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Powerful and secure infrastructures with WebSphere Application Server for z/OS

The security side of Application Migration

Redbooks

International Technical
Support Organization

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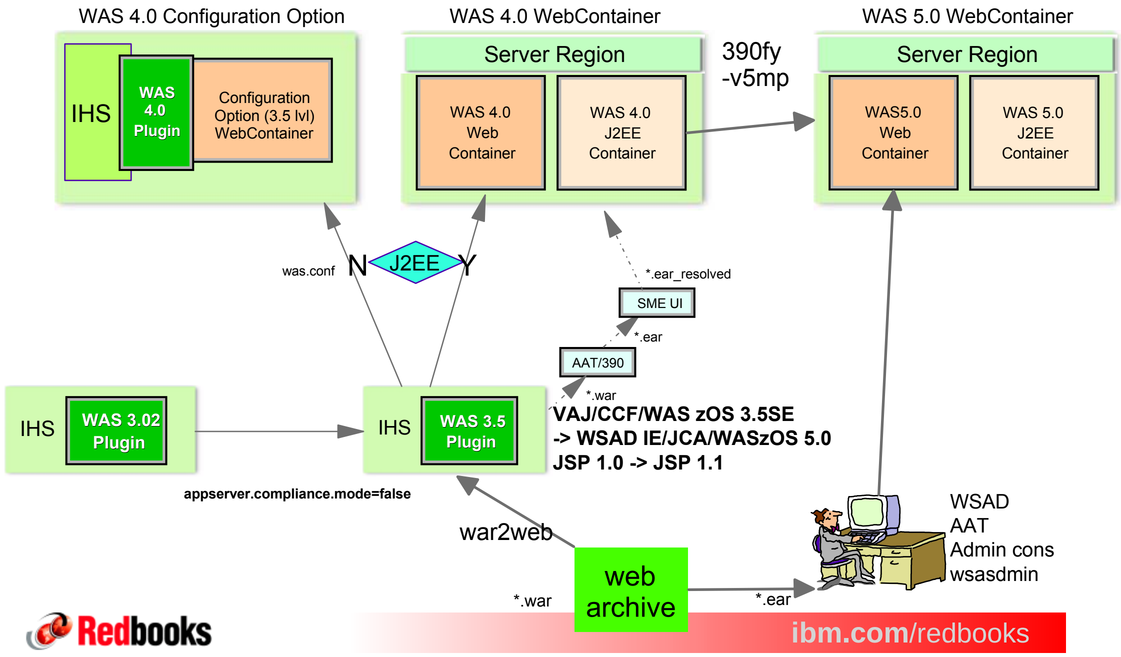
Objectives

