New Oracle EBS Security Features You Can Use Now

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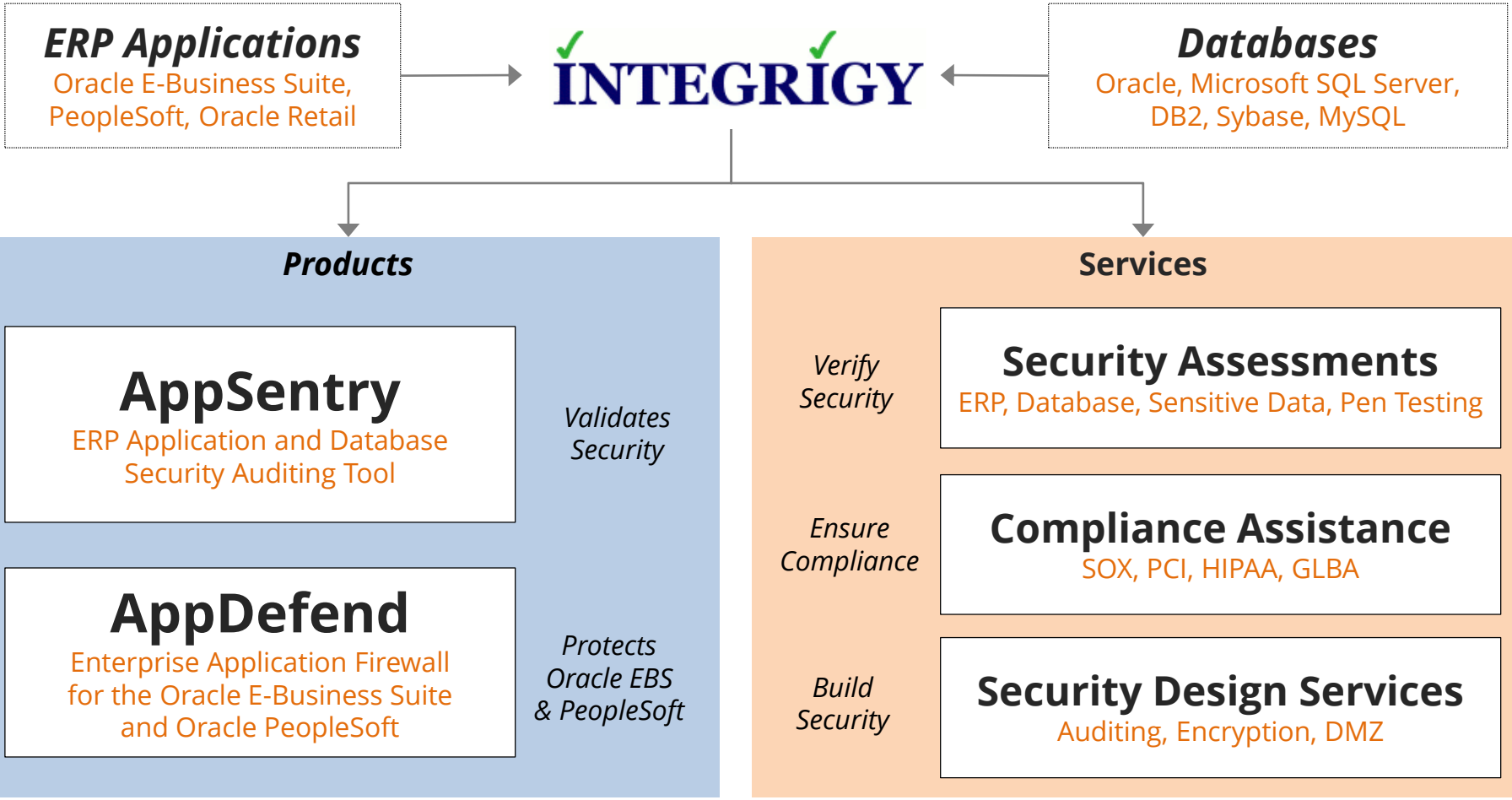
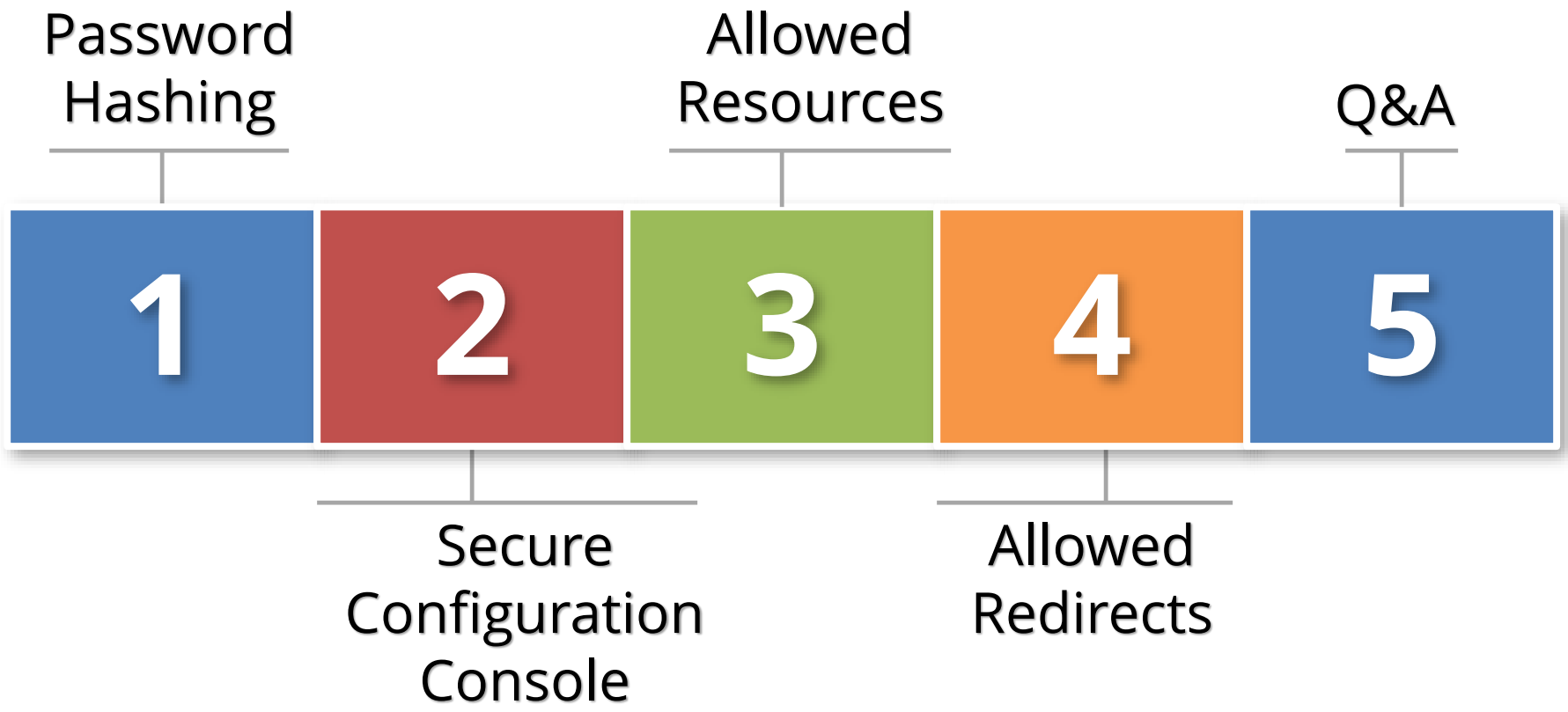
About Integrigy



