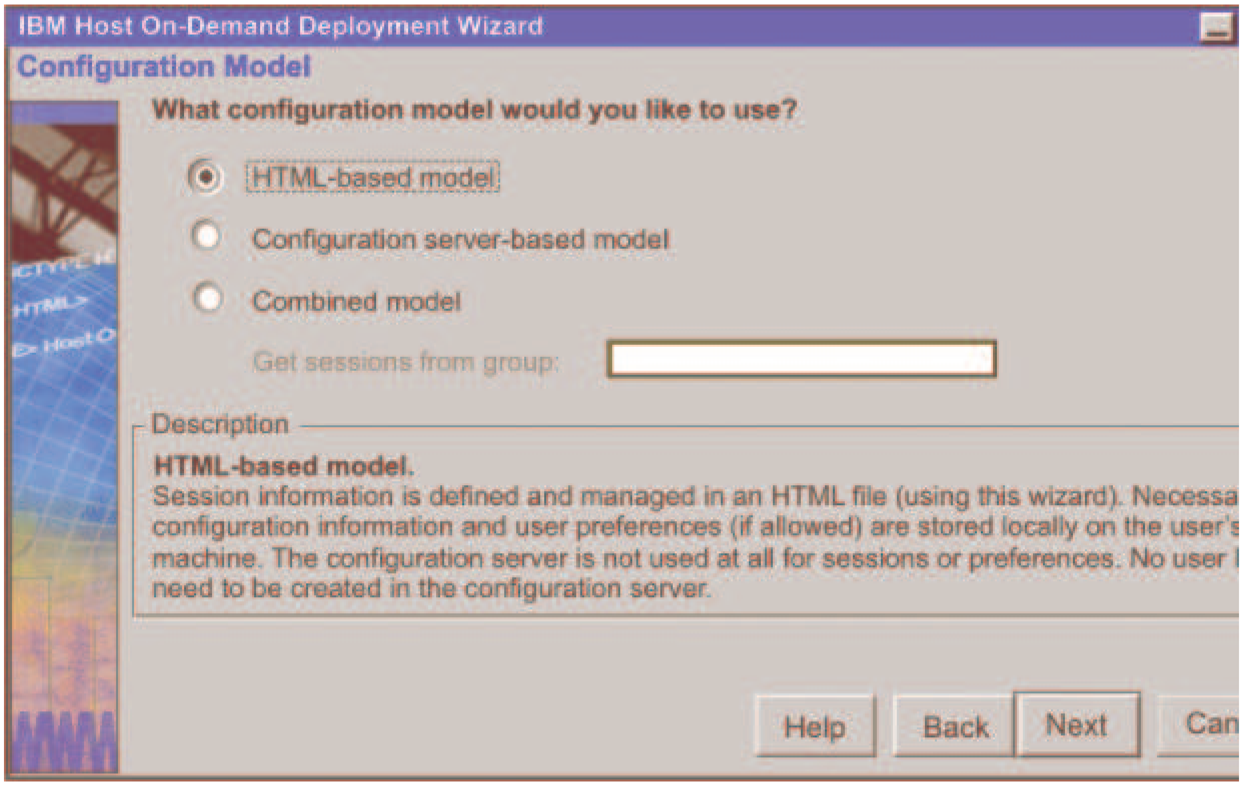
[✓ Create a new HTML file]

Edit an existing HTML file

3. If you are creating a new HTML file, select one of the following three configuration models on the Configuration Model window (Figure 15) and click Next:
   - HTML-based model
   - Configuration server-based model
   - Combined model

   If you are using the HTML-based or Combined models, you can create your HTML file as normal. However, if you are using the Configuration server-based model, you must configure the HTML file with additional steps. Refer to Appendix B. Web Express Logon using the Configuration server-based model for more information.

   Figure 15. Configuration Model window



IBM Host On-Demand Deployment Wizard

Configuration Model

What configuration model would you like to use?

(●) HTML-based model
( ) Configuration server-based model
( ) Combined model

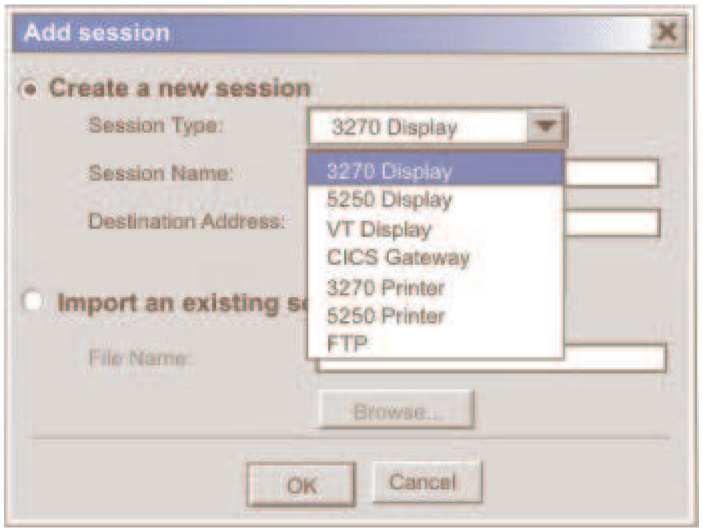
Get sessions from group:

Description

HTML-based model.
Session information is defined and managed in an HTML file (using this wizard). Necessa
configuration information and user preferences (if allowed) are stored locally on the user's
machine. The configuration server is not used at all for sessions or preferences. No user
need to be created in the configuration server.

4. On the Host Sessions window, click New/Import to open the Add session window (Figure 16). This window allows you to either create a new session (default) or import an existing session. To create a new session, select a host type, enter a session name, and a destination address. Click OK to return to the Host Sessions window.

Figure 16. Add session window



Add session

(●) Create a new session

Session Type: 3270 Display

Session Name:

Destination Address:

( ) Import an existing se

File Name:

Step 4: Configure the Host On-Demand session to use Web Express Logon.

Take the following steps to configure your Host On-Demand session to use Web Express Logon.

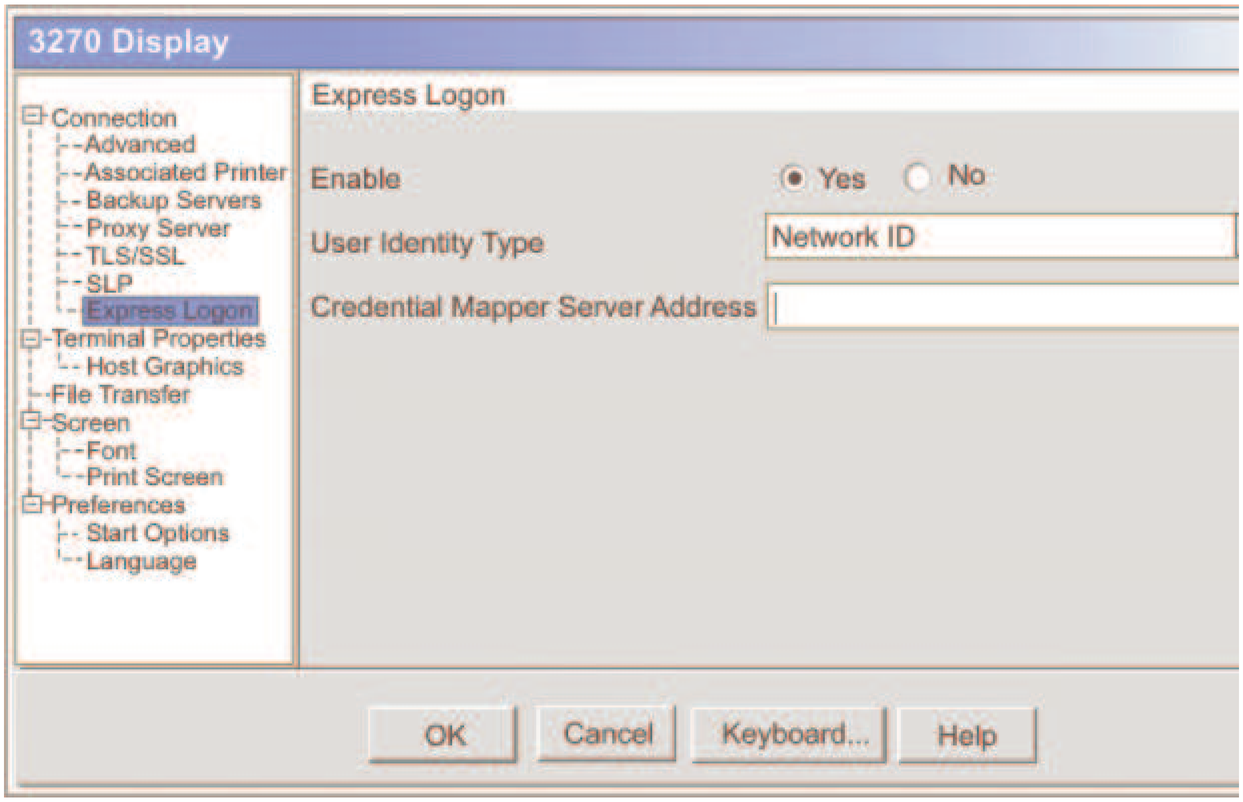
1. Using the Host Sessions window, highlight your session and select Properties under the Configure drop-

down menu. On the left side of the window, select Express Logon under Connection.

You may also open session properties by right-clicking a session icon and selecting Properties.

2. On the Express Logon window (see Figure 17), select Yes to enable Express Logon.

Figure 17. 3270 Express Logon



3270 Display

Connection
- Advanced
- Associated Printer
- Backup Servers
- Proxy Server
- TLS/SSL
- SLP
- Express Logon

Terminal Properties
- Host Graphics

File Transfer

Screen
- Font
- Print Screen

Preferences
- Start Options
- Language

Express Logon

Enable [✓ Yes] No

User Identity Type: Network ID

Credential Mapper Server Address:

OK Cancel Keyboard... Help

3. Select the User Identity Type:
   - Local System ID: the user's local operating system ID. Web Express Logon currently supports Microsoft Active Directory (Windows Domain).
   - Network ID: the user's network security application ID. Web Express Logon currently supports IBM Tivoli Access Manager and Netegrity Siteminder.
   - Portal ID: the user's Portal Server ID. Web Express Logon currently supports Portal Server, a component of IBM WebSphere Portal.
4. Type the full URL of the credential mapper server, for example, https://server_name/junction/cm/CredMapper, where
   - *server_name* is the name of the authentication server
   - *junction* is the name of the junction (optional)
   - *cm* is the credential mapper servlet space
   - *CredMapper* is the servlet name

   Be sure that the servlet name matches the name in your XML file. For example, if you specify the servlet name in your host session as CredMapper, the code in your XML should look like the following:

```
<servlet>
      <servlet-name>CredMapper</servlet-name>
      <display-name>CredMapper</display-name>
<servlet-class>com.ibm.eNetwork.security.sso.cms.CredMapper</servlet-class
```

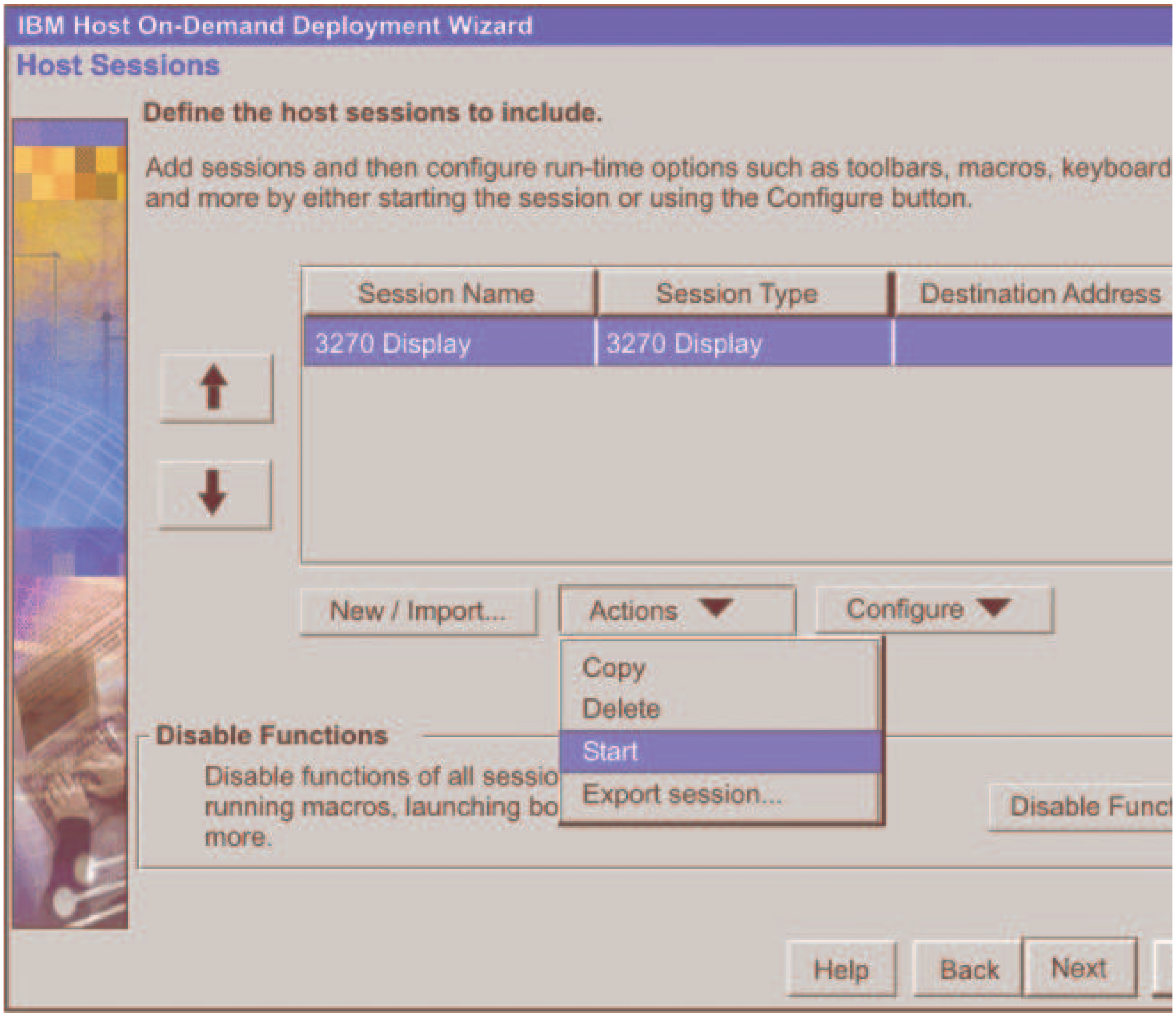
   The servlet that resides at this URL processes the HTTPS request from the user, performs a lookup, and returns the user's credentials. The Host On-Demand client uses the obtained credentials to automate the

login process.
5. Click OK.

Step 5: Record the Web Express Logon macro.

To record a macro, you must first start a host session. To start a session from within the Deployment Wizard, highlight your session on the Host Sessions window (Figure 18) and click Actions > Start.

Figure 18. Host Sessions window


IBM Host On-Demand Deployment Wizard

Host Sessions

Define the host sessions to include.

Add sessions and then configure run-time options such as toolbars, macros, keyboard and more by either starting the session or using the Configure button.

Session Name	Session Type	Destination Address
3270 Display	3270 Display	

Disable Functions

Disable functions of all sessio running macros, launching bo more.

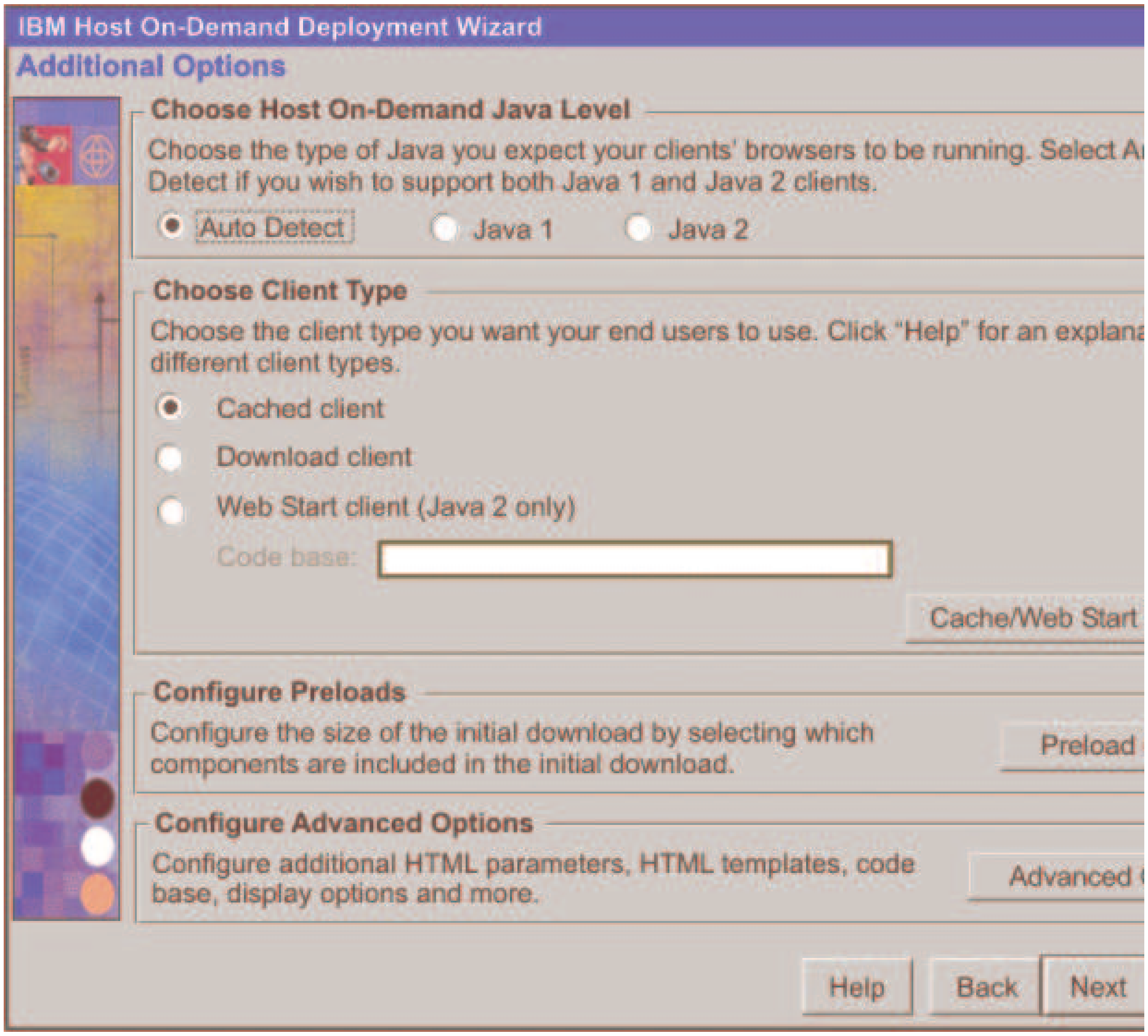
For details about how to record the Web Express Logon macro, refer to Appendix A. Recording the Web Express Logon macro.

Step 6: Finish creating your HTML file.

Now that you have configured your Host On-Demand session to use Web Express Logon and have recorded your login macro, you are ready to finish creating your HTML file using the Deployment Wizard. To finish creating the file, take the following steps:

1. On the Host Sessions window, click Next to open the Additional Options window (Figure 19). Make any changes that you desire and click Next.

   Figure 19. Additional Options window



IBM Host On-Demand Deployment Wizard

Additional Options

Choose Host On-Demand Java Level

Choose the type of Java you expect your clients' browsers to be running. Select A
Detect if you wish to support both Java 1 and Java 2 clients.

[✓ Auto Detect] Java 1 Java 2

Choose Client Type

Choose the client type you want your end users to use. Click "Help" for an explana
different client types.

[✓ Cached client]
Download client
Web Start client (Java 2 only)

Code base:

Configure Preloads

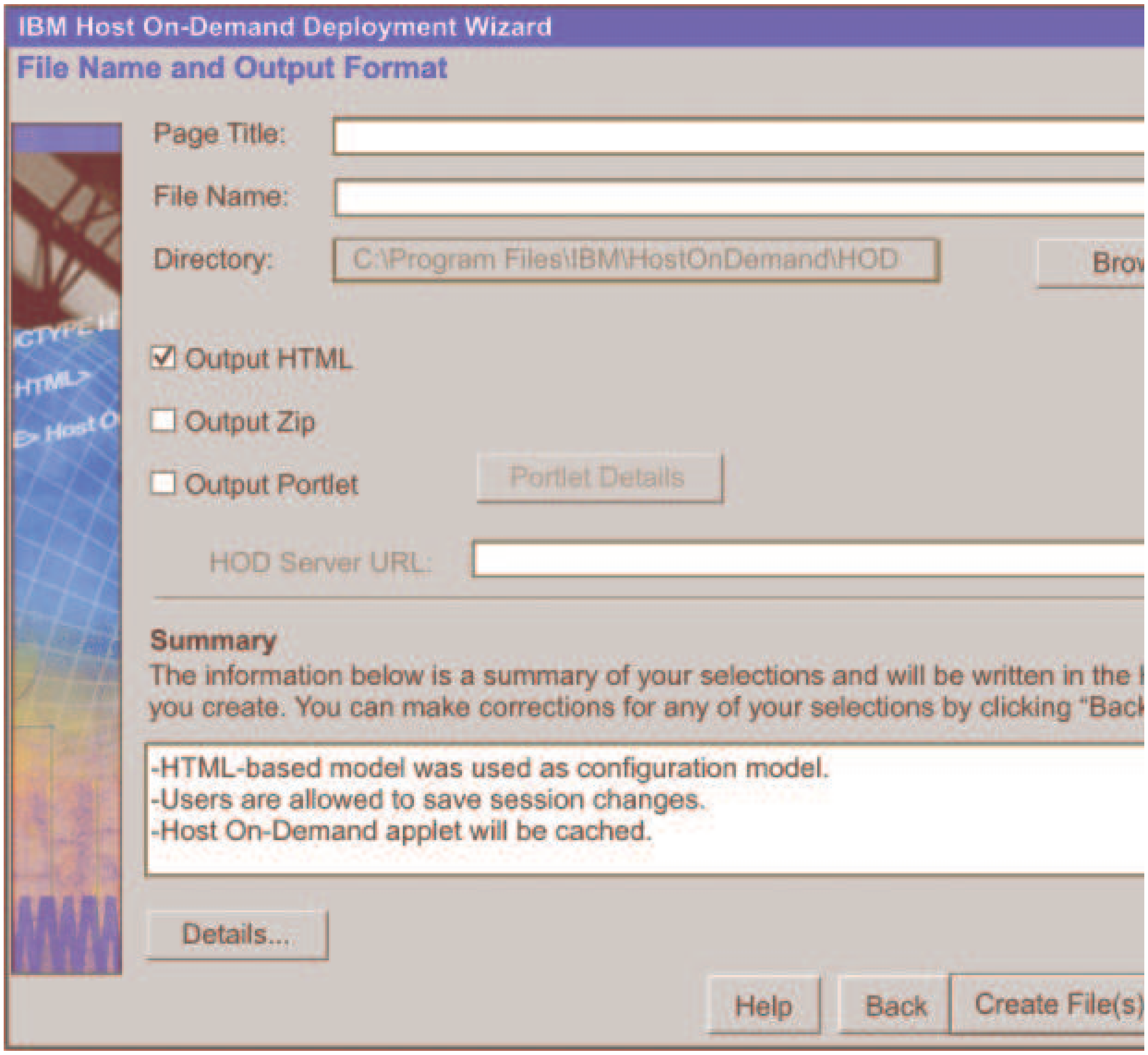
Configure the size of the initial download by selecting which components are included in the initial download.