Security Aspects when migrating WebSphere Applications

- Overview
- Affected Environments
- Most likely problems
- Strategies
- Summary

Migrating WebApps to WebSphere 5



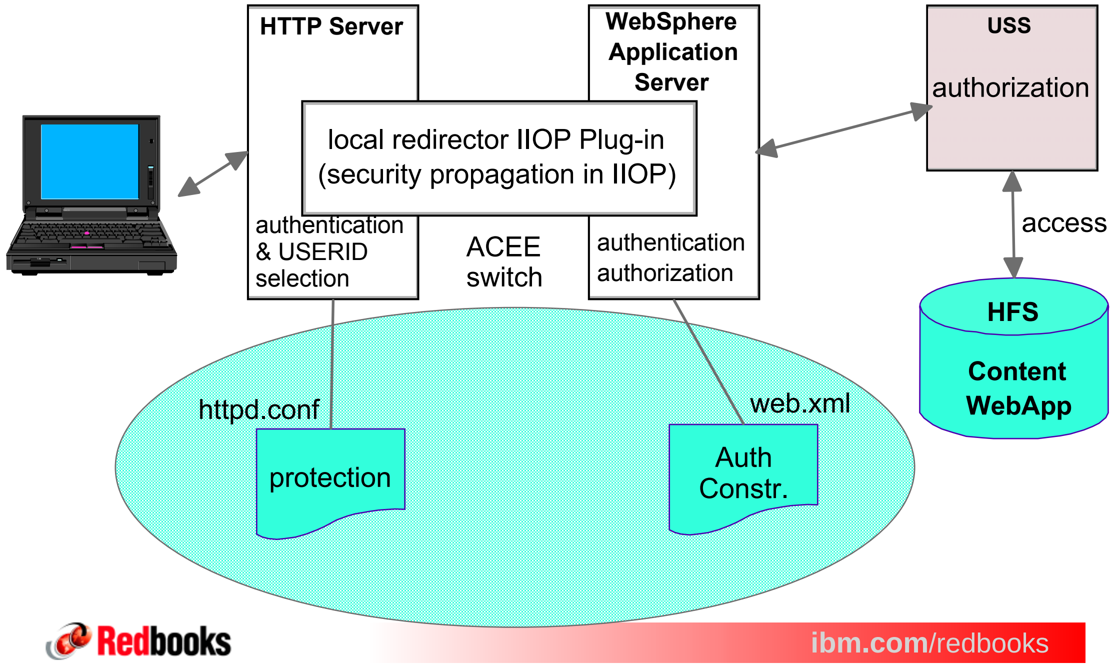
Generic migration tips

- get WebSphere migration handbook
  - generic: http://www.redbooks.ibm.com/pubs/pdfs/redbooks/sg246910.pdf
  - z/OS: Redpiece will be available soon, contact Tamas Vilaghy, Poughkeepsie
  - use 390fy tool -v5mp option for quick migration from 4.01 to 5.. (Note that only the "new" version of the 390fy tool provides the -v5mp option. The "new" 390fy tool is included in level W401502 for WebSphere Application Server 4.0.1 for z/OS
- **The Class API Checker Tool (CACT)** can be used to analyze servlets and EJBs to determine if they contain any unsupported or deprecated APIs.
  - http://www7b.software.ibm.com/wsdd/library/techarticles/0208_cocasse/0208_cocasse.html
- Migrate servlets to API 2.2 and JSP 1.1, with the MigrateWC tool
  - http://www-1.ibm.com/support/docview.wss?uid=swg24001150
- **Changes SERVER class profiles from**
  - <subsys_type>.<subsys_name>.<appl_envir_name> to ..
  - <subsys_type>.<subsys_name>.<appl_envir_name>.<cell_name>

Affected Environments

- ➤Applications using the local redirector together with IHS protection
- ➤Applications using the simple config option
- ➤Applications running in IBM HTTP Server address space
- ➤Applications who's security is based on IHS protection setups
- ➤Applications based on IHS password file capability
- ➤Applications that use SOMDOBJS
- ➤Applications that use sync2thread
- ➤Applications that use CCF connectors
- ➤Applications that use unmanaged threads

Security Migration Problem: protection setups and redirector plug-in


HTTP Server
WebSphere Application Server
USS
authorization
local redirector IIOP Plug-in (security propagation in IIOP)
authentication & USERID selection
ACEE switch
authentication authorization
access
HFS
Content WebApp
httpd.conf
protection
web.xml
Auth Constr.

What are the reasons?