Agenda


Password Hashing
Allowed Resources
Q&A
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Secure Configuration Console
Allowed Redirects

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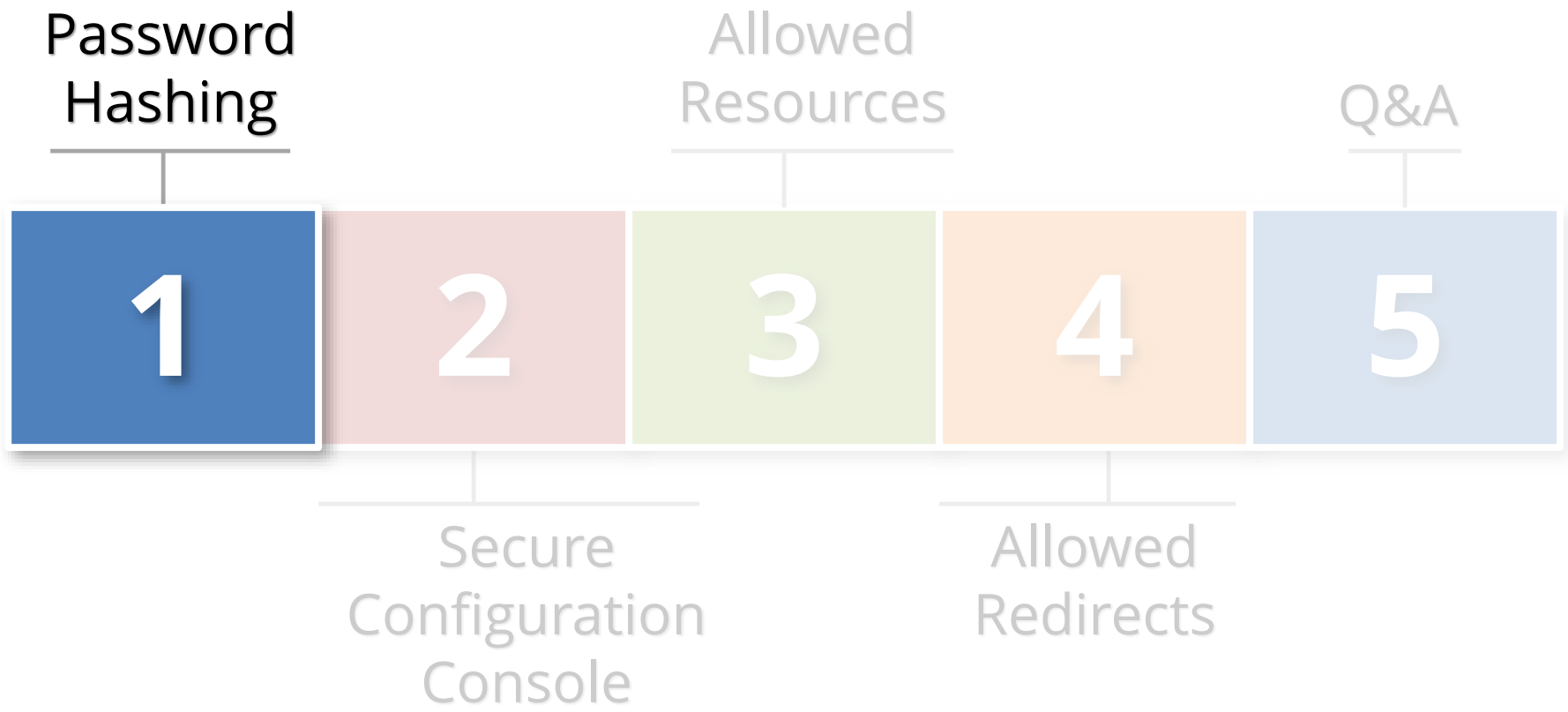
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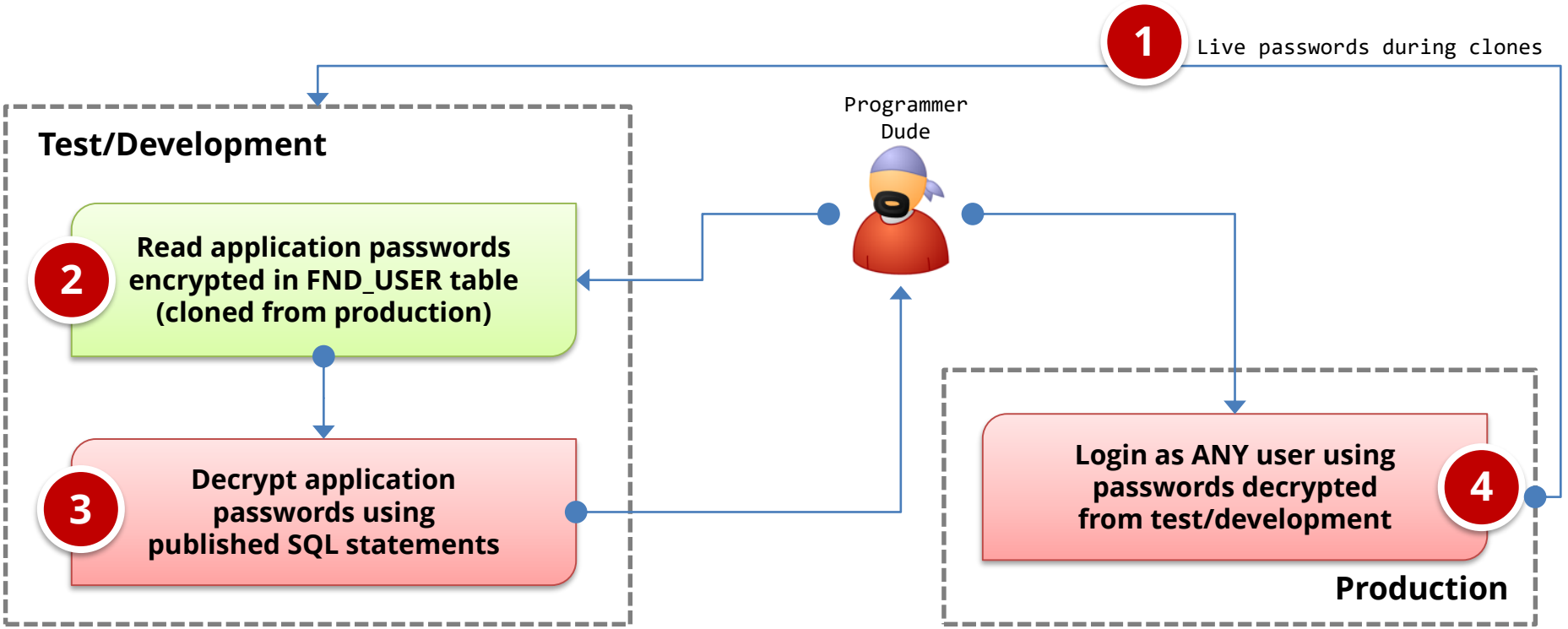
Threat