Configure Advanced Options

Configure additional HTML parameters, HTML templates, code base, display options and more.

2. On the File Name and Output Format window (Figure 20), enter the page title, the file name, choose the directory where you want to save your file, and check the Output HTML box. You should save your file to the Host On-Demand server in a directory known to your Web server; usually, this directory is your Host On-Demand server's publish directory. Click Create File(s) to finish creating your HTML file.

   Figure 20. File Name and Output Format window


IBM Host On-Demand Deployment Wizard
File Name and Output Format
Brow
Portlet Details
Details...
Help
Back
Create File(s)

Page Title:

File Name:

Directory: C:\Program Files\IBM\HostOnDemand\HOD

☑ Output HTML

☐ Output Zip

☐ Output Portlet

HOD Server URL:

Summary

The information below is a summary of your selections and will be written in the

you create. You can make corrections for any of your selections by clicking "Back

-HTML-based model was used as configuration model.
-Users are allowed to save session changes.
-Host On-Demand applet will be cached.

Congratulations! You have taken all the necessary steps to implement Web Express Logon in a vault-style environment. Your next step is to test the logon automation. If logon automation is not successful, that is, you are still being prompted with the host logon screen, refer to Troubleshooting Web Express Logon.

Configuring macro-based automation in a Portal Server environment

In order to implement macro-based automation in a Portal Server environment, you must configure your Host On-Demand session to run as a portlet in the IBM WebSphere Portal Server space. You must also configure the Portal Server's Credential Vault Service with the appropriate host credential information, including the user's password, application ID, and host address. In this environment, the Portal Server's Credential Vault is similar to Host Credential Mapper (HCM) Vault database. For details about how to configure Portal Server's Credential Vault, refer to the Portal Server documentation.

The Portal Credential Vault cannot be used as the HCM database for RACF passticket generation.

The following steps show you how to use the Deployment Wizard to create your Host On-Demand portlet, configure your host session, and record your login macro.

Steps 1-4 are designed for administrators who are planning to use the Deployment Wizard to create the portlet, configure the host session to use Web Express Logon, and record the Web Express Logon macro all in one sitting. However, you may decide to create your portlet first and then configure your session and create your macro later.

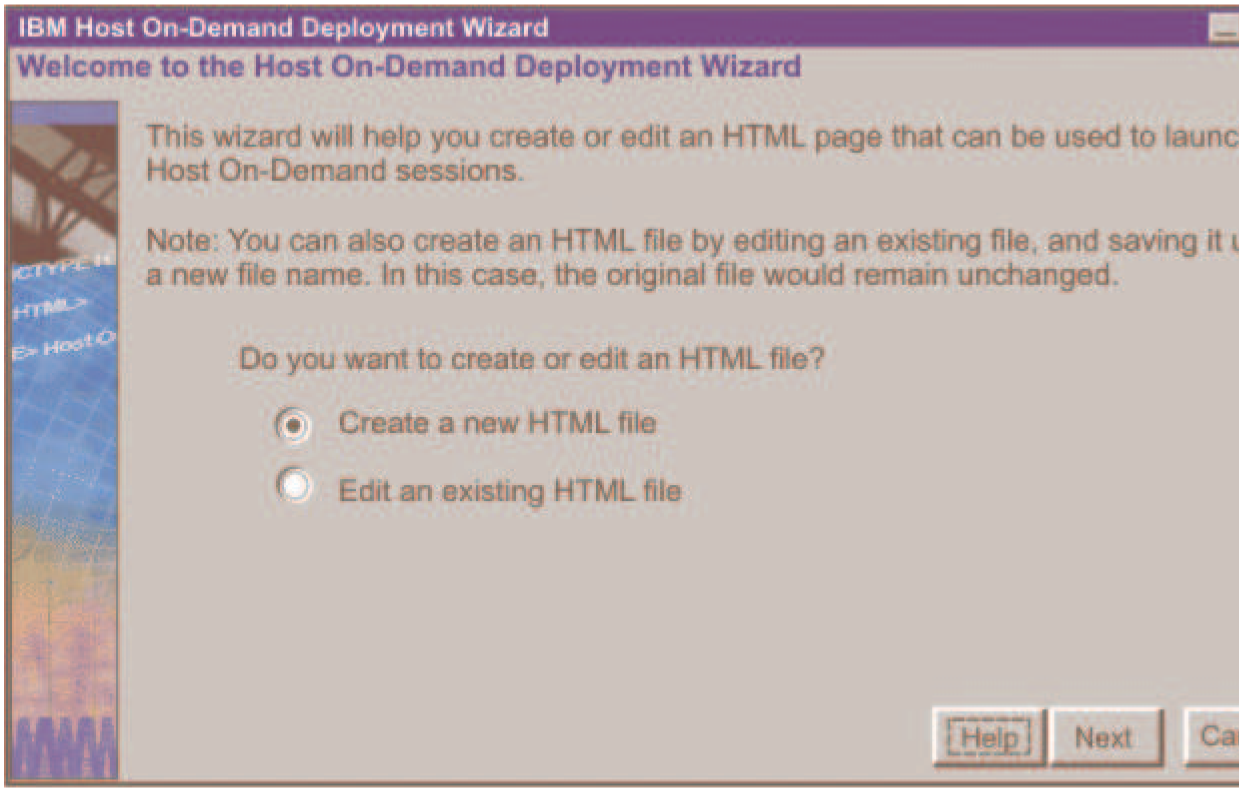
Step 1: Begin creating your Host On-Demand portlet.

The Host On-Demand Deployment Wizard allows you to create a portlet to be launched within a Portal Server page. Host On-Demand portlets are saved as Web Archive (WAR) files.

To begin creating your portlet on a Windows machine, take the following steps:

1. Open the Deployment Wizard:
   - If you automatically installed the Deployment Wizard as part of the Windows Host On-Demand server, click Start > Programs > IBM WebSphere Host On-Demand > Administration > Deployment Wizard.
   - If you installed the Deployment Wizard from the Host On-Demand CD separately, click Start > Programs > IBM WebSphere Host On-Demand Deployment Wizard > Deployment Wizard.
2. On the Welcome to the Deployment Wizard window (Figure 21), select either to create a new file or edit an existing file. Click Next.

Figure 21. Welcome to the Host On-Demand Deployment Wizard window



IBM Host On-Demand Deployment Wizard

Welcome to the Host On-Demand Deployment Wizard

This wizard will help you create or edit an HTML page that can be used to launc
Host On-Demand sessions.

Note: You can also create an HTML file by editing an existing file, and saving it u
a new file name. In this case, the original file would remain unchanged.

Do you want to create or edit an HTML file?

[✓ Create a new HTML file]

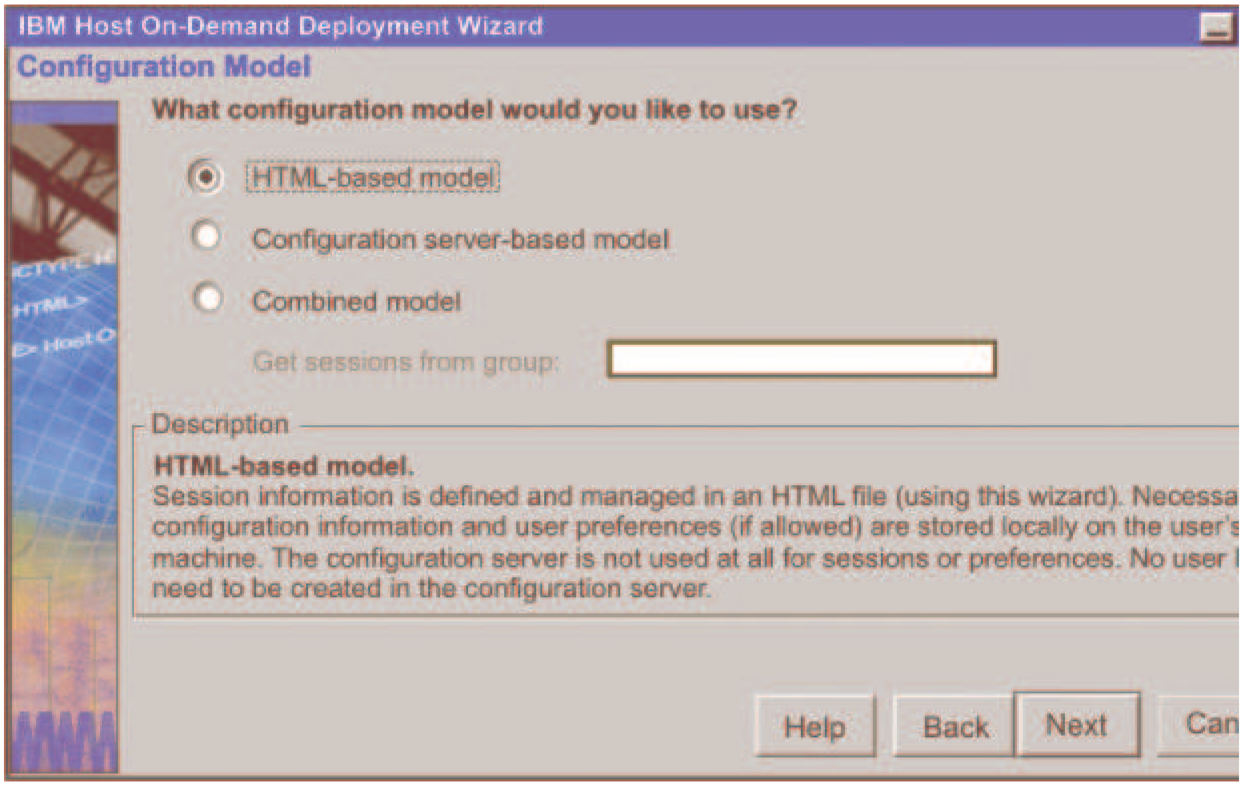
Edit an existing HTML file

3. If you are creating a new HTML file, select one of the following three configuration models on the Configuration Model window (Figure 22) and click Next:
   - HTML-based model
   - Configuration server-based model
   - Combined model

If you are using the HTML-based or Combined models, you can create your HTML file as normal.

However, if you are using the Configuration server-based model, you must configure the HTML file with additional steps. Refer to Appendix B. Web Express Logon using the Configuration server-based model for more information.

Figure 22. Configuration Model window



IBM Host On-Demand Deployment Wizard

Configuration Model

What configuration model would you like to use?

[✓ HTML-based model]

Configuration server-based model

Combined model

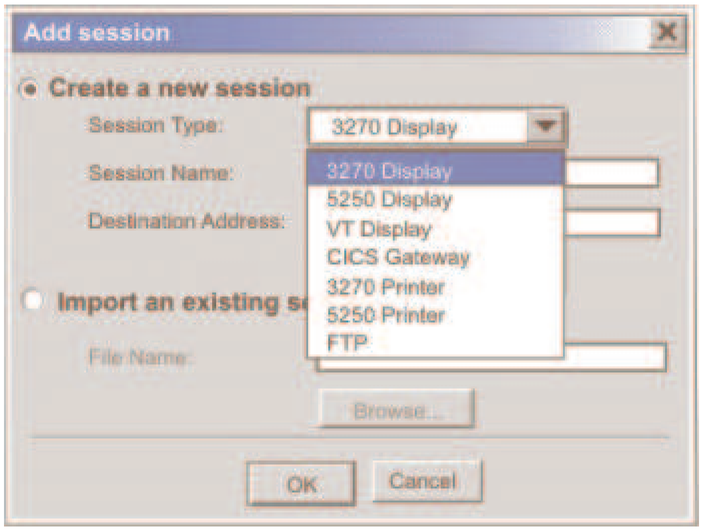
Get sessions from group:

Description

HTML-based model.
Session information is defined and managed in an HTML file (using this wizard). Necessa
configuration information and user preferences (if allowed) are stored locally on the user's
machine. The configuration server is not used at all for sessions or preferences. No user l
need to be created in the configuration server.

4. On the Host Sessions window, click New/Import to open the Add session window (Figure 23). This window allows you either to create a new session (default) or import an existing session. To create a new session, select a host type, enter a session name, and a destination address. Click OK to return to the Host Sessions window.

Figure 23. Add session window



Add session

[✓ Create a new session]

Session Type: 3270 Display

Session Name:

Destination Address:

Import an existing se

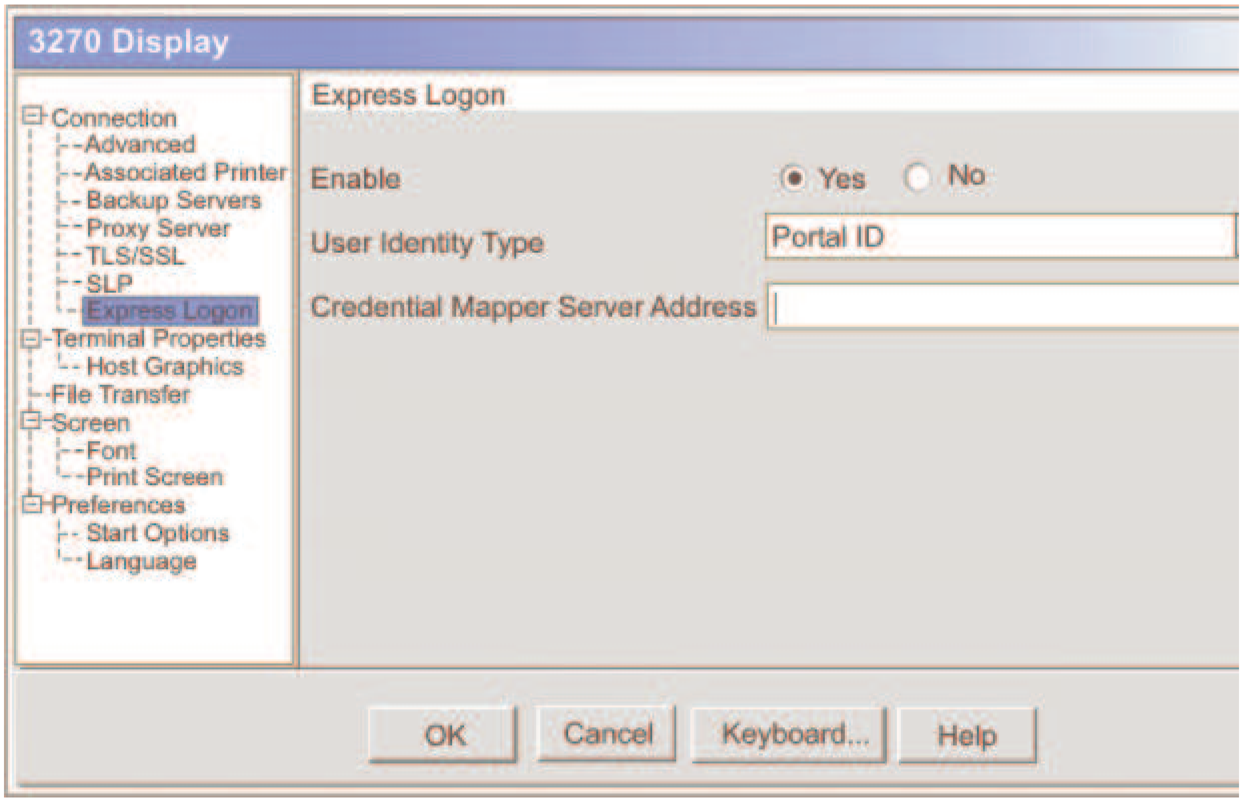
File Name:

Step 2: Configure the Host On-Demand session to use Web Express Logon.

Take the following steps to configure your Host On-Demand session to use Web Express Logon.

1. Open session properties. There are two ways to do this:
   - Right-click a session icon and select Properties. On the left side of the window, select Express Logon under Connection, and select Enable.
   - In the Deployment Wizard on the Host Sessions window, highlight your session and select Properties under the Configure drop-down menu. On the left side of the window, select Express Logon under Connection and then select Enable.
2. On the Express Logon window (see Figure 24), select Yes to enable Express Logon.

Figure 24. 3270 Express Logon



Enable [✓ Yes] No
User Identity Type: Portal ID
Credential Mapper Server Address:

3. Select the User Identity Type:

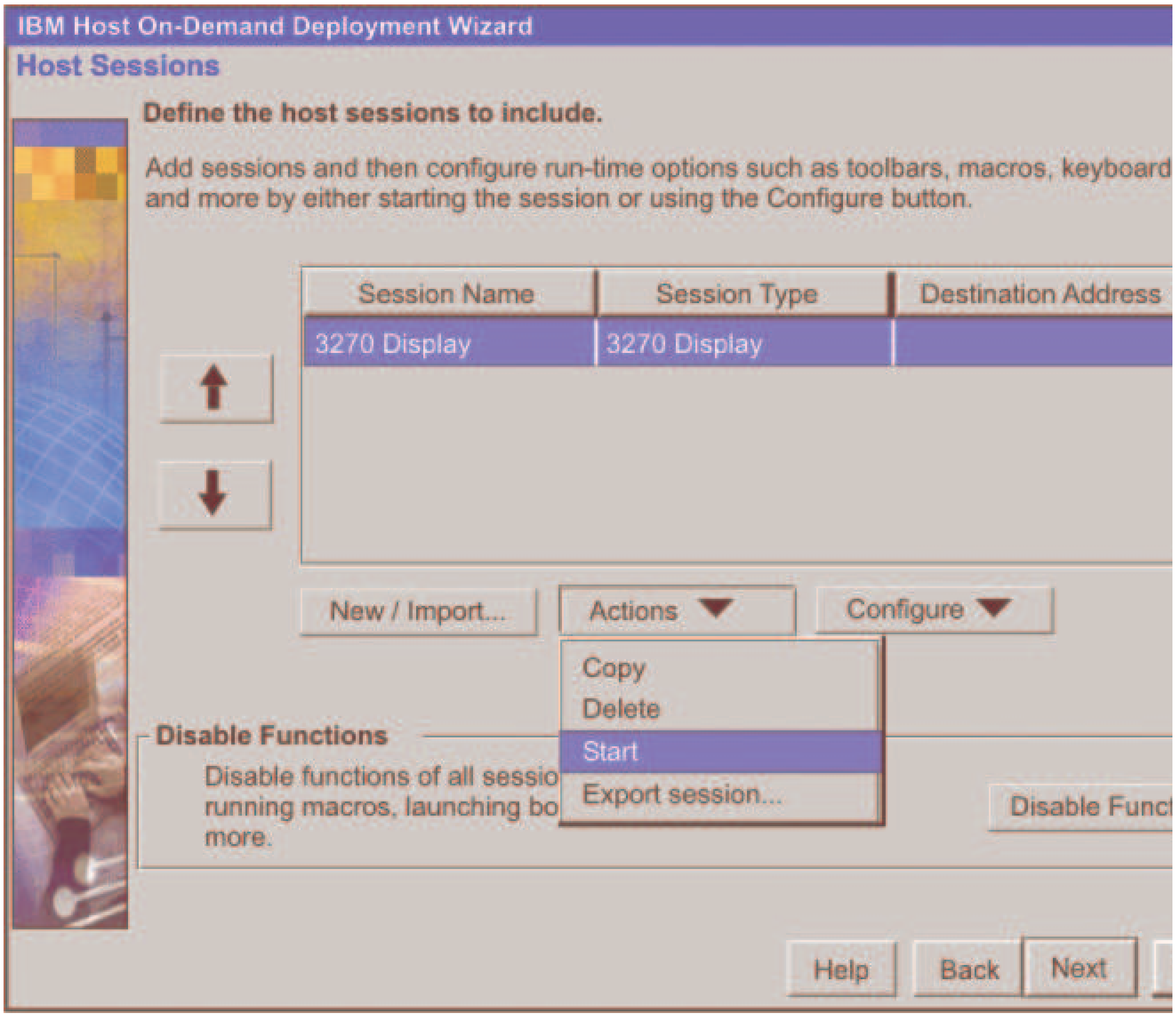
   The User Identity Type field is not used when using the Portal Server Credential Vault Service.

   - Local System ID: the user's local operating system ID. Web Express Logon currently supports Microsoft Active Directory (Windows Domain).
   - Network ID: the user's network security application ID. Web Express Logon currently supports IBM Tivoli Access Manager and Netegrity Siteminder.
   - Portal ID: the user's Portal Server ID. Web Express Logon currently supports Portal Server, a component of IBM WebSphere Portal.
4. Leave the Credential Mapper Server Address field blank. This field is not required when using the Portal Server Credential Vault Service.
5. Click OK.

Step 3: Record the Web Express Logon macro.

To record a macro, you must first start a host session. To start a session from within the Deployment Wizard, highlight your session on the Host Sessions window (Figure 25) and click Actions > Start.

Figure 25. Host Sessions window



Define the host sessions to include.

Add sessions and then configure run-time options such as toolbars, macros, keyboard and more by either starting the session or using the Configure button.

Session Name	Session Type	Destination Address
3270 Display	3270 Display	

Disable Functions

Disable functions of all sessio running macros, launching bo more.

For details about how to record the Web Express Logon macro, refer to Appendix A. Recording the Web Express Logon macro.