WAS3 SOMDOBJS is no longer supported in WAS4 and higher

WAS4 local redirector is no longer available

WAS4 simple config option is no longer available

WAS5 never switches is ACEE

WAS5 TH does not support password files

WAS4 and higher don't support CCF connectors

WAS5 does no longer support sync2

Strategies

Migrate to J2EE 1.3

Migrate password files to RACF or CUR

Migrate cleanly from local redirector to HTTP plug-in

If using surrogate users RunAS Role might be the solution

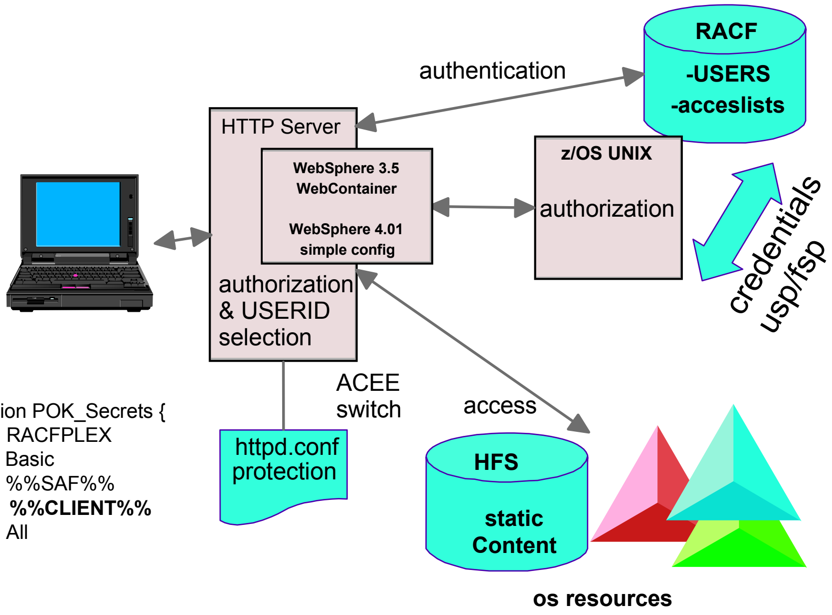
Migrate SOMDOBJS to EJBROLES

Migrate CCF connectors to JCA

Thread level based problems:

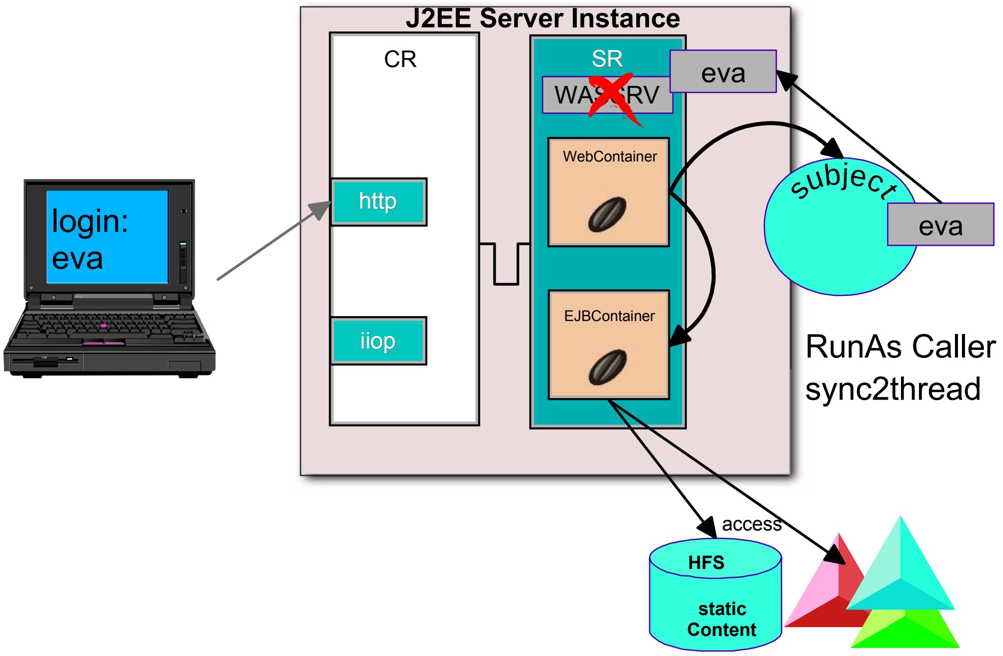
- Avoid sync2thread options
- Avoid thread level based security
- If not possible a solution needs to be architected

TLS Problem No1:
Protection setup based os resource access



```
Example: Protection POK_Secrets {
        ServerId      RACFPLEX
        AuthType      Basic
        PasswdFile  %%SAF%%
        Userid          %%CLIENT%%
        Mask            All
}
```