Application user passwords may be **decrypted** and multiple other user accounts may be used to circumvent application controls.



Oracle EBS Password Encryption

FND_USER Table

USER_NAME	ENCRYPTED_FOUNDATION_PASSWORD	ENCRYPTED_USER_PASSWORD
GUEST	ZG6EBD472D1208B0CDC78D7EC7730F9B249496F825E761BA3EB2FEBB54F6915FADA757EF4558CF438CF55D23FE32BE0BE52E	ZG6C08D49D524A1551A3068977328B1AFD260400FB598E799A3A8BAE573777E7EE7262D1730366E6709524C95EC6BFA0DA06
SYSADMIN	ZH39A396EDCA4CA7C8D5395D94D8C915510C0C90DA198EC9CDA15879E8B547B9CDA034575D289590968F1B6B38A1E654DD98	ZHF57EAF37B1936C56755B134DE7C83AE40CADDD4AA83B1D7455E5533DC041773B494D2AA04644FB5A514E5C5614F3C87888
WIZARD	ZG2744DCFCCFFA381B994D2C3F7ADACF68DF433BADF59CF6C3DAB3C35A11AAAB2674C2189DCA040C4C81D2CE41C2BB82BFC6	ZGE9AAA974FB46BC76674510456C739564546F2A0154DCF9EBF2AA49FBF58C759283C7E288CC673044036E284042A8FE4451