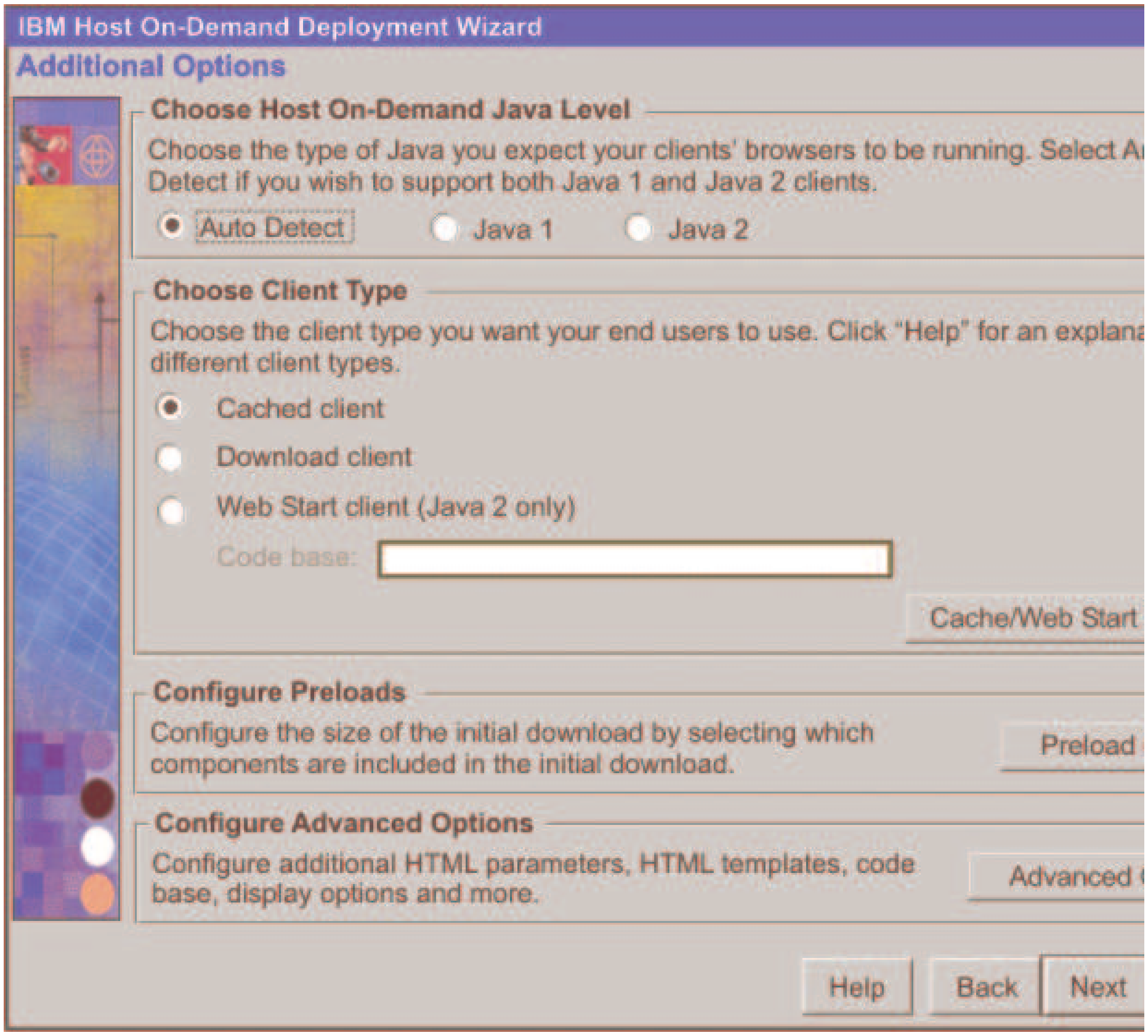
Step 4: Finish creating your Host On-Demand portlet.

Now that you have configured your Host On-Demand session to use Web Express Logon and have recorded your login macro, you are ready to finish creating your portlet file using the Deployment Wizard. To finish creating the file, take the following steps:

1. On the Host Sessions window, click Next to open the Additional Options window (Figure 26). Make any changes that you desire and click Next.

   Do not select Web Start client as your client type when creating a Host On-Demand portlet.

Figure 26. Additional Options window


IBM Host On-Demand Deployment Wizard

Additional Options

Choose Host On-Demand Java Level

Choose the type of Java you expect your clients' browsers to be running. Select A
Detect if you wish to support both Java 1 and Java 2 clients.

[✓ Auto Detect] Java 1 Java 2

Choose Client Type

Choose the client type you want your end users to use. Click "Help" for an explana
different client types.

[✓ Cached client]
Download client
Web Start client (Java 2 only)

Code base:

Configure Preloads

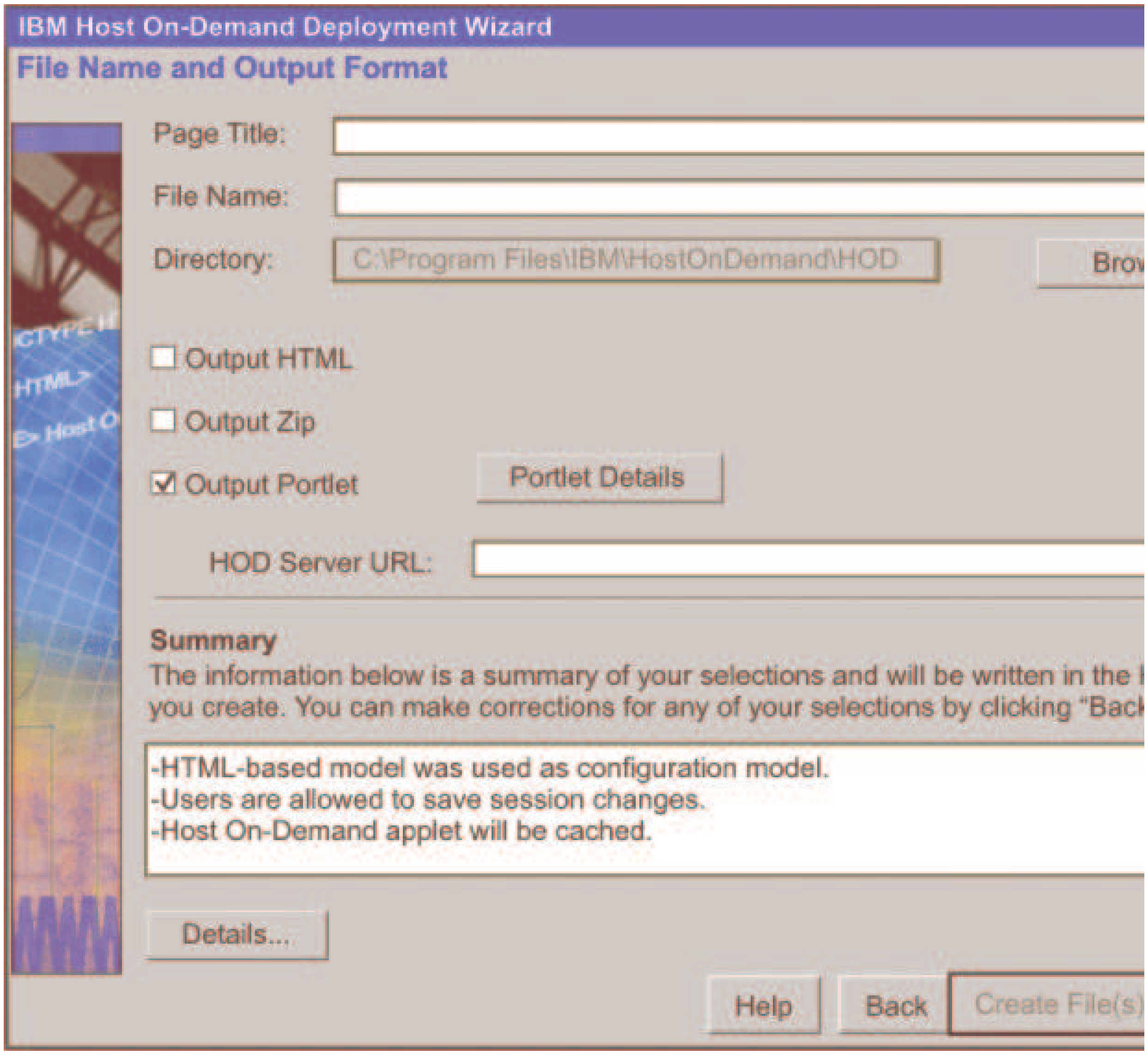
Configure the size of the initial download by selecting which components are included in the initial download.

Configure Advanced Options

Configure additional HTML parameters, HTML templates, code base, display options and more.

2. On the File Name and Output Format window (Figure 27), enter the page title and file name, choose the directory where you want to save your portlet file, and check the Output Portlet box. You should save your portlet to the Host On-Demand server in a directory known to your Web server; usually, this directory is your Host On-Demand server's publish directory. Click the Portlet Details button when you are finished.

Figure 27. File Name and Output Format window



Summary
The information below is a summary of your selections and will be written in the
you create. You can make corrections for any of your selections by clicking "Bac

-HTML-based model was used as configuration model.
-Users are allowed to save session changes.
-Host On-Demand applet will be cached.

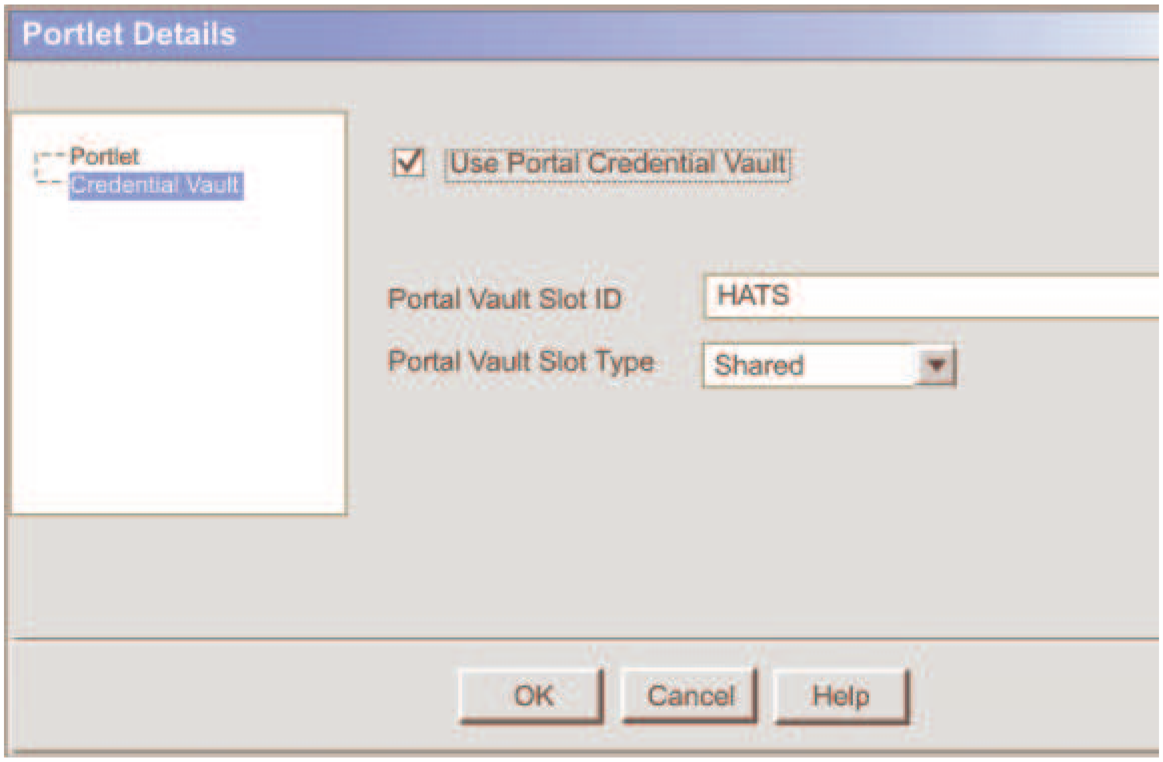
3. On the Portlet Details window (Figure 28), select Credential Vault in the left tree view to configure your portlet and allow Host On-Demand to retrieve the user credentials from the Portal Credential Vault. Once you enable Host On-Demand to use the Portal Server's Credential Vault, enter information for the following two fields:
   - **Portal Vault Slot ID**: Specifies a string that is prepended to the Portal Credential Vault Slot name retrieved by the Host On-Demand portlet. The Portal Vault Slot name is made up of the slot ID, the host name, and the application name, which you specify when you record the Web Express Logon macro. The default value is HATS.
   - **Portal Vault Slot Type**: Identifies the Portal Credential Vault Slot Type retrieved by the Host On-Demand portlet. The default is administrative

   Any information that you provide about the Portal Server Credential Vault is only used if you have left the Credential Mapper Server Address field in the Express Logon window of session properties blank.

   Click OK.

   Host On-Demand does not provide any tools for manipulating vault slots. Refer to the WebSphere Portal documentation for more details.

   Figure 28. Portlet Details



☑ Use Portal Credential Vault

Portal Vault Slot ID: HATS

Portal Vault Slot Type: Shared

4. On the File Name and Output Format window (Figure 27), enter the HOD Server URL so the Portal Server will be able to locate the Host On-Demand Server. The URL that you specify here must identify the Host On-Demand publish directory. An example HOD Server URL is http://server_name.mycompany.com/hod, where server_name is the name of the server where Host On-Demand is installed. You are not required to enter a value for this field since it can be modified by a Portal Server administrator once the portlet has been installed. This field is a configuration parameter of the generated portlet and is named hodCodeBase.
5. Click Create File(s) to finish creating your portlet file.

Congratulations! You have taken all the necessary steps to implement Web Express Logon in a Portal Server environment. Your next step is to test the logon automation. If logon automation is not successful, that is, you are still being prompted with the host logon screen, refer to Troubleshooting Web Express Logon.

Implementing connection-based automation

Configuring connection-based automation in an i5/OS or OS/400 and Kerberos environment

Unlike macro-based automation, connection-based automation does not require the use of a Credential Mapper Servlet (CMS), a login macro, the Network Security plug-in, nor the Host Credential Mapper (HCM). Instead, it extends the existing single sign-on capability of iSeries environments that meet the following criteria:

- operate within a Windows Domain
- have Kerberos-based network authentication enabled on each target iSeries system
- run i5/OS V5R3 or OS/400 V5R2 or later (these versions support Kerberos-based network authentication)
- run one or more of the following client operating systems:
  - Windows 2000 (Professional, Server, and Advanced Server)
  - Windows XP Professional
  - Windows Server 2003

You must configure your iSeries environment to use single sign-on capability in order to implement connection-based logon automation.

The iSeries environment provides single sign-on capability by working in conjunction with Kerberos-based network authentication and an IBM technology called Enterprise Identity Mapping (EIM). Host On-Demand uses this existing methodology for acquiring credentials to allow users to bypass the host session login screen.

Both EIM technology and Kerberos are available with i5/OS V5R3 and OS/400 V5R2 operating systems. EIM is an IBM infrastructure technology that allows you to manage multiple user identities and user registries easily and inexpensively while maintaining secure authentication and authorization. This architecture describes the relationships between individuals or entities in an enterprise and the many identities that represent them within the enterprise. Kerberos, on the other hand, is a network authentication protocol that identifies and authenticates users who request to log on to a network. Together, EIM and Kerberos provide single sign-on capability.

Although this document does not instruct you how to configure your iSeries environment for single sign-on capability, the following resources are available to help you:

- IBM eServer iSeries Enterprise Identity Mapping document: http://publib.boulder.ibm.com/iseries/v5r2/ic2924/info/rzalv/rzalv.pdf
- Enterprise Identity Mapping Web site: http://www.ibm.com/servers/eserver/security/eim/
- IBM eServer iSeries Resource Library: http://www.ibm.com/eserver/iseries

Once you have configured your iSeries environment to use single sign-on capability, you are ready to configure Host On-Demand to extend this single sign-on capability. To accomplish this, take the following two steps:

Step 1: Use the Deployment Wizard to create your HTML file.

The Host On-Demand Deployment Wizard allows you to specify how sessions are defined and managed. You can choose from three different configuration models:

- HTML-based model
- Configuration server-based model
- Combined model

When using the Configuration server-based model and a network security application such as Tivoli Access Manager, you may be accessing your Host On-Demand pages via a URL such as https://server_name/junction_name/HOD/myhodpage.html, where *server_name* is the name of the machine running Tivoli Access Manager and *junction_name* is the junction that you create to point to your Host On-Demand server machine and your HTTP server's port number. If this is the case, Host On-Demand will try to contact the Host On-Demand Service Manager to get your user, group, and session information at the *server_name* rather than at the *junction_name*. To remedy this situation, edit the config.properties file found in the HOD directory of your Host On-Demand install directory (\Program Files\IBM\HostOnDemand\HOD\config.properties) by adding this line at the end of the file content:

```
ConfigServer=myhodserver.ibm.com
```

where *myhodserver* is the machine you are pointing to with the *junction_name*.

Step 2: Configure your Host On-Demand session to use Web Express Logon.

Configure your 5250 session properties to use a Kerberos passticket by taking the following steps:

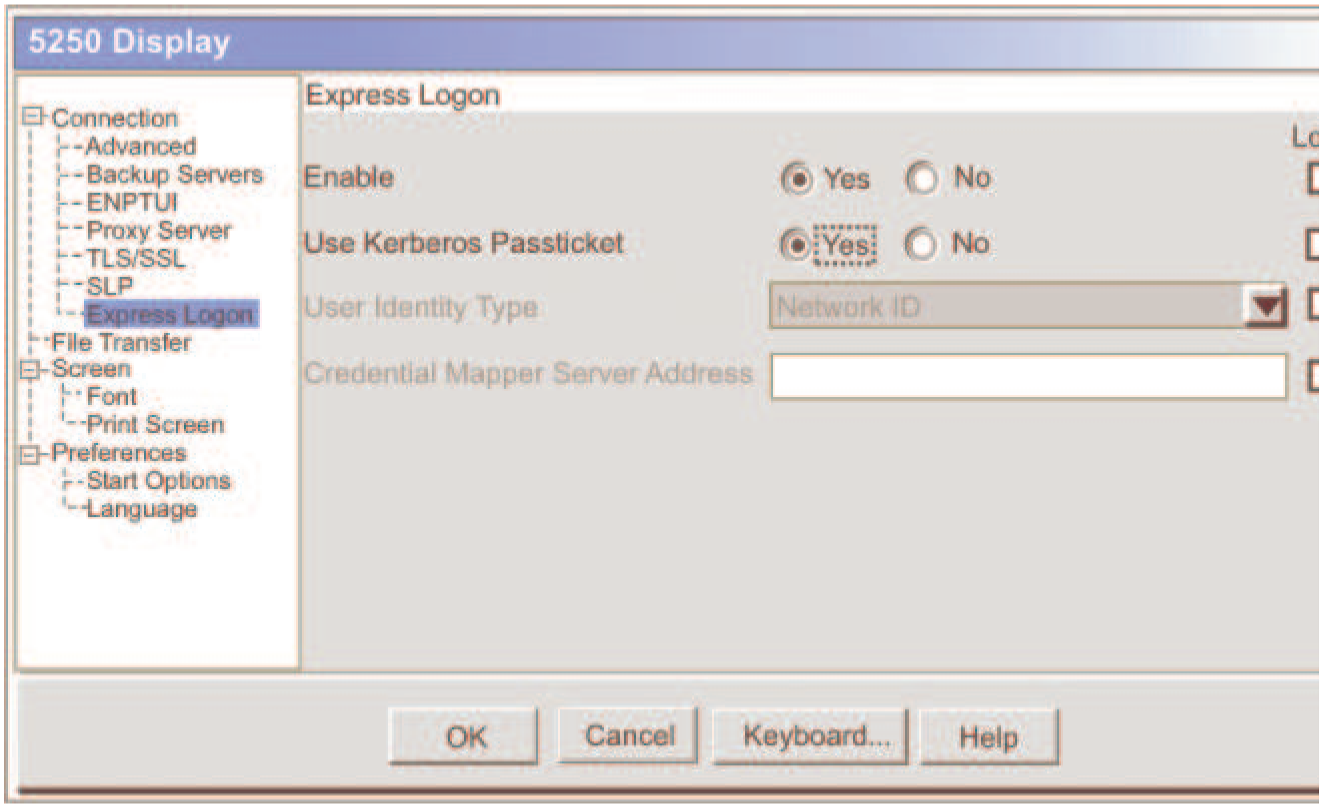
1. Open session properties. There are two ways to do this:
    - Right-click a session icon and select Properties.

- In the Deployment Wizard on the Host Sessions window, highlight your session and select Properties under the Configure drop-down menu.

2. On the Connection > Express Logon window (see Figure 29), select Yes to enable Express Logon and Yes to use a Kerberos Passticket. This allows Host On-Demand to be able to retrieve a passticket from a Windows server. This passticket is used to connect to the host system that you identify in the session properties.

   Once you select Yes to Use Kerberos Passticket, the User Identity Type and Credential Mapper Server fields become disabled. This is because they are not required for connection-based automation.

Figure 29. 5250 Express Logon



Express Logon

Enable [✓ Yes] No

Use Kerberos Passticket [✓ Yes] No

User Identity Type Network ID

Credential Mapper Server Address

Once you have taken the above steps and configured your iSeries host for Kerberos authentication, you will have taken all the necessary steps to implement Web Express Logon in an i5/OS or OS/400 and Kerberos environment. Your next step is to test the logon automation. If logon automation is not successful, that is, you are still being prompted with the host logon screen, refer to Troubleshooting Web Express Logon.

Configuring connection-based automation in an FTP environment

Web Express Logon is also designed to work in FTP environments that use Portal Server. To configure this environment, follow steps 1 and 2 in this chapter and then steps 1, 2 and 4 in the Configuring macro-based automation in a Portal Server environment chapter. Because FTP logon is based on connection-based automation, you will not need to create a Web Express Logon macro; however, you must configure the Portal Server Credential Vault as you would with macro-based automation in a Portal Server environment. For details about how to configure the Portal Server Credential Vault, refer to the Portal Server documentation.

In order to implement connection-based automation in an FTP login environment, you must configure your network security application and create your HCM database. For details about these steps, refer to the Web Express Logon for Host On-Demand Version 8 white paper, located at http://gwareview.boulder.ibm.com/software/network/library/whitepapers/wel.pdf.

In this document, we show you how to edit and deploy the CMS provided with Host On-Demand and use the Deployment Wizard to create your HTML file and configure your host session.

Steps 3-5 are designed for administrators who are planning to use the Deployment Wizard to create the HTML file and configure the FTP session to use Web Express Logon all in one sitting. However, you may decide to create your HTML file first and then configure your session later.

Step 1: Configure the Credential Mapper Servlet (CMS).

We recommend using a J2EE-compliant Web application server such as IBM WebSphere Application Server to configure and deploy the Credential Mapper Servlet (CMS). The CMS is supplied with Host On-Demand and must be deployed to a J2EE-compliant Web application server. At a high level, the CMS is responsible for determining the client's identity and returning the host credentials to the client as an XML document.