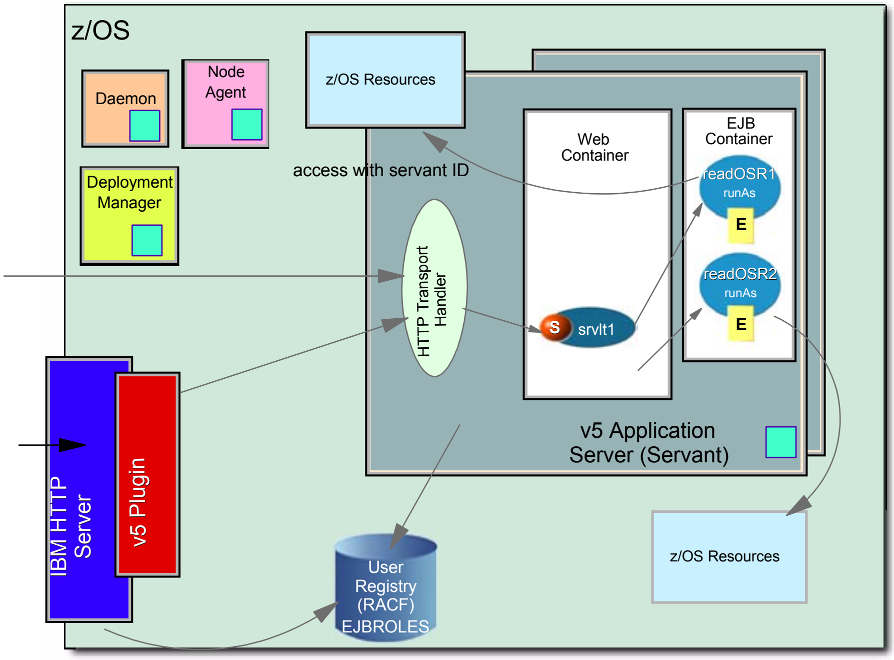
TLS Problem No2:
Protection setup based os resource access



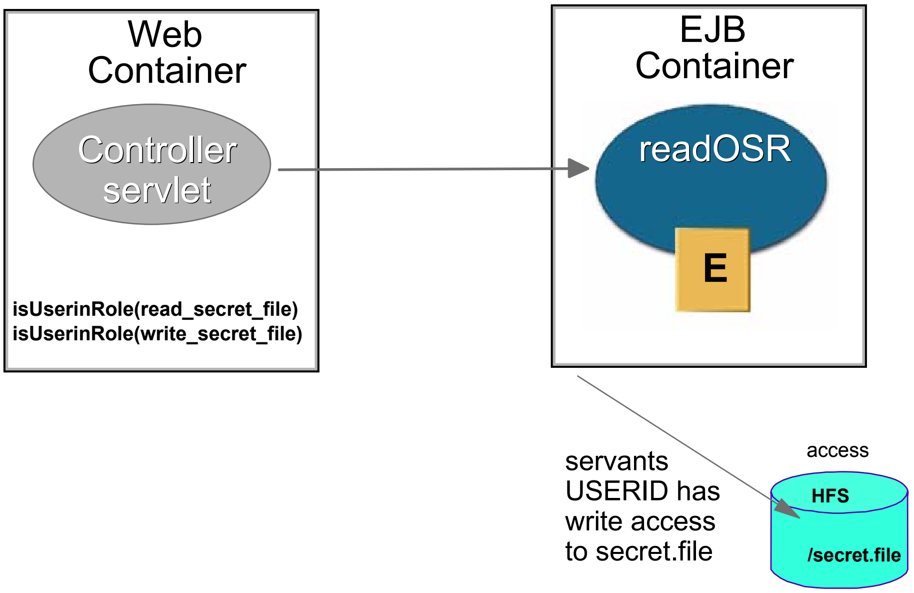
Strategies if ACEE based security is a problem

- Wait for sync2thread (not recommended)
- Wait for simple config (not recommended)
- Map OS resources to J2EE methods and protect the method
- Use JAVA2 security
- Use a authorization engine (J2EE server that does RACHECKS)
- Use a access engine (URL called from WebApp)