APPS password encrypted user name + user password

User password encrypted using APPS password

R12 APPS Password Decryption SQL

```
select
(
  select
  decrypt(
    (select fnd_web_sec.get_guest_username_pwd from dual)
     , fu.encrypted_foundation_password
  )
  from dual
) as apps_password
from
  fnd_user fu
where
  fu.user_name like
  (select substr(fnd_web_sec.get_guest_username_pwd,1,
      instr(fnd_web_sec.get_guest_username_pwd,'/')-1)
   from dual
  )
```

Google: oracle applications password decryption

End-User Password Decryption SQL

```
select user_name,
       decrypt('APPSPASSWORD',
       encrypted_user_password)
from
  fnd_user;
```

Google: oracle applications password decryption

Access Oracle EBS Decrypt Function

```
create or replace
function decrypt(key in varchar2,
                 value in varchar2)
return varchar2
as language java name
'oracle.apps.fnd.security.WebSessionManagerProc.decrypt
(java.lang.String,java.lang.String)
return java.lang.String';
```

Decrypt is in a Java class in the database and must be published with a PL/SQL function in order to be called directly from SQL. This is only one method for using decrypt – there are many other ways this can be accomplished.

Oracle EBS Password Decryption and Hashing

- **Application passwords are encrypted by default, not hashed which is more secure**
  - Simple method to decrypt if able to access FND_USER table

- **Secure hashing of passwords is optional for ALL Oracle EBS versions and must be enabled by DBA**
  - Patch for earlier 11i versions and included with R12 but not enabled by default

EBS Password Hashing New Feature

- **Enable EBS application user password hashing**
  - See MOD ID 457166.1 for instructions
- **Use AFPASSWD rather FNDCPASS in order to enable stronger hash algorithms**
  - For 12.1.3+ and 12.2.3+, use **SHA512**
  - For all other versions, only option is SHA (uses SHA1)
- **Previously migrated, as of June 2017 improved hashing available**
  - 12.2.3+ = 26175708 FND SECURITY RUP JUN-2017
  - 12.1.3+ required
  - Run AFPASSWD again with PARTIAL option

EBS Password Hashing New Feature

- **Verify it has been run successfully for all users**
  - See MOS ID 1084956.1 for query

Release	Versions	SHA1	SHA256, 384, 512
11.5	11.5.10	RUP6	*Not available*
12.0	12.0.4 – 12.0.6	12.0.4	*Not available*
12.1	12.1.1 – 12.1.3	12.1.1+	12.1.3+
12.2	12.2.1 – 12.2.8	12.2.1+	12.2.3+ [26175708]