A. Locate the WAR files on the Host On-Demand Version 9 CD

The three WAR files are located in the `cdimage\apps\wel` subdirectory. Choose the one that matches your network security application:

- IBM Tivoli Access Manager: amcms.war
- Netegrity Siteminder: smcms.war
- Microsoft Active Directory (Windows Domain): wincms.war

If you have a different network security application, you will need to customize your own version of the CMS. For more information about how to do this, refer to Customizing Web Express Logon.

In addition to several other files, the WAR file contains the following files:

- web.xml: the servlet configuration file that you will edit in a later step
- Vault.xml: a sample file to help you better understand Vault parameters and their values
- was.policy: for IBM WebSphere Application Server users only, this file contains the required permissions for the CMS when Java 2 security is enabled (refer to Troubleshooting Web Express Logon for more information)

B. Become familiar with the INIT parameters in the web.xml file.

In this step, you will become familiar with the three default INIT parameters in the web.xml file.

- **Host Credential Mapper (HCM) plug-in**: The name of the parameter is CMPICredentialMappers, and the parameter value is a compound value that contains the list of all available HCM plug-ins, for example, CMPIDCASPlugin and CMPIVaultPlugin. Currently, the value is echo, but you will eventually replace this with the name of your HCM plug-in.

  Code example:

```
init-param>
   <param-name>CMPICredentialMappers</param-name>
   <param-value>echo</param-value>
</init-param>
```

- **Network Security plug-in**: The name of the parameter is CMPINetworkSecurity, and the parameter value is the full path name of the class that handles the CMS interface into the network security application. This example is taken from the amcms.war file, which is based on the Tivoli Access Manager network security application:

Code example:

```
<init-param>
     <param-name>CMPINetworkSecurity</param-name>
     <param-value>com.ibm.eNetwork.security.sso.cms.CMNPIAccessManager
                        </param-value>
</init-param>
```

The Network Security plug-in does not apply to Microsoft Active Directory (Windows Domain), Portal Server, or Certificate-based Web Express Logon. For Microsoft Active Directory, the Windows login ID is used to identify the user. For Portal Server, the Portal ID is used to identify the user. For Certificate-based Web Express Logon, the client certificate is used to identify the user.

- **echo plug-in**: The name of this INIT parameter (echo) is the same as the value for the HCM plug-in. In a future step, you will replace echo with the name of your HCM plug-in.

  Host On-Demand provides this optional echo plug-in in case you want to confirm that you are able to deploy the CMS correctly before you begin editing the web.xml file. For example, after you deploy your CMS to a Web server, you can test it by entering the following syntax in a workstation's browser address bar: `https://web_application_server_name/context_root/CredMapper`, where *web_application_server_name* is the name of the Web application server, *context_root* is the name of the context root that you specify when deploying the CMS, and *CredMapper* is the name of the CMS itself.

  Some Web application server products allow you to deploy the servlet first and then edit the XML file. Other products, such as WebSphere Application Server V5, work best when you deploy the servlet after you edit the XML code. Refer to your product's documentation for details.

  Code example:

```
<init-param>
   <param-name>echo</param-name>
   <param-value>com.ibm.eNetwork.security.sso.cms.CMPINetEcho,AuthType_All
                </param-value>
</init-param>
```

C. Edit the CMS-related parameters.

In this step, you will edit two of the three INIT parameters in the web.xml file. INIT parameters adapt the servlet to your environment. You will not edit the CMPINetworkSecurity parameter name or value.

1. Locate the CMPICredentialMappers parameter and change the name of its current value (echo) to the name of your HCM plug-in. In this example, the HCM plug-in is CMPIVaultPlugin:

```
<init-param>
  <param-name>CMPICredentialMappers</param-name>
  <param-value>CMPIVaultPlugin</param-value>
</init-param>
```

2. Locate the echo parameter and change the name of its current value (echo) with the name of the parameter value that you specified for the HCM plug-in (CMPIVaultPlugin).

   Now, replace the parameter value with a compound value that contains the full class path name of the implementing class, the authentication type to be used by the HCM plug-in, and the host mask. Separate these values with commas. In this example, com.ibm.eNetwork.security.sso.cms.CMPIVault is the full class path name, AuthType_All is the authentication type, and * is the host mask.

Full class path name

The CMS uses the value of the full class path name to create a class object of the specified type. That object is then used to handle CMS or HCM requests. The specified class file must be in the `...\WEB-INF\classes` subdirectory in a loose file (not as a JAR file). From this location, the CMS will be able to access and use it whenever the need arises.

Authentication type

This value is used to identify the type of authentication that the requestor needs. Once you specify the desired authentication type, the CMS can better identify which credential mapper to select to handle the request. You can pair multiple authentication types together to give HCMs the freedom to support multiple authentication types. Use the vertical bar character to join multiple authentication types.

The five identified authentication types are listed in Table 6:

Authentication used in Secure Shell (SSH) on VT emulation or sftp sessions are not supported by the HCM plug-in.

Table 6. Authentication types and descriptions

Authentication type	Description
`AuthType_3270Host`	Identifies the credentials to be used with a 3270 emulation
`AuthType_5250Host`	Identifies the credentials to be used with 5250 emulation
`AuthType_VTHost`	Identifies the credentials to be used with VT emulation
`AuthType_FTPPassword`	Credentials used to access an FTP host
`AuthType_ConfigServer`	Credentials identified by the token used to identify the user to the Host On-Demand configuration server (if you are using the Configuration server-based model
`AuthType_All`	Identifies the credentials to be used for all authentication types

Host mask

The host mask is a secondary selection criteria used by the CMS to identify the most appropriate credential mapper. This value can contain one or more host addresses. Use the vertical bar character to join multiple addresses. Use the asterisks character to wildcard a host address. The wildcard character may start, end, or start and end a host address.

Table 7 lists valid wild-carded addresses:

Table 7. Host masks and values matched

Host mask	Value matched
`*.raleigh.ibm.com`	Matches all addresses that end with `.raleigh.ibm.com`
`ralvm*`	Matches all addresses that start with `ralvm`
`*`	Matches all
`*xyz*`	Matches any host address that contains `xyz`

Code example:

```
    <init-param>
      <param-name>CMPIVaultPlugin</param-name>
      <param-value>com.ibm.eNetwork.security.sso.cms.CMPIVault, AuthType_All,
                    </param-value>
            </init-param>
```

D. Add optional CMS-related debugging parameters.

Add the following two optional debugging parameters to help you troubleshoot:

CMPI_TRACE_LOG_FILE
This parameter specifies the name of the log file. The value should be the full path to the log file, for example C:\Program Files\IBM\HostOnDemand\HODWEL.log on a Windows platform.

Code example:

```
<init-param>
   <param-name>CMPI_TRACE_LOG_FILE</param-name>
   <param-value>C:\Program Files\IBM\HostOnDemand\HOD\HODWEL.log</param-value
</init-param>
```

CMPI_CMS_TRACE_LEVEL
This parameter specifies the trace level for the CMS. The trace messages are logged to the log file specified by CMPI_TRACE_LOG_FILE parameter. Depending on your Web application server, they may or may not be logged to the console. Trace level values include the following:

- **0 = None**: No tracing. This is the default.
- **1 = Minimum**: Trace APIs and parameters, return values, and errors.
- **2 = Normal**: Trace Minimum plus internal APIs and parameters and informational messages.
- **3 = Maximum**: Trace Normal plus Java exceptions.

Code example:

```
<init-param>
   <param-name>CMPI_CMS_TRACE_LEVEL</param-name>
   <param-value>3</param-value>
</init-param>
```

E. Add the required Vault parameters for the CMPIVaultPlugin.

Add the required Vault parameters to allow the HCM database to map the user ID to the host ID.

Use the Vault.xml file located in the WAR file as a reference for adding parameters when editing the web.xml file.

1. The following parameters contain all the relevant information needed to connect to your HCM database, which in this example is a JDBC database table. You can either configure access to an existing database or point to a newly created database. The level of security for the database varies according to database vendor. Refer to the database application's documentation for details.

   CMPI_VAULT_DB_ADDRESS
   This is a URL string that provides the address of the database. An example of this string is jdbc:db2://dtagw:6789/HODSSO.

   Code example:

   ```
   <init-param>
   ```

```
        <param-name>CMPI_VAULT_DB_ADDRESS</param-name>
              <param-value>jdbc:db2://dtagw.raleigh.ibm.com:6789/HODSSO
                     </param-value>
     </init-param>
```

CMPI_VAULT_DB_NET_DRIVER

This string contains the name of the class that acts as the network database driver. An example of this string is COM.ibm.db2.jdbc.net.DB2Driver. The location of this class is assumed to be in the existing class path.

Code example:

```
     <init-param>
        <param-name>CMPI_VAULT_DB_NET_DRIVER</param-name>
        <param-value>COM.ibm.db2.jdbc.net.DB2Driver</param-value>
     </init-param>
```

CMPI_VAULT_DB_USERID

This is the ID of the user account to use when accessing the database.

Code example:

```
     <init-param>
        <param-name>CMPI_VAULT_DB_USERID</param-name>
        <param-value>admin</param-value>
     </init-param>
```

CMPI_VAULT_DB_PASSWORD

This is the password of the user account to use when accessing the database.

This parameter should be encrypted using the encrypt password tool. It is decrypted by the HCM plug-in before using it. For more information about the password encryption tool, refer to Appendix C. Password encryption tool.

Code example:

```
     <init-param>
        <param-name>CMPI_VAULT_DB_PASSWORD</param-name>
        <param-value>tuBu9v8lHiJi1jt08UgHzA==</param-value>
     </init-param>
```

CMPI_VAULT_DB_TABLE

This entry identifies the table to use for the needed query.

Code example:

```
     <init-param>
        <param-name>CMPI_VAULT_DB_TABLE</param-name>
        <param-value>HACP</param-value>
     </init-param>
```

2. The following parameters should correspond directly to the column headings in your HCM database and should clearly indicate the contents of the columns. With some databases, such as IBM DB2, the column headings must be in all upper-case letters, for example, NETWORKID, HOSTADDRESS, HOSTID, and PASSWORD.

Based on the information provided by the first two of these parameters (network ID and host address), you can make a SQL query of the database to get the host ID. The result of the query is entered in the host ID (HOSTID) column. Assuming that the query is successful, a call is made to the vault-style database to request the password.

CMPI_VAULT_DB_NETID_COL_NAME

This entry identifies the name of the column that contains the network ID value (NETWORKID).

Code example:

```
<init-param>
   <param-name>CMPI_VAULT_DB_NETID_COL_NAME</param-name>
   <param-value>NETWORKID</param-value>
</init-param>
```

CMPI_VAULT_DB_HOSTADDR_COL_NAME

This entry identifies the name of the column that contains the host address value (HOSTADDRESS).

Code example:

```
<init-param>
   <param-name>CMPI_VAULT_DB_HOSTADDR_COL_NAME</param-name>
   <param-value>HOSTADDRESS</param-value>
</init-param>
```

CMPI_VAULT_DB_HOSTADDR_COL_NAME

This entry identifies the name of the column that contains the host address value (HOSTADDRESS).

Code example:

```
<init-param>
   <param-name>CMPI_VAULT_DB_HOSTADDR_COL_NAME</param-name>
   <param-value>HOSTADDRESS</param-value>
</init-param>
```

CMPI_VAULT_DB_HOSTAPP_COL_NAME

This entry identifies the name of the column that contains the host application value (APPLICATIONID).

Code example:

```
<init-param>
   <param-name>CMPI_VAULT_DB_HOSTAPP_COL_NAME</param-name>
   <param-value>APPLICATIONID</param-value>
</init-param>
```

CMPI_VAULT_DB_HOSTID_COL_NAME

This entry identifies the name of the column that contains the user's host identification value (HOSTID).

Code example:

```
<init-param>
   <param-name>CMPI_VAULT_DB_HOSTID_COL_NAME</param-name>
   <param-value>HOSTID</param-value>
```

```
        </init-param>
```

CMPI_VAULT_DB_HOSTPW_COL_NAME

This entry identifies the name of the column that contains the host password value (PASSWORD).

Code example:

```
        <init-param>
           <param-name>CMPI_VAULT_DB_HOSTPW_COL_NAME</param-name>
           <param-value>PASSWORD</param-value>
        </init-param>
```

F. Add the optional Vault parameters (if desired).

Unlike the previous set of Vault parameters, the following parameters are optional. Which of these parameters you add to the web.ml file depends on your environment and your objectives as an administrator:

CMPI_VAULT_TRACE_LEVEL

This parameter specifies the trace level for the Vault plug-in. The trace messages are logged to the log file specified by CMPI_TRACE_LOG_FILE parameter. Depending on your Web application server, they may or may not be logged to the console. Trace level values include the following:

- **0 = None**: No tracing. This is the default.
- **1 = Minimum**: Trace APIs and parameters, return values, and errors.
- **2 = Normal**: Trace Minimum plus internal APIs and parameters and informational messages.
- **3 = Maximum**: Trace Normal plus Java exceptions.

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_TRACE_LEVEL</param-name>
       <param-value>3</param-value>
    </init-param>
```

CMPI_VAULT_DB_PRESERVE_WHITESPACE

This parameter indicates whether to trim white spaces from the credential request parameters or not. If true, the white spaces are not trimmed. The default is false.

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_DB_PRESERVE_WHITESPACE</param-name>
       <param-value>false</param-value>
    </init-param>
```

CMPI_VAULT_DB_CASE_SENSITIVE

This parameter specifies whether or not the Vault plug-in converts the application ID and network ID of the user to lowercase characters and then uses the lcase() method to make SQL queries to the HCM database. This parameter should be set to true when using SQL applications that do not support the lcase() method.

Code example:

```
    <init-param>
       <param-name>CMPI_VAULT_DB_CASE_SENSITIVE</param-name>
```

```
        <param-value>false</param-value>
    </init-param>
```

Step 2: Save the WAR file and deploy the CMS.

Once you save the WAR file with your edits, you are ready to deploy the servlet to the Web server. Refer to your Web server application's documentation for details of how to deploy the servlet.

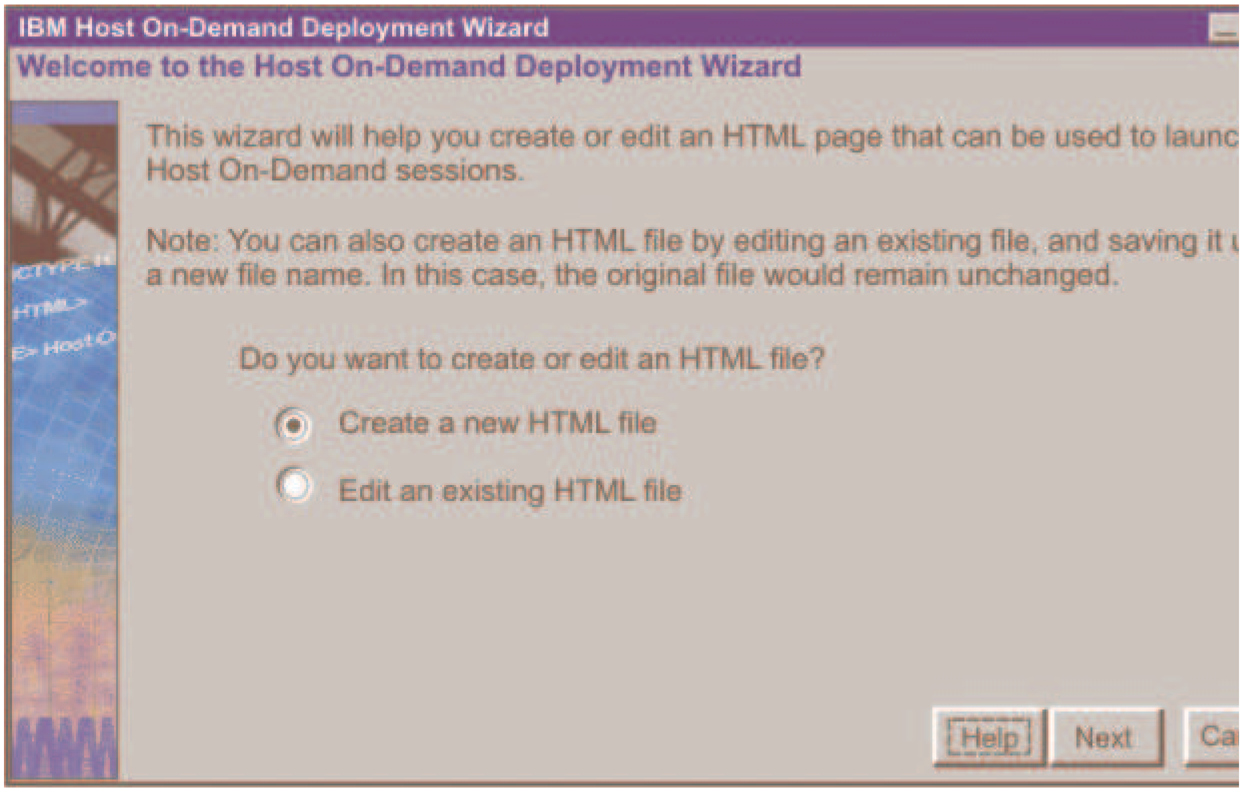
Step 3: Begin creating your HTML file.

The Host On-Demand Deployment Wizard allows you to create an HTML file that is used to launch Host On-Demand sessions. Within the Deployment Wizard, you can add, delete, configure, and start sessions. It guides you configuration choices and provides comprehensive help for the features. When you have finished selecting features, it creates the HTML and supporting files for you.

To begin creating your HTML file on a Windows machine, take the following steps:

1. Open the Deployment Wizard:
   - If you automatically installed the Deployment Wizard as part of the Windows Host On-Demand server, click Start > Programs > IBM WebSphere Host On-Demand > Administration > Deployment Wizard.
   - If you installed the Deployment Wizard from the Host On-Demand CD separately, click Start > Programs > IBM WebSphere Host On-Demand Deployment Wizard > Deployment Wizard.
2. On the Welcome to the Deployment Wizard window (Figure 30), select either to create a new HTML file or edit an existing file. Click Next.

   Figure 30. Welcome to the Host On-Demand Deployment Wizard window



IBM Host On-Demand Deployment Wizard

Welcome to the Host On-Demand Deployment Wizard

This wizard will help you create or edit an HTML page that can be used to launc
Host On-Demand sessions.

Note: You can also create an HTML file by editing an existing file, and saving it u
a new file name. In this case, the original file would remain unchanged.

Do you want to create or edit an HTML file?

[✓ Create a new HTML file]

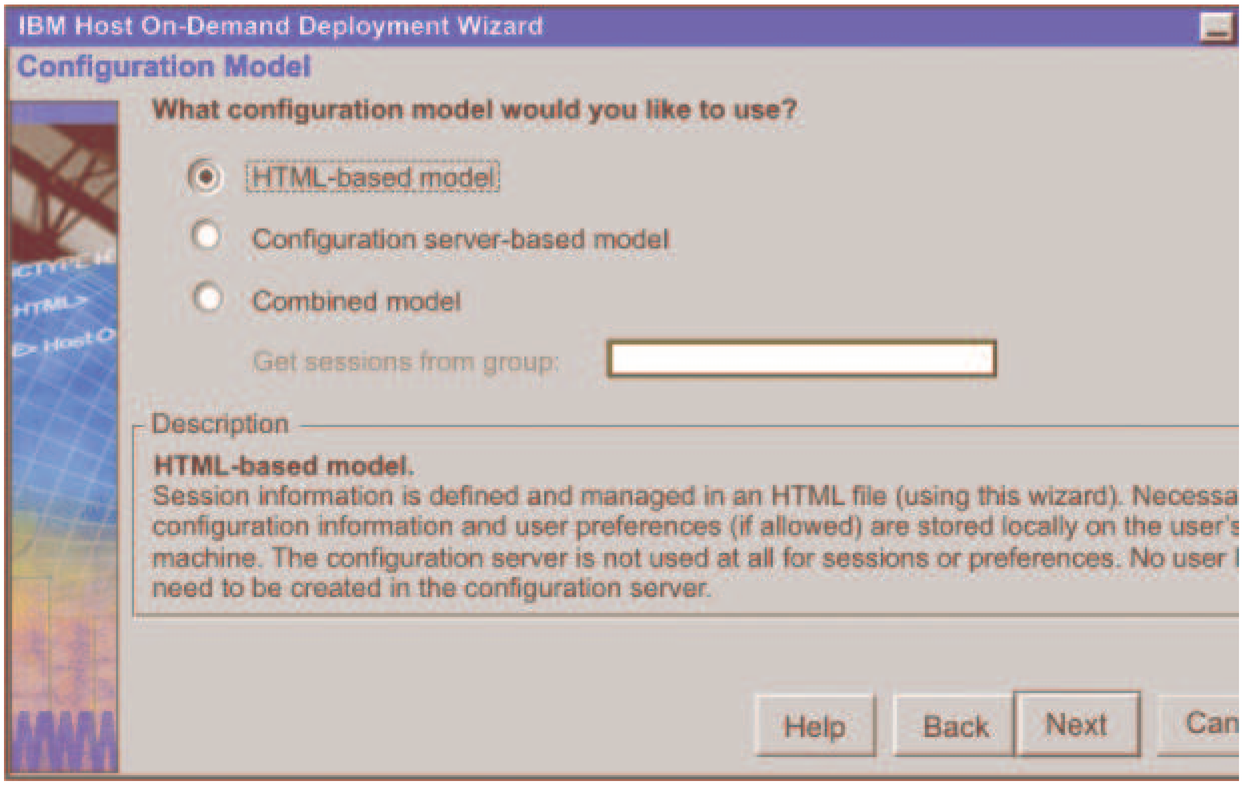
Edit an existing HTML file

3. If you are creating a new HTML file, select one of the following three configuration models on the Configuration Model window (Figure 31) and click Next:
   - HTML-based model

- Configuration server-based model
- Combined model

If you are using the HTML-based or Combined models, you can create your HTML file as normal. However, if you are using the Configuration server-based model, you must configure the HTML file with additional steps. Refer to Appendix B. Web Express Logon using the Configuration server-based model for more information.

Figure 31. Configuration Model window



IBM Host On-Demand Deployment Wizard

Configuration Model

What configuration model would you like to use?