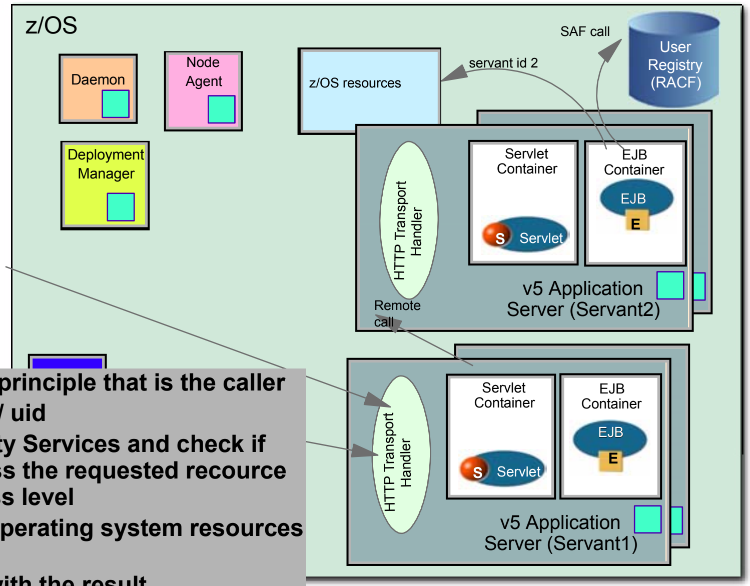
TLS Problems
Solution Strategies: declarative



TLS Problems
Solution Strategies: programmatic

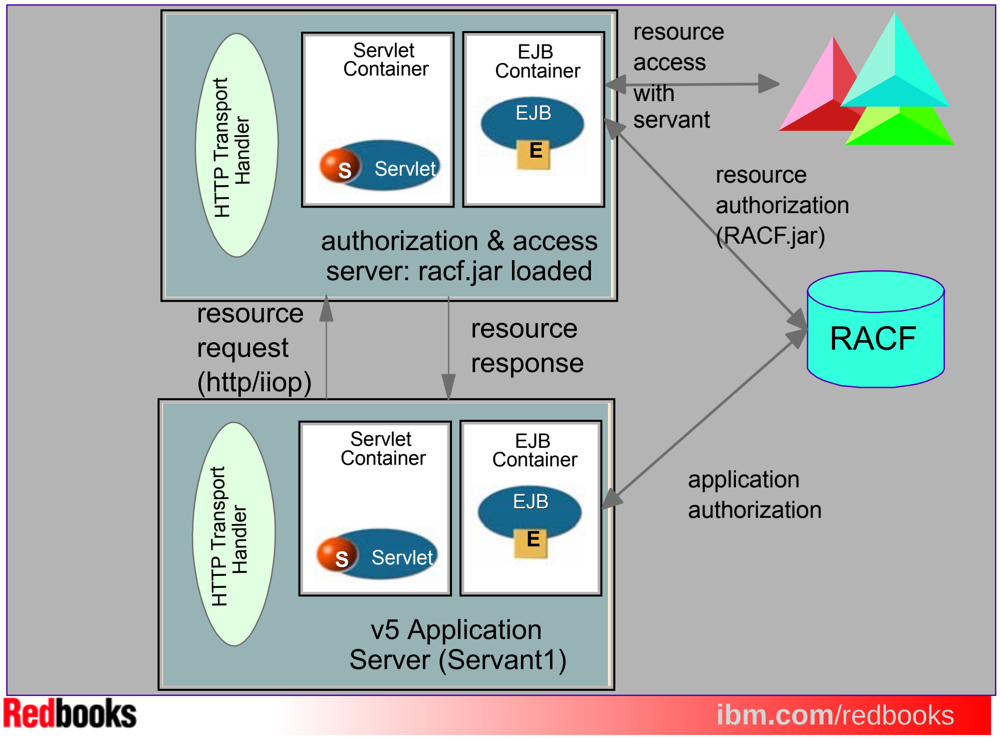

Web Container
Controller servlet
isUserinRole(read_secret_file)
isUserinRole(write_secret_file)
EJB Container
readOSR
E
servants USERID has write access to secret.file
access
HFS
/secret.file

TLS Problems
Solution Strategies: authorization engine



- **establish on server2 the principle that is the caller**
- **Get the matching userid / uid**
- **call Java for z/OS Security Services and check if caller is allowed to access the requested recource with the requested access level**
- **if allowed, access z/OS operating system resources with servants userid**
- **return from remote call with the result**