Oracle EBS Password Hash Feature

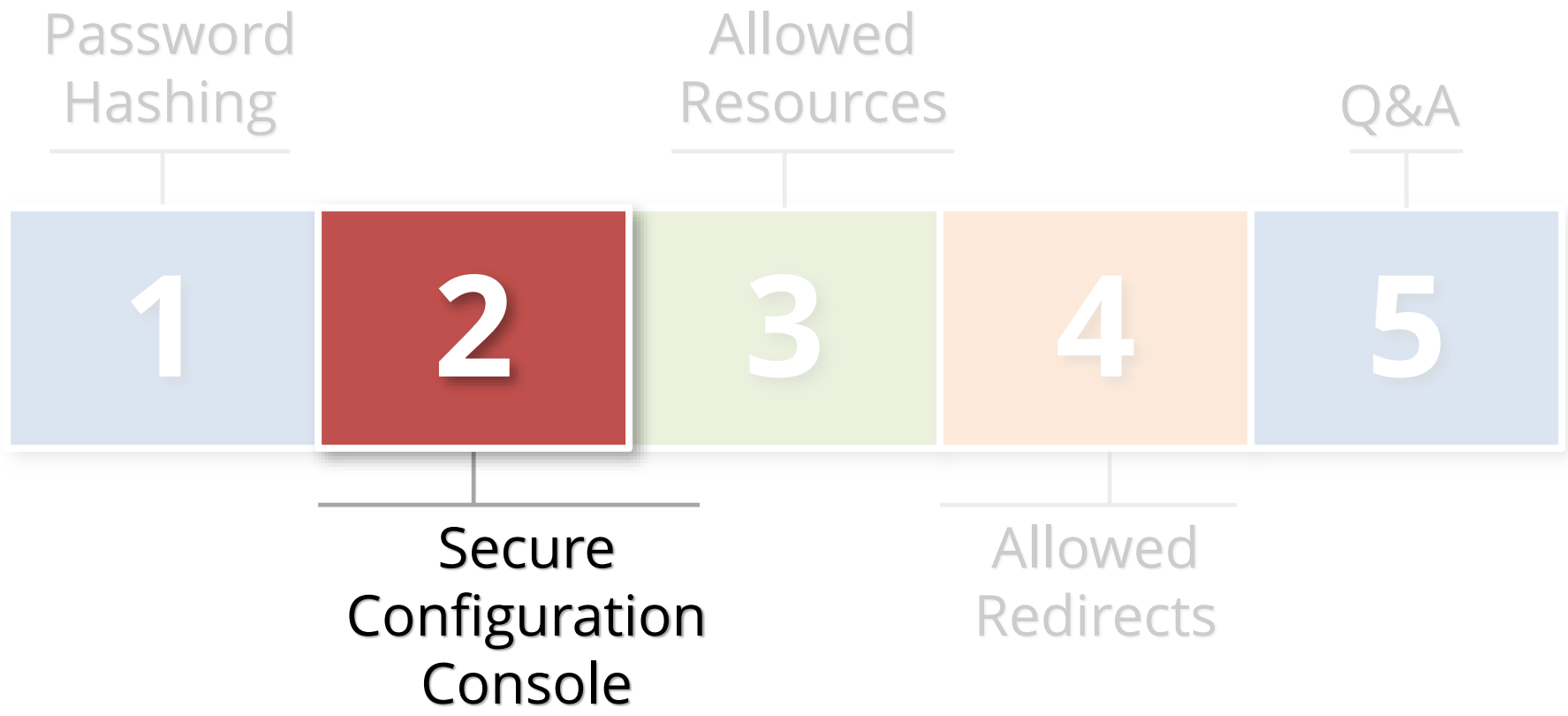
FND_USER Table

USER_NAME	ENCRYPTED_FOUNDATION_PASSWORD	ENCRYPTED_USER_PASSWORD
GUEST	XG{SHA1}	XG6C08D49D524A1551A3068977328B1AFD260400FB598E799A3A8BAE573777E7EE7262D1730366E6709524C95EC6BFA0DA06
SYSADMIN	XG{SHA1}	XGF57EAF37B1936C56755B134DE7C83AE40CADDD4AA83B1D7455E5533DC041773B494D2AA04644FB5A514E5C5614F3C87888
WIZARD	XG{SHA1}	XGE9AAA974FB46BC76674510456C739564546F2A0154DCF9EBF2AA49FBF58C759283C7E288CC673044036E284042A8FE4451

APPS password no longer encrypted and stored in FND_USER

User password now a SHA1 one-way hash

Agenda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Secure Configuration Console

- **Secure Configuration Console performs basic Oracle EBS security checks**
  - 18 checks as of November 2018
- **Available for 12.1.3 and 12.2.6+**
  - 12.1.3 = Secure Configuration Console in Oracle E-Business Suite Release 12.1.3 (Doc ID 2311308.1) and Patch 26090737:R12.FND.B
  - 12.2.6 = Oracle E-Business Suite Security Guide
- **Access using Functional Administrator responsibility**
  - Functional Administrator → Configuration Manager