(●) HTML-based model
( ) Configuration server-based model
( ) Combined model

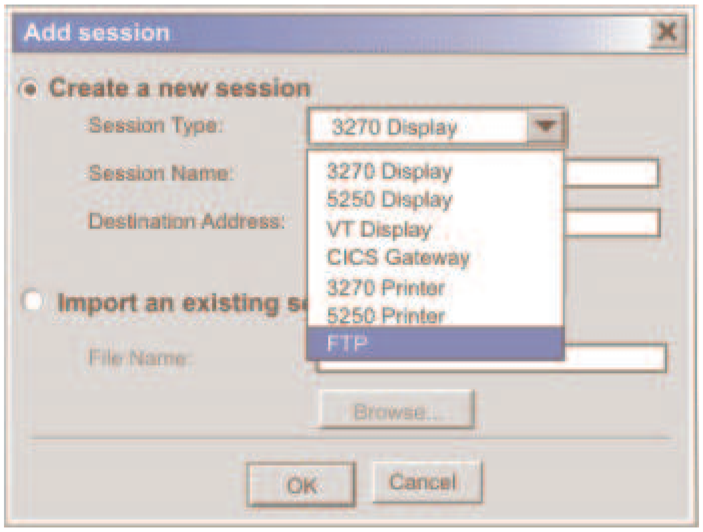
Get sessions from group:

Description

HTML-based model.
Session information is defined and managed in an HTML file (using this wizard). Necessa
configuration information and user preferences (if allowed) are stored locally on the user's
machine. The configuration server is not used at all for sessions or preferences. No user l
need to be created in the configuration server.

4. On the Host Sessions window, click New/Import to open the Add session window (Figure 32). This window allows you to either create a new session (default) or import an existing session. To create a new session, select FTP as the host type, enter a session name, and a destination address. Click OK to return to the Host Sessions window.

Figure 32. Add session window



Add session

(●) Create a new session

Session Type: 3270 Display

Session Name:

Destination Address:

( ) Import an existing se

File Name:

Step 4: Configure the Host On-Demand session to use Web Express Logon.

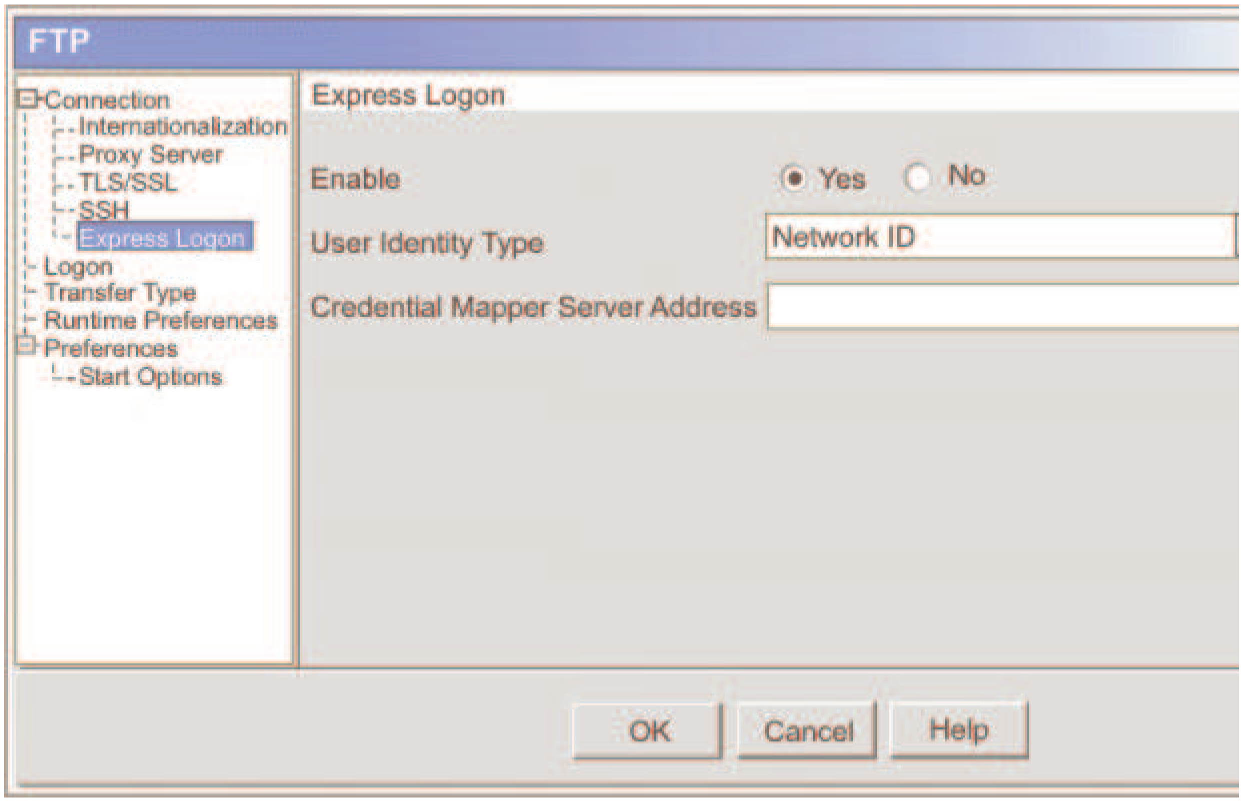
Take the following steps to configure your Host On-Demand session to use Web Express Logon.

1. Using the Host Sessions window, highlight your FTP session and select Properties under the Configure drop-down menu. On the left side of the window, select Express Logon under Connection.

   You may also open session properties by right-clicking a session icon and selecting Properties.

2. On the Express Logon window (see Figure 33), select Yes to enable Express Logon.

   Figure 33. FTP Express Logon



Express Logon

Enable [✓ Yes] No

User Identity Type: Network ID

Credential Mapper Server Address:

3. Select the User Identity Type:
   - local system ID: the user's local operating system ID. Web Express Logon currently supports Microsoft Active Directory (Windows Domain).
   - network ID: the user's network security application ID. Web Express Logon currently supports IBM Tivoli Access Manager and Netegrity Siteminder.
   - Portal ID: the user's Portal Server ID. Web Express Logon currently supports Portal Server, a component of IBM WebSphere Portal.
4. Type the full URL of the credential mapper server, for example, https://server_name/junction/cm/CredMapper, where
   - *server_name* is the name of the authentication server
   - *junction* is the name of the junction (optional)
   - *cm* is the credential mapper servlet space
   - *CredMapper* is the servlet name

   Be sure that the servlet name matches the name in your XML file. For example, if you specify the servlet name in your host session as CredMapper, the code in your XML should look like the following:

```
<servlet>
      <servlet-name>CredMapper</servlet-name>
      <display-name>CredMapper</display-name>
<servlet-class>com.ibm.eNetwork.security.sso.cms.CredMapper</servlet-class
```

The servlet that resides at this URL processes the HTTPS request from the user, performs a lookup, and returns the user's credentials. The Host On-Demand client uses the obtained credentials to automate the login process.

5. Click OK.

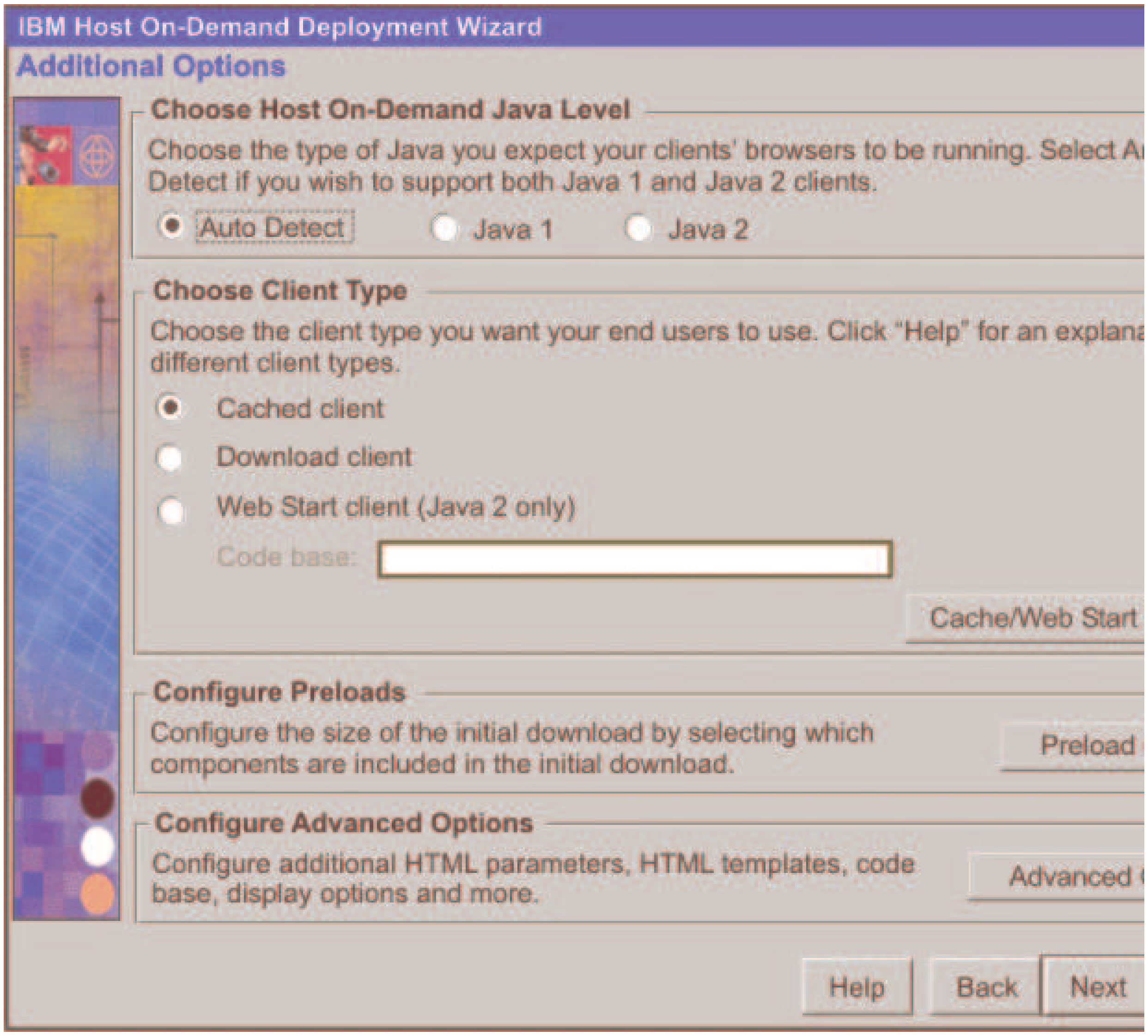
Notice the Logon option in the left pane of the FTP Host Sessions window. On this window, be sure to leave the User ID and Password fields blank. If you enter a User ID and Password, Host On-Demand will ignore the settings on the Express Logon window.

Step 5: Finish creating your HTML file.

Now that you have configured your Host On-Demand session to use Web Express Logon and have recorded your login macro, you are ready to finish creating your HTML file using the Deployment Wizard. To finish creating the file, take the following steps:

1. On the Host Sessions window, click Next to open the Additional Options window (Figure 34). Make any changes that you desire and click Next.

Figure 34. Additional Options window


IBM Host On-Demand Deployment Wizard

Additional Options

Choose Host On-Demand Java Level

Choose the type of Java you expect your clients' browsers to be running. Select A
Detect if you wish to support both Java 1 and Java 2 clients.

[✓ Auto Detect] Java 1 Java 2

Choose Client Type

Choose the client type you want your end users to use. Click "Help" for an explana
different client types.

[✓ Cached client]
Download client
Web Start client (Java 2 only)

Code base:

Configure Preloads

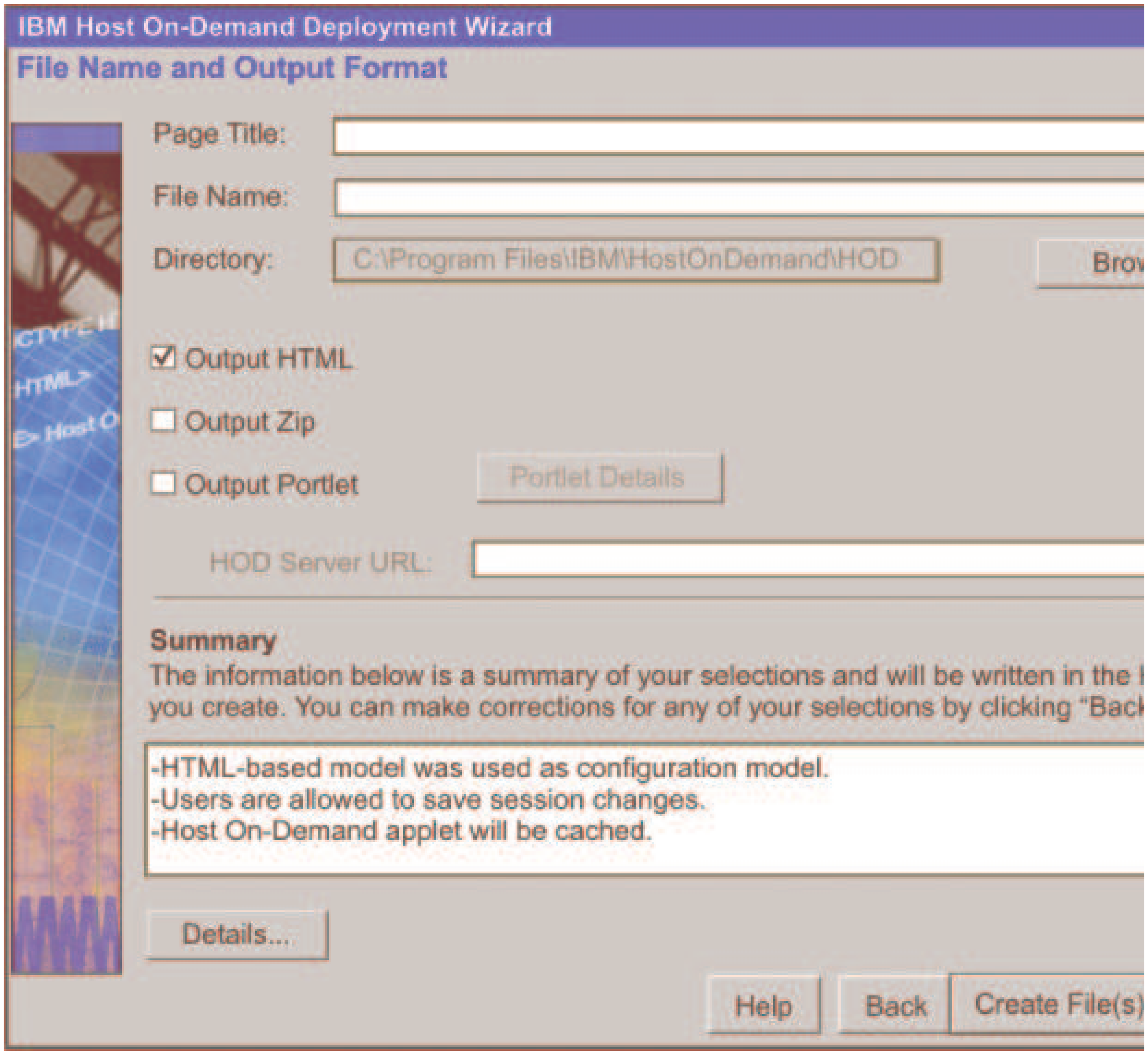
Configure the size of the initial download by selecting which components are included in the initial download.

Configure Advanced Options

Configure additional HTML parameters, HTML templates, code base, display options and more.

2. On the File Name and Output Format window (Figure 35), enter the page title, the file name, choose the directory where you want to save your file, and check the Output HTML box. You should save your file to the Host On-Demand server in a directory known to your Web server; usually, this directory is your Host On-Demand server's publish directory. Click Create File(s) to finish creating your HTML file.

Figure 35. File Name and Output Format window



Directory: C:\Program Files\IBM\HostOnDemand\HOD

☑ Output HTML

☐ Output Zip

☐ Output Portlet

Summary

The information below is a summary of your selections and will be written in the
you create. You can make corrections for any of your selections by clicking "Back

-HTML-based model was used as configuration model.
-Users are allowed to save session changes.
-Host On-Demand applet will be cached.

Congratulations! You have taken all the necessary steps to implement Web Express Logon in an FTP login environment. Your next step is to test the logon automation. If logon automation is not successful, that is, you are still being prompted with the host logon screen, refer to Troubleshooting Web Express Logon.

API programming guide

Customizing Web Express Logon

If you decide to customize Web Express Logon, you may take either of the following two approaches -- (1) customize the existing CMS or (2) replace the entire CMS with your own custom version. Although the first approach requires some J2EE knowledge, it is easier to implement than the second approach and does not require experience creating servlets.

The CMS is the core of the credential-mapping framework. It is supplied with Host On-Demand and must be deployed to a J2EE-compliant Web application server. At a high level, the CMS is responsible for determining the client's identity and returning the host credentials to the client as an XML document. It accomplishes these tasks through credential mapper Java classes called plug-ins. Web Express Logon provides two Network

Security plug-ins (one for Tivoli Access Manager and one for Siteminder) to perform the request part of the process and three Host Credential plug-ins (two for DCAS and one for Vault) to perform the response part.

The Network Security plug-in retrieves the user's credentials from the network security application after the user has made an HTTPS request to the CMS. It identifies the user by way of the network user ID and then passes it on to the appropriate Host Credential plug-in. The Host Credential plug-in then determines the host user ID and acquires the host access credentials.

If you take the first approach, you can create a Network Security plug-ins and/or a HCM plug-in. For example, if your network security application is not one of three applications supported by Web Express Logon, you can create a Network Security plug-in to meet the requirements of your application. Also, if you want to use an LDAP directory as your HCM database instead of a JDBC database such as IBM DB2, for example, you can create your own HCM plug-in.

Approach 1: Replace the entire CMS with your own custom version of the servlet

This document does not describe how to create a servlet, but the following are resources available to help you:

- **IBM Websphere Studio Application Developer**: IBM Websphere Studio Application Developer is the core development environment from IBM. It helps you optimize and simplify J2EE and Web services development by offering best practices, templates, code generation, and the most comprehensive development environment in its class. For more information, refer to http://www.ibm.com/software/awdtools/studioappdev/.
- **IBM developerWorks**: IBM developerWorks is your one-stop developer source. It offers tutorials, training, sample code, CDs and downloads, and more. For more information, refer to http://www.ibm.com/developerworks/.

If you decide to replace the entire CMS provided with Host On-Demand, you will need to use an HTTP parameter for requests and XML-formatted data for responses. Parameters are supplied to the CMS servlet via an HTTP request, and the response information is encapsulated into an XML-formatted object and returned to the caller.

HTTP request parameters

When Host On-Demand makes a request of the CMS, it applies the appropriate HTTP parameters to this request. This helps determine the needs of the request. Since it must be an HTTP request, the CMS request interface is built around a standard HTTP-style query. Following the HTTPS protocol and server address is the query character, a question mark, and then a list of keys and values. These keys and values are separated by the ampersand symbol. Within each key and value pair, the key and value are separated by the symbol for equality. A sample query may look like the following example:

```
https://www.ibm.com/authserver/servlet/cms?operation=1
                &destination=www.ibm.com/somehost&appid=tpf
                &authtype=AuthType_3270Host
```

Table 5 is a list of available keys:

Table 8. Available keys and values

Key	Possible value
`operation`	'1' -- Credential Mapping Request
`destination`	This is the destination for which the credentials are being requested.
`appid`	This is the host application ID for which the credentials are being requested.
`authtype`	This is the type of authentication credentials being requested (available

	authentication types are defined in Table 2).
`localid`	This optional value will supply the user's identification, based on the local operating system or the Portal user ID. For now, the local ID solution is supported only on the Windows operating system.

XML data response object

The CMS returns its response to the client in XML format in an effort to make the response information structured and extensible. This XML format provides a good base for allowing structured access to the return data today and flexibility for expansion and improvement in the future. The following XML schema defines the format of the XML document:

```
<schema targetNamespace=""
xmlns="http://www.w3.org/2001/XMLSchema">
        <element name="hod-sso-credential" type="hod-sso-credentialType" />
<complexType name="hod-sso-credentialType">
        <sequence>
                <element name="userid" type="string" />
                <element name="password" type="string" />
                <element name="status" type="string" />
        </sequence>
        <attribute name="version" type="string" />
        </complexType>
</schema>
```

Based on the above schema, the following code is a sample of the XML return document that is streamed over the HTTPS connection:

```
<?xml version="1.0"?>
<hod-sso-credential version="1.0" >
   <userid>&^$#^&</userid>
   <password>&^$#^&</password>
   <status>0</status>
</hod-sso-credential>
```

In the above code, the user ID and password elements return garbage characters because they are encrypted. Host On-Demand includes an object called `com.ibm.eNetwork.security.sso.PasswordCipher` to accomplish this. It contains the following two methods:

public static String encrypt (String plainText)
This method returns an encrypted string passed as a parameter.

public static String decrypt (String cipherText)
This method reverses the encryption process by returning a decrypted string. If the cipherText was not encrypted using the encrypt method, it returns the original input string

The `status` element provides the status of the return value. If the credential mapper query fails for any reason, this field reports that failure to the client. Failure codes are defined in the SSOConstants class, which serves as a static repository of related SSO static information. The following table contains the status code definitions:

Table 9. Status code definitions

Status code	Description
0	Success
1	Unknown status code
2	Suitable HCM plug-in not found

3	Invalid network user ID
4	Invalid application ID
5	Invalid server address
6	Database connection error
7	User ID not found in database
8	Exception
9	Invalid user ID
10	Passticket error
11	Timeout
12	Unexpected DCAS return code
13	API not supported
14	Bad URL
15	Unable to parse response
16	Local user ID not available
17	Duplicate XML tags
18	An exception occurred while processing the credential request
19	Network Security plug-in is not defined to the CMS
20	Portal ID not available
21	A matching user ID not found in Portal Vault

Approach 2: Customize the existing CMS provided with Host On-Demand

You can create custom Network Security and HCM plug-ins to customize the existing CMS. The CMS relies on these plug-ins to provide the user's network ID and host credentials. The CMS interacts with these plug-ins via the following three Java interfaces:

- com.ibm.eNetwork.security.SSO.CMS.CMInterface
- com.ibm.eNetwork.security.sso.CMRequest
- com.ibm.eNetwork.security.sso.CMResponse

com.ibm.eNetwork.security.SSO.CMS.CMInterface

The CMInterface interface contains the following methods:

`public int Init(Properties p, String id)`

This method is used to initialize the plug-in. Any configuration parameters needed to intialize the plug-in will be passed in with the properties object parameter. The parameters are specified in the servlet's web.xml file. The id parameter is the symbolic name of the plug-in specified in the CMS configuration portion of the web.xml file. This value may be used to qualify the instance of the plug-in in the event multiple instances of the plug-in are running.

`public void Destroy()`

This method is called when CMS is shutting down.

`public CMResponse CMSGetUserCredentials(CMRequest req)`

This method is called by the CMS when it has selected the plug-in to respond to a request. If the plug-in is a network security type, it is expected that the plug-in will return the user's network user id. If the plug-in is a host user credential type, then this method will need to return the user's host credentials.

The following methods are needed for plug-in identification and selection.

`public String getName();`
This method returns a string that identifes the plug-in.

`public String getDescription();`
This method returns a string that contains information that describes the purpose and function of the plug-in.