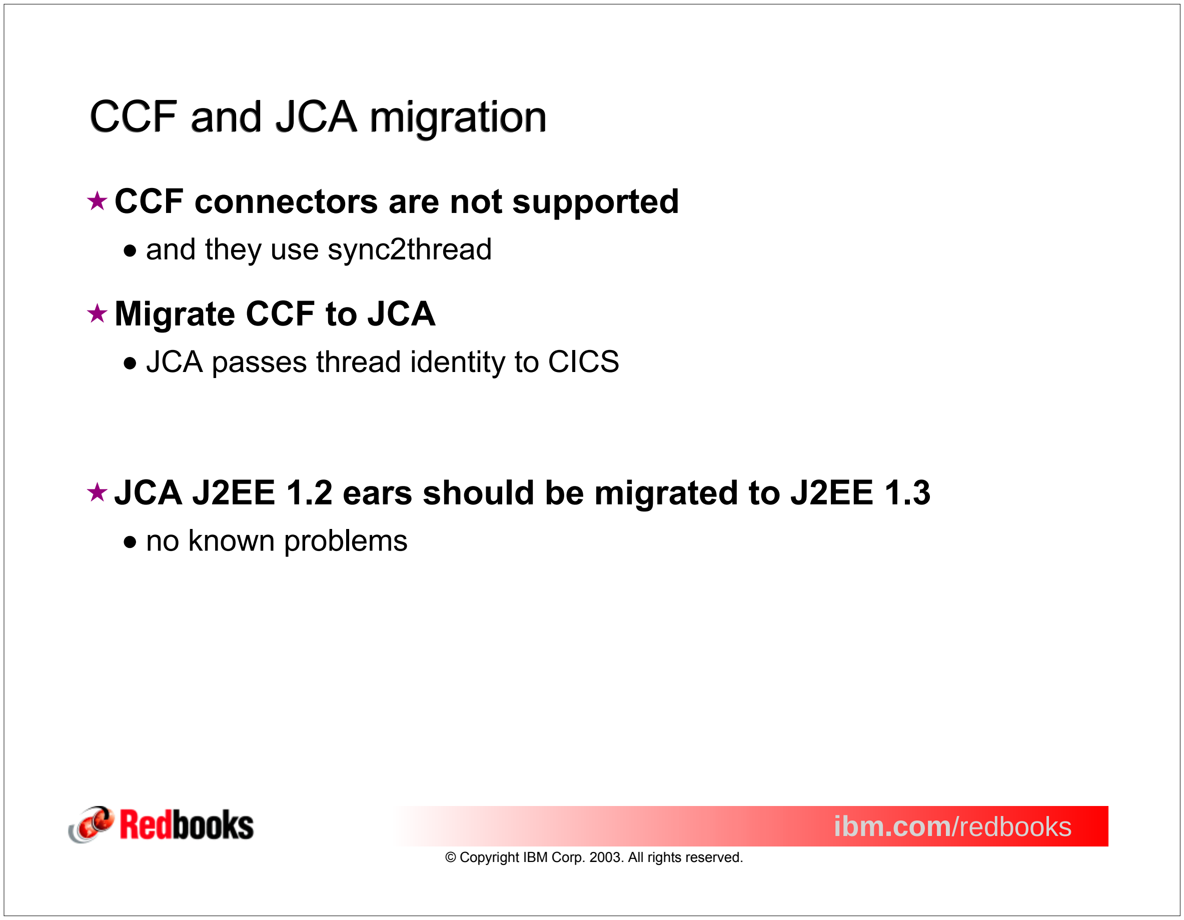
TLS Problems
Solution Strategies: authorization engine


HTTP Transport Handler
Servlet Container
S Servlet
EJB Container
EJB
E
authorization & access server: racf.jar loaded
resource access with servant
resource authorization (RACF.jar)
RACF
resource request (http/iiop)
resource response
HTTP Transport Handler
Servlet Container
S Servlet
EJB Container
EJB
E
v5 Application Server (Servant1)
application authorization

TLS Problems
Solution Strategies: Java2 and JAAS

Update was.policy (part of the .ear)

```
grant codeBase "file:readHFSWeb.war",
   Principal com.ibm.ws.security.common.auth.WS390Principal “WAS5/paul”
   {
   permission java.io.FilePermission "secret.file"."read";
   };
```



CCF and JCA migration

- ★ **CCF connectors are not supported**
  - and they use sync2thread
- ★ **Migrate CCF to JCA**
  - JCA passes thread identity to CICS
- ★ **JCA J2EE 1.2 ears should be migrated to J2EE 1.3**
  - no known problems