`public String getAuthor();`
This method is needed to identify the originating company or person of the plug-in.

`public String[] getParameters();`
This method returns a string array containing the parameter tokens that may be used to configure this plug-in. These tokens are the keys specified in the initialization (INIT) parameters section of the web.xml file used to define the CMS servlet. If no tokens are needed for configuration, the method may return null.

`public Properties getParameterInfo(String strParm);`
Given a parameter token, this method returns a properties object with the list of properties for the given parameter. The current list of possible properties are as follows:

- *cmiDefaultValue*: This property contains the default value for the specified parameter.
- *cmiEncrypted*: This property determines if the parameter must be encrypted (true or false).
- *cmiRequired*: This property identifies whether or not a parameter is required for initialization of the plug-in.

com.ibm.eNetwork.security.sso.CMRequest

The CMRequest object is used by CMS to encapsulate all necessary parameters for a plug-in request. The CMRequest interface contains the following members and methods:

Members:

- ID (Host ID or Network ID)
- Host Application ID
- Host Destination Address
- Authentication Type
- HTTP Servlet request object

Methods

`public CMRequest()`

`public CMRequest(String id, String applID, String hostAddr, int authType, HttpServletRequest httpRequest)`

`public String getID()`

`public void setID(String id)`

`public String getHostApplID()`

`public void setHostApplID(String applID)`

`public String getHostDestination()`

`public void setHostDestination(String hostAddr)`

`public int getAuthType()`

`public void setAuthType(int authType)`

`public HttpServletRequest getHttpRequestObject()`

`public void setHttpRequestObject(HttpServletRequest httpRequest)`

`public String toString()`

com.ibm.eNetwork.security.sso.CMResponse

The CMResponse object encapulates all relevant information needed by the CMS for the request made of a plug-in. The CMResponse interface contains the following members and methods:

Members:

- Status Code
- ID (Host ID or Network ID)
- User Credentials (Password or Passticket)

Methods:

`public CMResponse()`

`public CMResponse(Object id, Object password, int status)`

`public int getStatus()`

`public void setStatus(int status)`

`public Object getID()`

`public String getIDasString()`

`public void setID(Object id)`

`public Object getPassword()`

`public String getPasswordasString()`

`public void setPassword(Object password)`

`public String toString()`

Writing your own plug-ins

The Network Security and HCM plug-ins are Java classes that implement the CMInterface interface. The CMS makes calls to your plug-ins via the APIs described earlier.

Network Security plug-in: Host On-Demand provides two Network Security plug-ins, one for Tivoli Access Manager and one for Netegrity Siteminder. If you decide not to use either of these, you may create your own plug-in.

The primary function of the Network Security plug-in is to acquire the user's network ID, which may be gleaned from the HTTP header of the incoming HTTP request object. The details of how to acquire the network ID is specific to your network security application. Refer to your network security documentation for more information.

HCM plug-in: Host On-Demand provides three HCM plug-ins, two for DCAS and one for Vault. If you decide not to use either of these, you may create your own plug-in. For sample HCM plug-in code, refer to Appendix D. Sample HCM plug-in.

The primary function of the HCM plug-in is to take the user's network ID or user's certificate (and perhaps the application ID) and obtain the appropriate host credentials. In Web Express Logon's implementation, users' network IDs are mapped to their host IDs by way of a JDBC-accessible database. However, you may wish to do this by another means, such as LDAP. For this reason, you may want to write your own HCM plug-in. In our DCAS/JDBC plug-in, we automate 3270 application logins by associating users' network IDs to their host IDs. Then, the host IDs and application IDs are used to obtain a RACF-generated passticket. This passticket is then used to sign the user on to the host. In your environment, you may not want to use the JDBC association aspect of our plug-in. For this reason, we have provided a DCAS API that you can use to develop your own custom plug-ins. This API provides access to RACF-generated passtickets.

The DCAS API object (DCASClient) encapsulates the Passticket requests:

The DCAS API client contains the following members:

Members:

- Port Number
- Keyring File Name
- Keyring Password
- Use WellKnownTrustedCAs
- Server Authentication
- Trace Level
- Trace Log File Name

The DCAS API client contains the following methods:

Methods:

`Public DCASClient()`

This constructor should be used if you want to use the default trace level and log file name when the object is created.

`Public DCASClient(int traceLevel, String logFile)`

- traceLevel - Trace level (0=None, 1=Minimum, 2=Normal and 3=Maximum)
- logFile - Trace log file name. It should include the full path name.

This constructor should be used if you want to specify a trace level and log file name when the object is created.

`Public int Init(String dcasAddr, int dcasPort, String keyringFileName, String keyringPassword)`

- dcasAddr - DCAS server's IP address
- dcasPort - DCAS server's port number. If not specified, the default port number of 8990 will be used.
- keyringFileName - The name of the SSL keyring database file. It should include the full path name.
- keyringPassword - The password of the above keyring database.

This method should be called after creating the DCASClient object. The parameters are stored in the object, and they do not change for the life of the object. The keyringFileName should include the full path name. The keyring database must contain DCAS client certificate. It should also contain the DCAS server certificate if it is self signed or from an unknown Certificate Authority. The keyring Password should have been encrypted using the encrypt password tool. It will be decrypted before being stored in the object. The valid return codes are described in the SSOConstants object.

`Public void setWellKnownTrustedCAs(boolean wellKnownCAs)`

`public void setWellKnownTrustedCAsPassword(String password)`
This method is used for setting the value specified by the above parameter.

`Public void setServerAuthentication(boolean serverAuth)`

`Public void setTraceLevel(int level)`

`Public void setLogFile(string fileName)`

`Public CMResponse getPassticket(String hostUserID, String hostApplID, String hostAddr, long timeout)`

- hostUserID - User ID for which the passticket is being requested.
- hostApplID - Application ID for which the passticket is being requested.
- hostAddr - The DCAS server's address.
- timeout - The time available for the DCAS protocol to return a passticket. It is specified in milliseconds.

This method should be called after creating and initializing the DCASClient object to obtain a passticket from the DCAS server. The passticket and the user ID are returned in a CMResponse object. The caller should check the status field of the CMResponse object to see if the call was successful or not. If the call was successful, the status field will be set to SSO_CMR_SUCCESS (0). The valid values for the status field are specified in Table 9. An SSL client authenticated connection is established with the DCAS server, and it is reused for all subsequent passticket requests.

`Public CMResponse getPassticket(byte certificate[], String hostApplID, String hostAddr, long timeout)`

- certificate - User Certificate for which the passticket is being requested.
- hostApplID - Application ID for which the passticket is being requested.
- hostAddr - The DCAS server's address.
- timeout - The time available for the DCAS protocol to return a passticket. It is specified in milliseconds.

This method should be called after creating and initializing the DCASClient object to obtain a passticket from the DCAS server. The passticket and the user ID are returned in a CMResponse object. The caller should check the status field of the CMResponse object to see if the call was successful or not. If the call was successful, the status field will be set to SSO_CMR_SUCCESS (0). The valid values for the status field are specified in Table 9. An SSL client authenticated connection is established with the DCAS server, and it is reused for all subsequent passticket requests.

`Public void Destroy()`
This method closes the DCAS connection.

Troubleshooting error messages

Troubleshooting Web Express Logon

Web Express Logon depends on a number of independent processes working together to function properly. Some of these processes run on the Host On-Demand client while others run on other host systems. When one or more of these processes break down, you must be able to determine which process is causing the problem in order to resolve it appropriately. This portion of the document is devoted to that purpose.

If you have problems with Web Express Logon, analyze the type of results you receive and any accompanying informational messages. Some of these informational messages are included as part of the Host On-Demand client by way of an interactive panel, and/or they may be part of a server-based log.

Assuming that Web Express Logon is not functioning properly (that is, you are not logged in a host emulation session), ask yourself the following questions:

1. Did the Host On-Demand client display an error message panel?
   - If yes, skip to Web Express Logon client-side messages.
   - If no, verify the following on your session configuration panel:
     - Have you enabled Express Logon for the session that you are currently running? To do this, highlight your session and select Properties under the Configure drop-down menu in the Deployment Wizard. On the left side of the window, select Express Logon under Connection and click Yes to enable Express Logon.
     - Is this a 5250 session and you are using a Kerberos passticket for authentication? If so, you will need to make sure you select Yes for the Use Kerberos Passticket option on the Express logon window of session properties.
2. Are you using macro-based automation? If so, verify the following items:
   - When creating the macro, verify that you selected Web Express Logon (not Certificate Express Logon) on the Record macro window.
   - If you are expecting the macro to run when the session is started, verify that you have selected Auto-Start macro in your session configuration.
3. Did your automation macro run but not provide the appropriate credentials to log in the user? This means that you have properly accessed the Credential Mapper Web application, but something is not functioning properly within that environment. You should enable server-side logging and attempt another credential automation event. Then look in the log that is created and refer to Web Express Logon server-side messages.
4. Are you using IBM WebSphere Application Server and have Java 2 security enabled? If so, please check to make sure that the following permissions are granted in the was.policy file, which is located in the `META-INF` directory.

   permission java.io.FilePermission "<<ALL FILES>>", "write";
   You can change <<ALL FILES>> to whichever directory you specifed in the CMPI_TRACE_LOG_FILE parameter in the web.xml file.

   permission java.lang.RuntimePermission "accessClassInPackage.sun.jdbc.odbc";
   This applies to the JDBC database Host Credential Mapper (HCM).
5. Are users being prompted for their network IDs twice? When using JVM V1.4 and later, users may be prompted for their network credentials two times. Although this is a known issue, currently no workaround exists. This double authentication issue does not occur when using JVM V1.3.x.

Web Express Logon client-side messages

When an unexpected problem occurs during the Web Express Logon process, the Host On-Demand client provides information about the problem to the user by displaying a panel with an informational message. Each of these messages contain an error code that you can use as a unique identifier for the problem that is occurring. The following is a list of all Web Express Logon messages for the Host On-Demand client.

WELM001: Message key not found: status = value
This message should only be seen in the event of an error found in a custom plug-in. If you have customized the Web Express Logon credential mapper framework, you can create user defined error codes. If the Web Express Logon credential mapper returns such a code, this message will be displayed.

WELM002: No suitable Host credential plug-in found
This message is displayed when there is no appropriate credential plug-in found to handle the Host On-Demand client's credential request. Verify that your Web Express Logon credential mapper application is properly configured to handle the Host On-Demand client's session type.

WELM003: Invalid network user ID

The Web Express Logon credential mapper cannot acquire the user's network ID. This can be caused by improper settings in the network security plug-in section of the CMS configuration. If the local operating system identification is being used to identify the user, make sure this option is selected in the Express Logon section of the Session Configuration panel.

WELM004: Invalid Application ID
This message indicates the lack of a valid Application ID. You specify the Application ID when you create the Web Express Logon macro. When you create the macro, be sure that you enter the proper value for the Application ID.

WELM005: Invalid server address
This message indicates the lack of a valid server address. The server address is specified as the Destination Address on the Session Configuration panel. For some credential plug-ins, this is a required parameter.

WELM006: Could not connect to database
This problem can be generated by an improperly configured database link. Please verify that the database is properly configured in your CMS configuration. If the configuration information looks correct, you should independently verify the database's availability and running status. The database's configuration and management tools are a good place to perform this test.

WELM007: A matching user ID not found in database
The credential plug-in is not able to find a match for the user's host ID, given the search criteria. Verify that the user's host ID is specified in the database or other storage medium used by the credential plug-in. In addition, you may want to enable server-side logging and verify that the parameters being sent to the CMS are correct.

WELM008: The Credential Mapper Servlet reported an exception while processing a credential request. Please see the server log for details.
This generalized message is a result of an exception occurring on the CMS. Please follow the instructions for enabling server-side logging for more information about the cause of this problem.

WELM009: Invalid User ID
A credential plug-in does not have a valid user's host ID. For some plug-ins, the host ID is used to obtain a temporary passticket credential to access the host. If the value used is not appropriate, this message is generated. You may want to verify the user's host ID is specified in the database or other storage medium used by the credential plug-in. In addition, you may want to enable server-side logging and verify that the parameters being sent to the CMS are correct.

WELM010: Passticket could not be obtained
This message is displayed when a credential plug-in receives an error during the passticket creation process. Typically, the actual creation of the passticket occurs in a process outside of the credential plug-in. If that external process returns an error, this message displays. You should enable server-side logging and perform the credential request again. Using the information in the log along with the messages found in this section of the document should provide a better understanding of the problem.

WELM011: Credential/Passticket request timed out
This message is the result of a pending request timing out before it could be resolved. This could happen when the Host On-Demand client is making a request of the Credential Mapper Server, or it could be the credential plug-in making a request of an external entity. In either case, if the default time elapses before the request is fulfilled, this message is generated. To rectify the problem, verify that the addresses being used are correct. For the Host On-Demand client, the Credential Mapper server is specified as the Credential Mapper Server address in the Express Logon properties window of the Session Configuration panel. If the credential plug-in is generating this problem, verify that the credential plug-in is properly configured in your CMS configuration.

WELM012: Unexpected return code received from DCAS
This error is created when a credential plug-in receives an unexpected return value of an external application. You should enable server-side logging and perform the credential request again. Using the information in the

log along with the messages found in this section of the document should provide a better understanding of the problem.

WELM013: API not supported. Contact the system administrator for server log.
This message informs the user that an unsupported request has been made of the credential plug-in selected by the credential mapping application. You should enable server-side logging and perform the credential request again. Using the information in the log along with the messages found in this section of the document should provide a better understanding of the problem.

WELM014: A malformed URL was specified for the Credential Mapper Server Address
The address used for the Credential Mapper server is not a valid URL address. The Credential Mapper server is specified as the Credential Mapper server address in the Express Logon properties of the Session Configuration panel.

WELM015: Unable to parse Credential Mapper response
The response generated by the Credential Mapper server application contains a response that is improperly formatted. This may happen when a custom Credential Mapper server application is used in place of the default Host On-Demand Credential Mapper server application. Refer to Customizing Web Express Logon for more information about the CMS response format.

WELM016: Local user ID not available
This message is generated when the operating system on which the Host On-Demand client is running does not support the Use Local Operating System ID option for network security identification. Refer to the Introduction for more information about which operating systems and versions are supported by this option.

WELM017: Credential Mapper response contained a duplicate userid, password, or status tag
This problem is caused when the response generated by the Credential Mapper server application contains duplicate response values. This may happen when a custom Credential Mapper server application is used in place of the default Host On-Demand Credential Mapper server application. Refer to Customizing Web Express Logon for more information about the CMS response format.

WELM018: An exception occurred while processing the credential request: some exception
This message is displayed when an exception occurs in the Host On-Demand client during the Web Express Logon process. If the exception is an IOException, the problem may be the Credential Mapper server address specified in the Express Logon properties panel in the session configuration. If the address seems correct, validate that the CMS server is available. Typing the Credential Mapper address specified in the session configuration into the address entry field of your browser allows you to test access to the CMS server easily. The results should be an XML document similar to the one described earlier in this document.

WELM020: Portal user ID not available
This message is generated when the Portal ID cannot be retrieved. The HTML page may not be configured as a Host On-Demand portlet.

WELM021: A matching user ID not found in Portal Vault
The matching user's host credentials are not found in the Portal Vault. Be sure that the Portal Vault parameters are configured when the HTML page is generated.

WELM050: Web Express Logon Credential Mapper Server Address not specified
Web Express Logon is used to automate the Host On-Demand configuration server login process, but the Credential Mapper server address is not specified. Verify that you have specified the proper value for the Credential Mapper server address in the Deployment Wizard.

WELM051: User name returned from Web Express Logon is not a known Host On-Demand user
Web Express Logon is used to automate the Host On-Demand configuration server login process and the user name provided by Web Express Logon is not a valid Host On-Demand user. Verify that the user is listed in the Host On-Demand configuration by accessing the Host On-Demand Administrative Console. In addition, view the server-side log to verify that the user name is being retrieved properly.

WELM052: Invalid password returned from Web Express Logon
Web Express Logon is used to automate the Host On-Demand configuration server login process, and the password provided by Web Express Logon is not a valid. Verify that the user is listed in the Host On-Demand configuration by accessing the Host On-Demand Administrative Console. In addition, view the server-side log to verify that the user name is being retrieved properly.

WELM053: This session is not enabled for Web Express Logon
A Web Express Logon macro is executed, and the session on which it is running has not been configured to use Web Express Logon. Web Express Logon can be configured via the Host On-Demand session configuration panel.

Web Express Logon server-side messages

The following are the primary server-side messages:

CMPIE001: Credential Mapper Plug-in initialization failed for: *YourCredentialMapperName*
This error occurs when the Credential Mapper plug-in corresponding to *YourCredentialMapperName* fails to initialize successfully. Possible causes of this error include the following:

- Your web.xml specifies an invalid or missing value for a parameter that is required by the specified plug-in.
- To determine which parameter(s) is causing the problem, turn on tracing for the plug-in and look in the log for error CMPIE008.
- You are using the DCAS or Vault plug-ins, and an error occurs when attempting to connect to the credentials database. Turn on tracing for the plug-in to obtain more diagnostic information (database driver missing, SQL exception, etc).
- You are using a custom plug-in, and your Init() method is returning a value other than 0 on success. Refer to the Customizing Web Express Logon for more information about writing your own credential mapper plug-in.
- You are using DCAS, and the SSL key database file or password is not specified in web.xml.

CMPIE003: No CM configuration can be found for the CM identified by the *CredentialMapperName* name.
This error occurs as a result of a missing element in your web.xml file. If you provide a value for the CMPICredentialMappers parameter that is not also a parameter itself elsewhere in the web.xml, you will get this error. For example, is you have the following definition in your web.xml,

```
<init-param>
            <param-name>CMPICredentialMappers</param-name>
            <param-value>vault</param-value>
        </init-param>
```

you would also need something like this,

```
<init-param>
            <param-name>vault</param-name>
            <param-value>com.ibm.eNetwork.security.sso.cms.CMPIVault,
                                                 AuthType_3270Host,*</param-va
        </init-param>
```

or you would get the error above.

CMPIE004: No Credential Mappers have been specified.
This error occurs when your web.xml does not define the CMPICredentialMappers parameter. Be sure to include the following in your web.xml:

```
<init-param>
```

```
                <param-name>CMPICredentialMappers</param-name>
                <param-value>YourCredentialMapperName(s)</param-value>
            </init-param>
```

CMPIE005: No Credential Mapper found for Auth type: AuthTypeValue
When you define a Credential Mapper in your web.xml, you specify the type of Authentication to which the plug-in applies. For example, if you had an entry such as the following,

```
    <init-param>
                <param-name>vault</param-name>
                <param-value>com.ibm.eNetwork.security.sso.cms.CMPIVault,
                                                    AuthType_3270Host,*</param-va
            </init-param>
```

this would show that the vault Credential Mapper is only intended to be used with 3270 host sessions. If this were the only Credential Mapper defined in your web.xml and you tried to perform a logon to a 5250 session, you would receive this error with AuthTypeValue equal to AuthType_5250Host. Be sure that your web.xml has a Credential Mapper defined that is appropriate for your authentication type.

CMPIE007: No authentication type specified for CM object: YourCredentialMapperName
When you define a Credential Mapper in your web.xml, you must specify the full class path name, the authentication type, and the host mask. If you do not specify an authentication type, or if you specify an invalid authentication type (such as AuthType_Fred), you will get this error. For a list of valid authentication types, refer to Table 6.

CMPIE008: Invalid value for parameter: ParameterName
This error occurs when a parameter that is required by the plug-in has an invalid value or has not been specified. Provide an appropriate value in the web.xml for the parameter ParameterName.

CMPIE010: Exception and Host User ID not found for Network ID: NetIDValue.
An exception occurred before the host user ID corresponding to NetIDValue could be found. A possible cause of the exception is a mismatch between the column names in the data source and the column names specified in the web.xml. Another possibility is an error in the formatting of the table name ([tableName$] for Excel, simply tableName for DB2). Double check your web.xml for errors and refer to the exception trace in the server log for debugging information.

CMPIE011: Host User ID not found for Network ID: NetIDValue.
This error occurs when there is no entry found in the database for NetIDValue. Check your database and verify that there is an entry for NetIDValue. Make sure that the host address and application ID found in the server log for this query match the host address and application ID specified for this NetID in the database.

CMPIE012: SQLException: Value.
This error occurs when attempting to open or close a connection to the database. Make sure that the database is available and correctly specified in the web.xml file.

CMPIE013: Exception: Value.
An exception occurred in the plug-in code.

DCAS error messages

The following are the primary DCAS error messages:

DCASE001: Cannot import the CA certificates contained in Keyring Database.
An SSL runtime exception occurred while loading the CA certificates from the KeyringDatabase. The file may be corrupted. Please see the additional logged messages for details. You may have to set the CMPI_DCAS_TRACE_LEVEL parameter in web.xml to 3 to see the additional messages.

DCASE002: Cannot read the keyring file: KeyringFileName
The specified KeyringFileName cannot be loaded. Make sure that the file exists and the path name and file name are correctly specified in the web.xml file. See the exception trace for additional information.

DCASE003: The DCAS server address is either blank or null.
The Host On-Demand client's credential request contains an invalid server address. See the WELM005 message for details.

DCASE004: The Keyring file name is either blank or null.
The CMPI_DCAS_KEYRING_FILE parameter must be specified in the web,xml file. Check the web.xml file.

DCASE005: The Keyring password is either blank or null.
The CMPI_DCAS_KEYRING_PASSWORD parameter must be specified in the web.xml file. Check the web.xml file.

DCASE006: The host user id is either blank or null.
The host user ID retrieved from the vault database is either blank or null. Check the vault database for host user ID.

DCASE007: The host application id is either blank or null.
The Host On-Demand client's credential request contains an invalid application ID. See the WELM004 message for details.

DCASE008: Passticket could not be obtained for user ID: Userid
The DCAS client could not obtain a passticket for the specified User ID. Make sure that the host user ID is valid and it is defined to the host credential system such as RACF. Also, see the additional logged message for a specific failure.

DCASE009: DCAS timer expired - no response from server: Host
The DCAS connection timer expired before a passticket request could be completed. If this problem persists, you may want to increase the value of the CMPI_DCAS_REQUEST_TIMEOUT parameter in the web.xml file. This value should be less than the timeout value for the macro.

DCASE010: Unexpected DCAS return code: ReturnCode
This error suggests an internal coding error. Please make a note of the ReturnCode and report this problem.

DCASE013: DCAS Exception: Exception
Exception occurred while processing a passticket request. See the additional logged messages for details.

DCASE021: Cannot send passticket request to server Host
The DCAS server connection is not active. Check the DCAS server log and retry the operation.

DCASE022: An unexpected error occurred while processing a passticket request.
An unexpected exception occurred while processing a passticket request. See the exception details to determine the cause of the problem.

DCASE023: An error occurred while receiving data from the passticket server Host. The connection is closing.
Input/Output error occurred while receiving data from the passticket/DCAS server. Retry the operation. If the problem persists, check the DCAS server log for details.

DCASE050: Cannot create socket to the passticket server at IpAddr. See other messages for details.
An SSL exception occurred while creating a secure connection. See the additional logged messages for details. You may have to set the CMPI_DCAS_TRACE_LEVEL parameter in web.xml to 3 to see the additional messages. This message typically indicates an SSL handshake failure.

DCASE051: The DCAS server at Ipaddr is an unknown host.
The Destination Address specified in the Session Connection panel is an unknown host. Check the Ipaddr to make sure it is valid. See the WELM005 message.

DCASE052: Cannot create socket to the passticket server at IpAddr because of an I/O error.
An I/O exception occurred while creating a secure connection to IpAddr. See the additional logged messages for details. You may have to set the CMPI_DCAS_TRACE_LEVEL parameter in web.xml to 3 to see the additional messages. The server at IpAddr may be down.

DCASE060: The common name in the certificate received from Host is empty. SSL connection is terminated.
The SSL server authentication failed. The Host presented a certificate that does not contain the common name. Please update the server certificate's common name, or turn the server authentication off.

DCASE061: The common name in the certificate received from Host has no address. SSL connection is terminated.
The SSL server authentication failed. The host presented a certificate whose common name does not have an address. Update the server certificate's common name to the server's IP address, or turn the server authentication off.

DCASE062: The passticket server's name Host has no address. SSL connection is terminated.
The SSL server authentication failed. The host presented a certificate whose host name does not have an IP address. Make sure that an IP address is associated with the host name, or turn the server authentication off.

DCASE063: The common name in the certificate received from Host does not match the partner's common name. SSL connection is terminated.
The SSL server authentication failed. The socket or discovered address does not match the common name specified in the Host certificate. The server certificate could not be authenticated. Update the server certificate's common name to match its IP address, or turn the server authentication off.

DCASE064: No certificate chain received from Host. SSL connection is terminated.
The host did not present its certificate when a connection was established. The server certificate could not be authenticated. The host must be configured to send its certificate to do the server authentication.

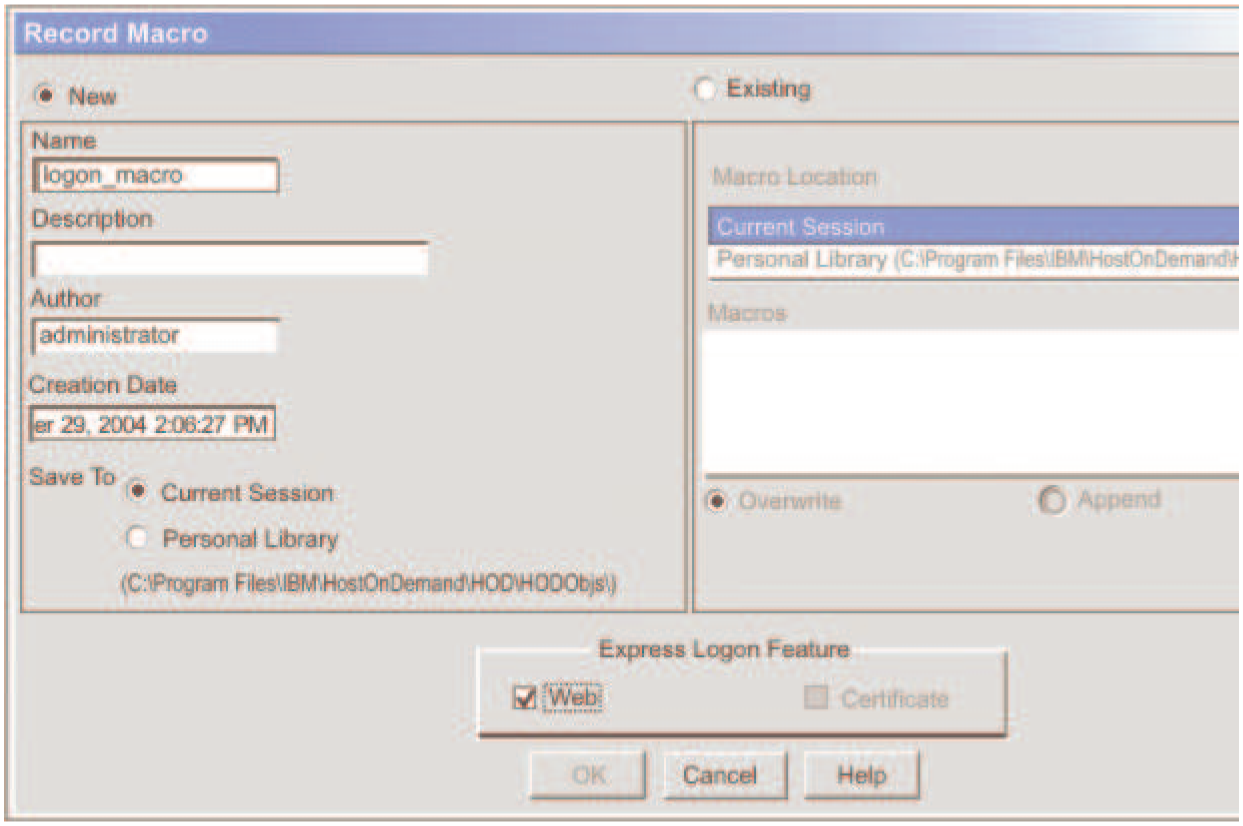
Appendixes

Appendix A. Recording the Web Express Logon macro

Take the following steps to record the logon automation macro:

1. In an open session, click the Record Macro button on the toolbar. On the Record Macro window (Figure 36), under Express Logon Feature, select Web.

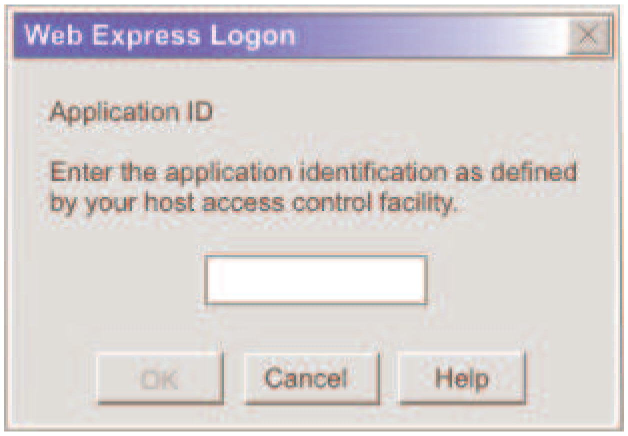
   Figure 36. Record macro window



Name: logon_macro
Description:
Author: administrator
Creation Date: er 29, 2004 2:06:27 PM
Save To: [✓ Current Session] Personal Library (C:\Program Files\IBM\HostOnDemand\HOD\HODObjs\)
Web [✓]

2. Enter the application ID (3270 sessions only) in the Application ID window (Figure 37) and then click OK. This name must match the RACF PTKTDATA (Passticket Data Profile) application name that is configured on the z/OS host. This name could be the same as the application name that the user is logging on to (for example, the name on USSMSG10). When creating PTKTDATA profiles for applications such as TSO (time sharing option), the application name portion of the profile will most likely not be the same. For example, RACF requires that the application ID portion of the profile name be TSO+SID. Refer to the *Security Server (RACF) Security Administrator's Guide*, publication number SC28-1915, to determine the correct profile naming. You can obtain this ID from the host administrator.

Figure 37. Application ID

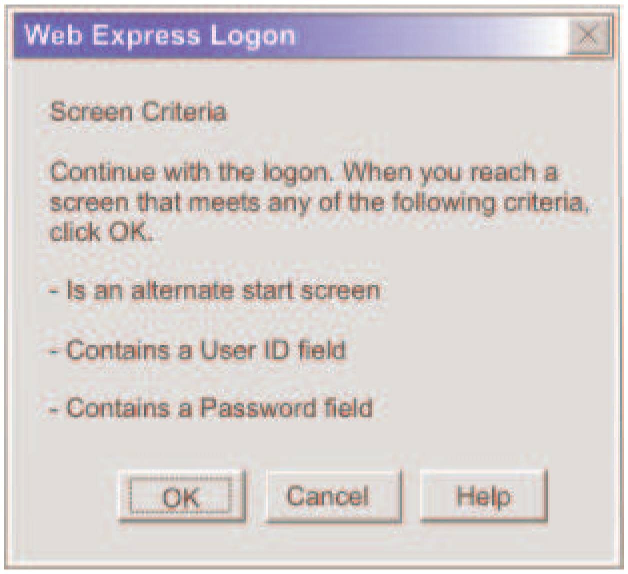


Application ID

Enter the application identification as defined by your host access control facility.

3. The Screen Criteria window (Figure 38) shows you what is needed by the macro to complete the logon. Once you reach a screen that meets any of the criteria, click OK..

Figure 38. Screen Criteria


Web Express Logon

Screen Criteria

Continue with the logon. When you reach a screen that meets any of the following criteria, click OK.

- Is an alternate start screen

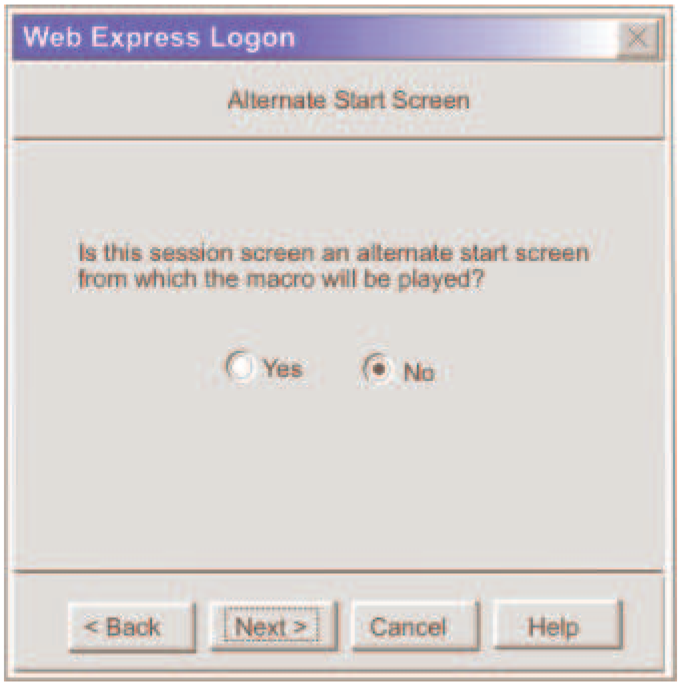
- Contains a User ID field

- Contains a Password field

4. On the Alternate Start Screen window (Figure 39), specify whether this screen is an alternate start screen and then click Next. The macro can start playing when a start screen is recognized or when an alternate screen is recognized. You can have only one alternate start screen per logon. If you have multiple logons, you will pass through this screen again.

   The alternate start screen is a screen from which the user might want to play the macro to log on to the application. If the application has more than one possible start screen, you should identify it during the recording process so that the macro can be played from that screen. For example, the logon process might begin from the USSMSG10 screen or the application logon screen. You may start the logon macro from either the start screen or the alternate start screen. You can designate only one screen as an alternate start screen. There is no alternate start screen after the screen that contains the user ID.

   Figure 39. Alternate Start Screen


Web Express Logon

Alternate Start Screen

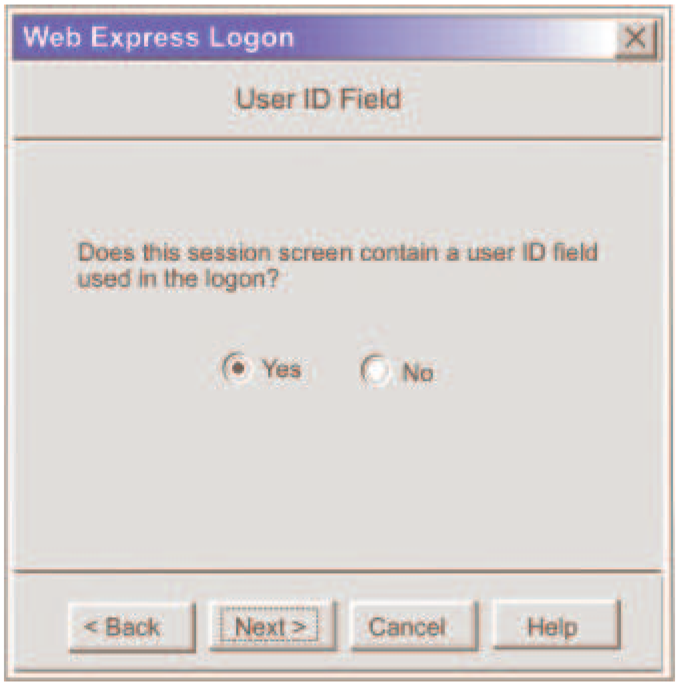
Is this session screen an alternate start screen from which the macro will be played?

Yes [✓ No]

5. On the User ID Field window (Figure 40), select Yes to specify that the session screen contains a user ID

field. Click Next.

Figure 40. User ID Field



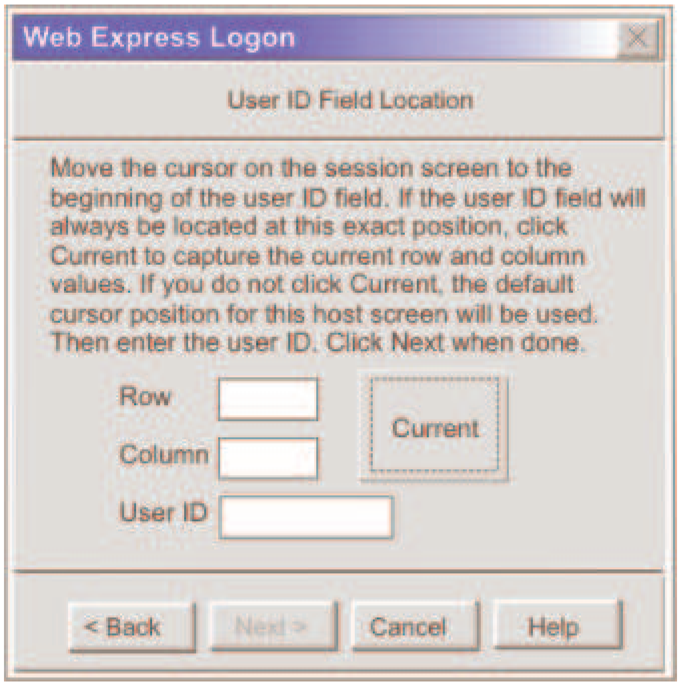
Does this session screen contain a user ID field used in the logon?

[✓ Yes] No

6. On the User ID Field Location window (Figure 41), type the user ID in the User ID field, not on the session screen. You must enter a user ID to continue recording the macro. The macro enters the actual user ID text in the user ID field on the session screen. Row/column determines the cursor position on the screen for the user ID field. Click Current to use the cursor's current position on the session screen if you know it is correct. If the current cursor position is not correct, move the cursor to the beginning of the user ID field on the session screen to identify where the user will enter the user ID and click Current. The field values change to match the new cursor position on the screen. If the initial cursor position is correct, then there is no need to move the cursor on the session screen. When you are finished, click Next.

   Click Current only if you will not be using this screen for multiple applications and the location of the user ID field never changes.

Figure 41. User ID Field Location

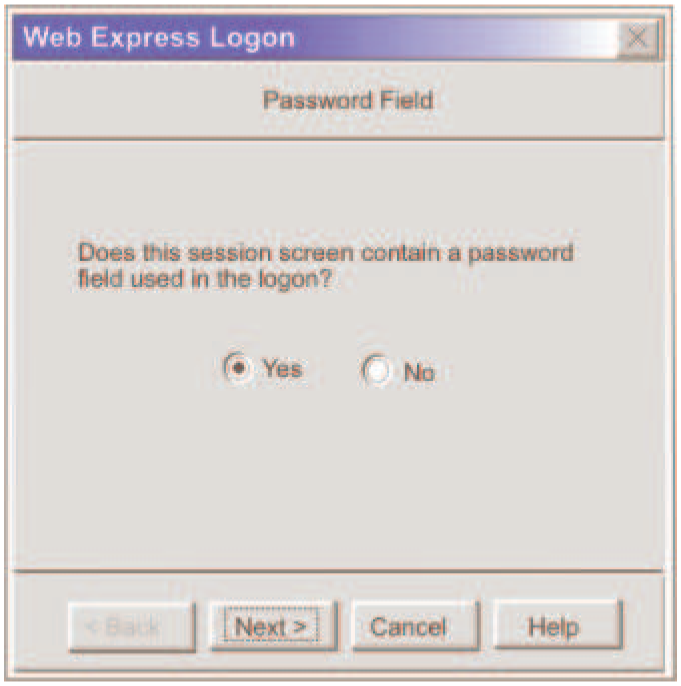


Move the cursor on the session screen to the beginning of the user ID field. If the user ID field will always be located at this exact position, click Current to capture the current row and column values. If you do not click Current, the default cursor position for this host screen will be used. Then enter the user ID. Click Next when done.

Row	
Column	
User ID	

7. On the Password Field window (Figure 42), select Yes to specify that the session screen contains a password field. Click Next.

Figure 42. Password Field



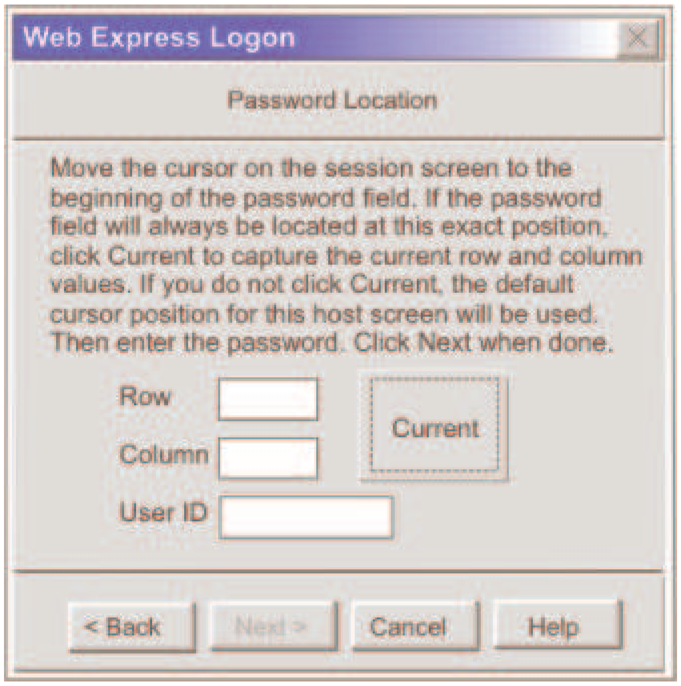
Does this session screen contain a password field used in the logon?

[✓ Yes] No

8. On the Password Field Location window (Figure 43), type the password in the Password field on this window, not on the screen. You must enter a password to continue recording the macro. The macro enters the actual password text in the password field on the session screen. Row/Column determines the cursor position on the screen for the password field. Click Current to use the cursor's current position on the session screen if it is correct. If not, move the cursor to the beginning of the Password field on the session screen to specify where the user will enter the password and click Current. The field values change to match the new cursor position on the screen. If the initial cursor position is correct, then there is no need to move the cursor on the session screen. When you are finished, click Next.

Click Current only if you will not be using this screen for multiple applications and the location of the password field never changes.

Figure 43. Password Field Location



Web Express Logon

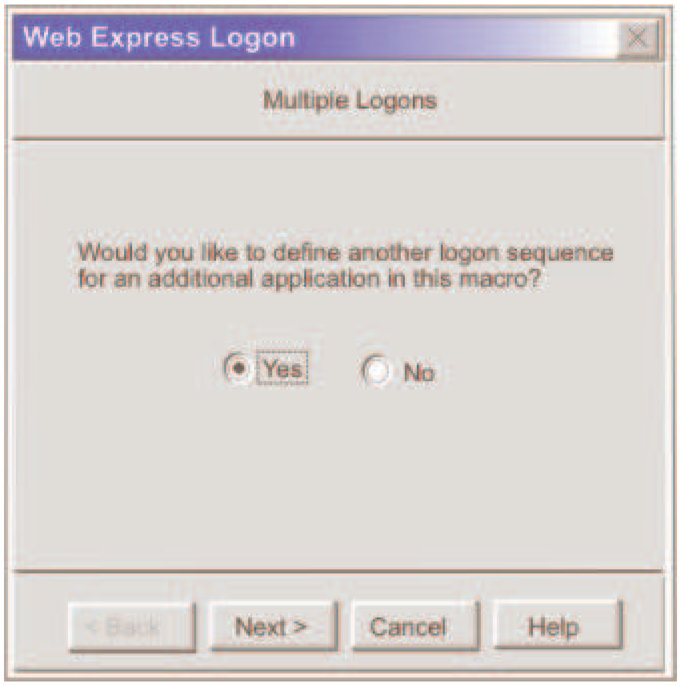
Password Location

Move the cursor on the session screen to the beginning of the password field. If the password field will always be located at this exact position, click Current to capture the current row and column values. If you do not click Current, the default cursor position for this host screen will be used. Then enter the password. Click Next when done.

Row
Column
User ID

9. On the Multiple Logons window (Figure 44), click either Yes or No.

Figure 44. Multiple Logons



Web Express Logon

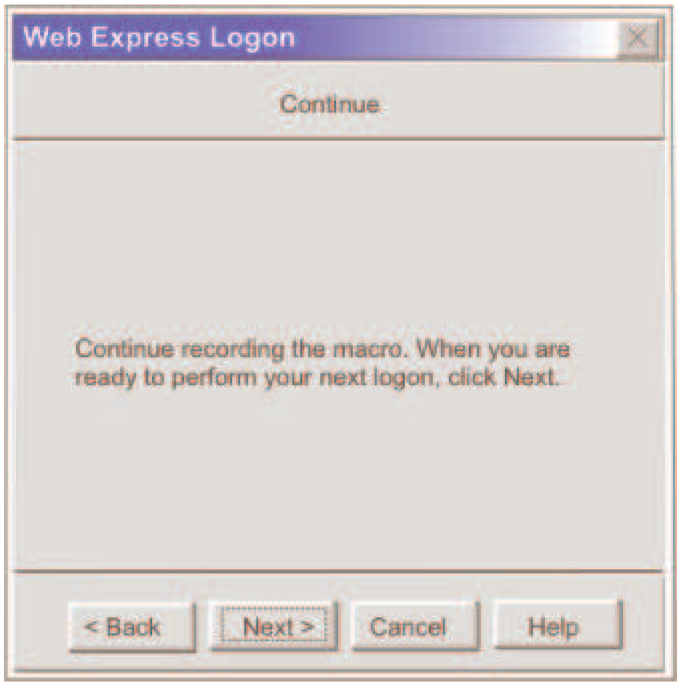
Multiple Logons

Would you like to define another logon sequence for an additional application in this macro?

[✓ Yes] No

Click Yes if you want to define another logon sequence for an additional application. If you click Yes, you will advance to the Continue window (Figure 45). Once you reach a point in the macro that requires another User ID and password logon, click Next.

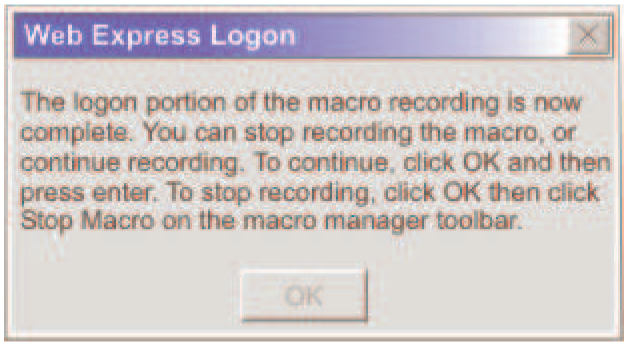
Figure 45. Continue



Continue recording the macro. When you are ready to perform your next logon, click Next.

Click No to finish recording the logon portion of the macro (see Figure 46). Click OK to finish.

Figure 46. Finish



The logon portion of the macro recording is now complete. You can stop recording the macro, or continue recording. To continue, click OK and then press enter. To stop recording, click OK then click Stop Macro on the macro manager toolbar.

10. Finish recording your macro using the Macro Manager, and click Stop on the toolbar.
11. If you are planning to save the macro to your current session (and not to a file), another window appears that asks you if you would like the macro to start automatically when the user opens the session. Click Yes if you would like the macro to auto-start. If you select No, the user will have to start the macro manually.

Appendix B. Web Express Logon using the Configuration server-based model

When creating an HTML file using the Configuration server-based model in the Deployment Wizard, the next window after the Configuration Model window is the Logon Type window. On this window, you are presented with the following three options:

- **Prompt users to enter Host On-Demand user ID**: Select this option only if you want users to be challenged for their credentials. This is the default option.
- **Use Web Express Logon**: Select this option to map the user's network ID to the Host On-Demand ID, which will log users on to the Host On-Demand server.

  Note that you *must* have your user profiles already set up on your Host On-Demand configuration server. I profiles set up and you attempt to launch the HTML file, you will get the following error message:

```
WELM051 User name returned from Web Express Logon is not a known H
```

Selecting this option also requires that you add an additional Vault credential mapper and all of its parameters to your web.xml file. For example, take the following steps:

1. In the web.xml file, update the following INIT parameter with the new Vault credential mapper name, for example, `CMPIConfigServer_`:

   ```
   <init-param>
     <param-name>CMPICredentialMappers</param-name>
     <param-value>CMPIDCASPlugin, CMPIVaultPlugin,
                  CMPIConfigServer_       </param-value>
   </init-param>
   ```

   Add the parameter name for the new parameter value specified above, and change the AUTH type to `AuthType_ConfigServer`:

   ```
   <init-param>
     <param-name>CMPIConfigServer_</param-name>
     <param-value>com.ibm.eNetwork.security.sso.cms.CMPIVault,
                          AuthType_ConfigServer, *</param-value>
     </init-param>
   ```

2. In the web.xml file, configure the remaining Vault parameters *except* these two parameters:
   - CMPI_VAULT_DB_HOSTADDR_COL_NAME
   - CMPI_VAULT_DB_HOSTAPP_COL_NAME

   Use the section E. Add the required Vault parameters for the CMPIVaultPlugin. and F. Add the optional Vault parameters (if desired). as references. You will need to prepend the new credential mapper name to the Vault parameter names, for example, CMPIConfigServer_CMPI_VAULT_DB_ADDRESS.
3. In your Vault credential mapper database, create a new table with three columns, for example:
   - NETWORKID
   - HODID
   - PASSWORD

   Be sure that the NETWORKID contains the network IDs, the HODID column contains the Host On-Demand user IDs, and the PASSWORD column contains the Host On-Demand passwords. Since you did not add parameters in your XML file for HOSTADDRESS and APPLICATIONID, you do not need to add the columns for these in your Vault credential database.

- **Automatically log users on to Host On-Demand using their Windows username**: Select this option to allow Host On-Demand to use the local system's ID for macro-based automation. You can either allow Host On-Demand to use the network ID supplied to the network security application or the Windows system ID to retrieve the host credentials. If you use this option, be sure that you select the appropriate User Identity Type in session properties and that you are using the WAR file that is intended to be used with Windows Domain (wincms.war).

When using the Configuration server-based model and a network security application such as Tivoli Access Manager, you may be accessing your Host On-Demand pages via a URL such as https://server_name/junction_name/HOD/myhodpage.html, where *server_name* is the name of the machine running Tivoli Access Manager and *junction_name* is the junction that you create to point to your Host On-Demand server machine and your HTTP server's port number. If this is the case, Host On-Demand will try to contact the Host On-Demand Service Manager to get your user, group, and session information at the *server_name* rather than at the *junction_name*. To remedy this situation, edit the config.properties file found in the HOD directory of your Host On-Demand install directory (\Program Files\IBM\HostOnDemand\HOD\config.properties) by adding this line at the end of the file content:

```
    ConfigServer=myhodserver.ibm.com
```

where *myhodserver* is the machine you are pointing to with the *junction_name*.

Appendix C. Password encryption tool

Host On-Demand provides a password encryption tool so you can encrypt your passwords for added security. The tool is a command-line tool that allows you to generate a file that stores the encrypted password, which you must then copy to the appropriate place in the web.xml file. The Host Credential plug-in decrypts the password before using it.

If you create a custom Host Credential plug-in, the plug-in should use the `com.ibm.eNetwork.security.PasswordCipher` object to decrypt the password. The CLASS file for this object is included in WAR file. Refer to XML data response object for a description of the encrypt and decrypt methods.

Windows platforms

Using a DOS prompt, change the current directory to the Host On-Demand's bin directory and type the following command:

```
    encrypt <password> [filename]
```

where *password* is the password to be encrypted and *filename* is the name of the file that you want to store the encrypted password. The default filename is password.txt.

Unix platforms

Issue the following command:

```
    cd your_install_dir
    Java -classpath .;your_install_dir\lib\sm.zip \
         com.ibm.eNetwork.security.sso.cms.tools.Encrypt <password> [filename]
```

where *your_install_directory* is your Host On-Demand installation directory, *password* is the password to be encrypted, and *filename* is the name of the file that you want to store the encrypted password. The default filename is password.txt.

Appendix D. Sample HCM plug-in

You can create your own Host Credential Mapper (HCM) plug-in if those provided with Web Express Logon do not suit your needs. To use your own custom plug-in, you must write the plug-in code and update the web.xml file so the servlet can function with your plug-in.

The following two sections provide more details about writing your own plug-in and updating the web.xml file.

Write the HCM plug-in.

Here, we provide pseudocode from a sample HCM plug-in called CMPISample. The purpose of this sample is to demonstrate the implementation of CMInterface and some of the functions your plug-in will need to provide. CMPISample is designed to read the host credentials from a database that you specify.

We recommend that you use the provided CMPIVault class for this function whenever possible.

You should only create a custom plug-in like CMPISample if one of the plug-ins provided with Host On-Demand does not suit your needs.

```
package com.mycompany;

import java.util.Properties;
import java.util.Enumeration;
import com.ibm.eNetwork.security.sso.*;
import com.ibm.eNetwork.security.sso.cms.CMInterface;


public class CMPISample implements CMInterface {

    private static final String className              = "com.mycompany.CMPISam


    //The following strings match the parameters contained in the web.xml file
    private static final String DB_ADDRESS             = "CMPI_SAMPLE_DB_ADDRES
    private static final String DB_TABLE               = "CMPI_SAMPLE_DB_TABLE"
    private static final String TRACE_LEVEL            = "CMPI_SAMPLE_TRACE_LEV
    private static final int    DEFAULT_TRACE_LEVEL    = Ras.TRACE_NONE;
    //TODO:  Add all other parameters needed, such as the database driver, colu

    private String dbAddress;          //url string that provides the address of
    private String dbTable;            //database table to use for the query
    private int    traceLevel;         //trace level
    private String logFile;            //trace log file
    //TODO:  Add fields for all other parameters


    private Properties pInit = null;
    private String cmID = null;
    //TODO:  Add any other needed fields, such as the database connection


    private boolean initOK = true;

    /**************************************************************************
     * Called to initialize the Sample Plug-in
     *
     * @param pInit  All of the CredMapper servlet parameters.
     *               These parameters are specified in the web.xml file.
     * @param id     The plug-in being initialized.
     * @return       An int value which indicates the status of the initializat
     *************************************************************************/
    public int Init(Properties pInit, String id)
    {
         final String methodName = "Init";

         initOK = true;
         this.pInit = pInit;
         this.cmID = id;

         // For debug purposes, add a RAS implementor which logs to stdout and
         String traceStr = getProperty(TRACE_LEVEL, false);                   //
         if (traceStr != null)  traceLevel = Integer.parseInt(traceStr);
         else                   traceLevel = DEFAULT_TRACE_LEVEL;
         String logFile  = getProperty(SSOConstants.TRACE_LOG_FILE, false);  //
         if (logFile == null)   logFile    = SSOConstants.DEFAULT_TRACE_LOG_FIL
```

```
          SampleRas sampleRas = new SampleRas(logFile);  //SampleRas classs not
                                                         //and writes to logFile a

          if ((traceLevel > Ras.TRACE_NONE) &&
              (Ras.hasNoImplementations())) {
            Ras.addRasImplementation(sampleRas);
          }

          if (traceLevel >= Ras.TRACE_MINIMUM) {
            //Trace all parameters and their values
            String parameters = "";
            //TODO:  Loop through pInit and build parameters string

            Ras.traceEntry(className, methodName, new String [] {
                           "pInit = {\n\t" + parameters + "\n\t}",
                           "id = " + id
                           } );
          }

         /************************************************************************
          * Get Sample parameters from the properties object
          * Try to retrieve the value of all parameters and return an error
          * if one or more than one parameter is bad.
          ************************************************************************
          dbAddress         = getProperty(DB_ADDRESS, true);           //Require
          dbTable           = getProperty(DB_TABLE, true);             //Require
          //TODO:  Read the rest of the properties here

          if (!initOK) return SSOConstants.SSO_INVALID_PARAMETER;

          //TODO:  Check to see if the network database driver exists here, and

          if (traceLevel >= Ras.TRACE_MINIMUM)
            Ras.traceExit(className, methodName);

          return SSOConstants.SSO_SUCCESS;
     }

     /************************************************************************
      * Close the Database connection
      ************************************************************************/
     public void Destroy() {
         final String methodName = "Destroy";
         if (traceLevel >= Ras.TRACE_MINIMUM)
           Ras.traceEntry(className, methodName);

         //TODO:  Close the database connection

         if (traceLevel >= Ras.TRACE_MINIMUM) //@ry3
           Ras.traceExit(className, methodName);

     }

     public CMResponse CMSGetUserCredentials(CMRequest cmreq)
     {
         final String methodName = "CMSGetUserCredentials";
         if (traceLevel >= Ras.TRACE_MINIMUM)
           Ras.traceEntry(className, methodName, new String [] {
                          "Network ID       = " + cmreq.getID(),
                          "Application ID   = " + cmreq.getHostApplID(),
                          "Destination Addr = " + cmreq.getHostDestination()
                          } );

         String netID = cmreq.getID();
         String hostApp = cmreq.getHostApplID();
         String hostDest = cmreq.getHostDestination();

         CMResponse resp = new CMResponse();

         String retid = null;
         String retpw = null;

         //TODO:  Build query statement with netID, hostApp, hostDest, and the v
         //TODO:  Execute the statement and set retid and retpw with the results

          if (retid == null) {
           if (traceLevel >= Ras.TRACE_MINIMUM)
             Ras.logMessage(Ras.MSG_ERROR, className, methodName,
                            "DB_USER_ID_ERROR", netID);
             resp.setStatus(SSOConstants.SSO_CMR_USER_ID_NOT_FOUND_IN_DB);
          }
          else {
               resp.setID(retid);
               resp.setPassword(retpw);
               resp.setStatus(SSOConstants.SSO_CMR_SUCCESS);
          }

         if (traceLevel >= Ras.TRACE_MINIMUM) //ry3
           Ras.traceExit(className, methodName);

          return resp;
     }

     /************************************************************************
      * Retrieve the property value
      ***********************************************************************/

     private String getProperty(String propName, boolean required)   //@d01c
     {
         String value = null;
         //TODO:  Retrieve the specified property from pInit

         return value;
     }

     public String getName() {return "Sample Credential Mapper";}
     public String getDescription() {return "Retrieves host credentials from a c
     public String getAuthor() {return "My Company";}
     String strParms[] = { DB_ADDRESS, DB_TABLE, TRACE_LEVEL }; //TODO:  Fill ir
     public String[] getParameters() {return strParms;}
     public Properties getParameterInfo(String strParm)
     {
         Properties p = new Properties();

         if (DB_ADDRESS.equals(strParm))
         {
             p.put(CMInterface.cmiRequired, "true");
         }
         else if (DB_TABLE.equals(strParm))
```

```
            {
                p.put(CMInterface.cmiRequired, "true");
            }
            else if (TRACE_LEVEL.equals(strParm))
            {
                p.put(CMInterface.cmiRequired, "false");
                p.put(CMInterface.cmiDefaultValue, Integer.toString(Ras.TRACE_NONE)
            }
            //TODO:  Add ifs for the rest of the parameters
            return p;
        }

    } //end class CMPIVault
```

Update the web.xml file.

In order for CMS to work with your custom plug-in, you will need to update the web.xml file with the appropriate parameters. Use the following pseudocode as an example:

```
    <init-param>
         <param-name>CMPICredentialMappers</param-name>
         <param-value>CMPISamplePlugin</param-value>
       </init-param>

       <!-- //// Optional Trace parameters //// -->
       <init-param>
         <param-name>CMPI_TRACE_LOG_FILE</param-name>
         <param-value>C:\Program Files\IBM\HostOnDemand\HOD\HODWEL.log</param-value
         <description>Credential Mapper Log file name.</description>
       </init-param>

       <init-param>
         <param-name>CMPI_CMS_TRACE_LEVEL</param-name>
         <param-value>2</param-value>
         <description>CMS Trace level.  0=none, 1=min, 2=normal, 3=max.</descriptio
       </init-param>

       <init-param>
         <param-name>CMPI_SAMPLE_TRACE_LEVEL</param-name>
         <param-value>2</param-value>
         <description>HCM Sample Trace level.  0=none, 1=min, 2=normal, 3=max.</des
       </init-param>
       <!-- //// End of Optional Trace parameters //// -->


       <!-- // Configuration parameters needed for HCM Sample Plug-in /// -->

         <!-- //// Required Parameters //// -->

           <!-- The parameter name must match the value specified in -->
           <!-- CMPICredentialMappers parameter.                     -->
           <init-param>
             <param-name>CMPISamplePlugin</param-name>
             <param-value>com.mycompany.CMPISample,
                          AuthType_3270Host,
                          *
             </param-value>
           </init-param>
```

```
          <!-- //// The Network ID to Host User ID Database Parameters //// -->

            <init-param>
              <param-name>CMPI_SAMPLE_DB_ADDRESS</param-name>
              <param-value>jdbc:odbc:my_db_url</param-value>
              <description>URL string that provides the address of the database.</
            </init-param>

            <init-param>
              <param-name>CMPI_SAMPLE_DB_TABLE</param-name>
              <param-value>NetIDToHostID</param-value>
              <description>The table to be used for querying the database.</descri
            </init-param>

            <!-- //// TODO:  All other parameters added to CMPISample must also be

          <!-- //// End of Network ID to Host User ID Database Parameters //// -->

        <!-- //// End of Required Parameters //// -->


      <!-- // End of Configuration parameters needed for HCM Sample Plug-in /// --
```

Appendix E. Glossary of terms

The following terms are used throughout this document:

authentication type

When editing Credential Mapper Servlet (CMS)-related parameters in the web.xml file for macro-based automation, the parameter value must contain the full class path name of the implementing class, the authentication type to be addressed by the credential mapper, and the host mask.

Once you specify the desired authentication type, the CMS can better identify which credential mapper to select to handle the request. You can pair multiple authentication types together to give Host Credential Mappers (HCM) the freedom to support multiple authentication types.

client certificate

A certificate stored in the client's Web browser used to identify the user.

connection-based automation

Connection-based automation works in FTP login environments as well as i5/OS or OS/400 environments that support Kerberos network authentication. With this type of automation, the user is authenticated through a telnet negotiation and the host never sends a login screen to authenticate the client. Therefore, connection-based automation does not require the use of a login macro, the Credential Mapper Servlet (CMS), a Network Security plug-in, nor the Host Credential Mapper (HCM).

credential challenges

Credential challenges are the time at which users are prompted to provide IDs and passwords.

Credential Mapper Servlet (CMS)

For the macro-based automation style of Web Express Logon, the CMS is the core of the credential-mapping framework. It is supplied with Host On-Demand and must be deployed to a Web server or some type of Web application framework. At a high level, it has two primary roles: (1) request the client's credentials (called a *network ID*) and (2) respond with the host access credentials, which consist of the *host ID* and a password or passticket, depending on the type of HCM.

Digital Certificate Access Server (DCAS)

DCAS is a TCP/IP server that runs on z/OS and OS/390 platforms. TN3270 servers connect to DCAS using Secure Socket Layer (SSL). The purpose of DCAS is to receive an application ID and a digital certificate from a TN3270 server and then ask RACF to return a valid user ID that has been associated with the certificate and to generate a passticket for the input user ID and application ID.

Enterprise Identity Mapping (EIM)

EIM is an IBM eServer technology that helps you easily manage multiple user registries and user identities in an enterprise. EIM is an architecture for describing the relationships between individuals or entities (like file servers and print servers) in the enterprise and the many identities that represent them within an enterprise. In addition, EIM provides a set of APIs that allow applications to ask questions about these relationships.

full class path name

When editing CMS-related parameters in the web.xml file for macro-based automation, the parameter value must contain the full class path name of the implementing class, the authentication type to be addressed by the credential mapper, and the host mask.

The CMS uses the value of the full class path name to create a class object of the specified type. That object is then used to handle CMS network security or HCM queries. You must place the specified class file in the ...\WEB-INF\classes subdirectory in a loose file (not as a JAR file). From this location, the CMS will be able to access and use it whenever the need arises.

Host Credential Mapper (HCM)

The HCM is a back-end repository that maps users' network IDs to their host IDs. This repository can be a JDBC database such as IBM DB2. The DCAS and Vault plug-ins provided with Web Express Logon are designed to work with a such a database. Another possibility for a repository is an LDAP directory. However, using LDAP as your HCM requires you to write your own plug-in..

host ID

A host ID is the credential used to uniquely identify the user to the host being accessed. In macro-based automation, the host ID is what the Host Credential Mapper returns to the Credential Mapper servlet in order to achieve single sign-on.

host mask

When editing CMS-related parameters in the web.xml file for macro-based automation, the parameter value must contain the full class path name of the implementing class, the authentication type to be addressed by the credential mapper, and the host mask.

The host mask is a secondary selection criteria used by the CMS to identify the most appropriate credential mapper. This value can contain one or more host addresses.

Kerberos

Kerberos is a network authentication protocol that identifies and authenticates users who request to log on to a network. It provides a means of verifying the identities of principals (users) on physically insecure networks. It provides mutual authentication, data integrity, and privacy under the realistic assumption that network traffic is vulnerable to capture, examination, and substitution.

macro-based automation

Macro-based automation is for environments of varying host types that *are not* using Kerberos authentication. As the name implies, it requires you to create a macro to perform logon automation.

In order to use the macro-based automation style of Web Express Logon, you must have a network security application in place. Host On-Demand provides out-of-the-box support for three common network security applications without requiring additional coding: IBM Tivoli Access Manager, Netegrity Siteminder, and Microsoft Active Directory (Windows Domain). If you have a different network security application, you will need to create your own plug-in to work in your environment.

network ID

A network ID is the credential that uniquely identifies the user to the network security application. In macro-based automation, the CMS calls upon the Network Security plug-in to acquire the user's network ID from the network security application.

Network Security plug-in

In macro-based automation, the Network Security plug-in acquires the user's network ID from the network security application.

Portal Server Credential Vault

A Portal Server repository where user credentials are stored.

Resource Access Control Facility (RACF)

RACF is an IBM security product that protects resources by granting access to only authorized users of protected resources. RACF retains information about the users, resources, and access authorities in profiles on the RACF database and refers to the profiles when deciding which users should be permitted access to protected system resources.

Appendix F. Sources for more information

Use the following sources to help you implement Web Express Logon in your environment:

- Host On-Demand: http://www.ibm.com/software/webservers/hostondemand
- Host On-Demand Information Center: http://publib.boulder.ibm.com/infocenter/hod9help
- IBM redbooks: http://www.redbooks.com
- IBM WebSphere Application Server: http://www.ibm.com/software/websphere/appserv
- IBM eServer iSeries Enterprise Identity Mapping document: http://publib.boulder.ibm.com/iseries/v5r2/ic2924/info/rzalv/rzalv.pdf
- Enterprise Identity Mapping Web site: http://www.ibm.com/servers/eserver/security/eim/
- IBM eServer iSeries Resource Library: http://www.ibm.com/eserver/iseries
- IBM Tivoli Access Manager: http://www.ibm.com/software/tivoli/products/access-mgr-e-bus/
- IBM Tivoli Identity Manager: http://www.ibm.com/software/tivoli/products/identity-mgr/
- IBM DB2 Universal Database: http://www.ibm.com/software/data/db2/udb/

- iSeries home page: http://www.ibm.com/servers/eserver/iseries
- RACF home page: http://www.ibm.com/servers/eserver/zseries/zos/racf/
- Certificate Express Logon white paper: Setting up and Using the IBM Express Logon Feature

Appendix G. Notices

```
IBM Corporation
Department T01
Building B062
P.O. Box 12195
Research Triangle Park, NC 27709-2195
U.S.A.
```

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee. The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Appendix H. Trademarks

The following terms are trademarks of International Business Machines Corporation in the United States, other countries, or both: **IBM**

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries.

Microsoft, Windows, Windows NT, and the Windows logo are registered trademarks of Microsoft Corporation.

Other company, product, and service names may be trademarks or service marks of others.