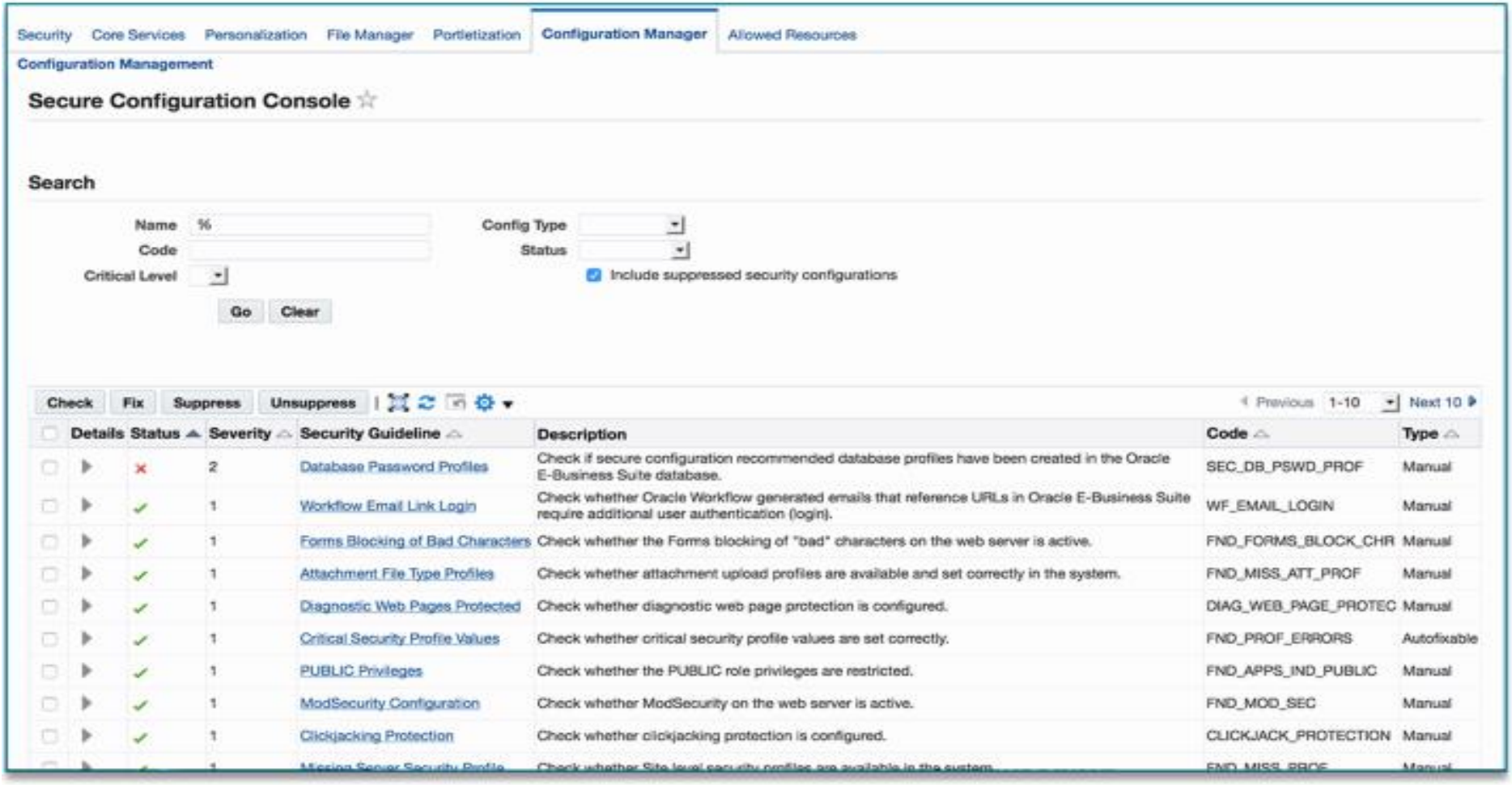
Secure Configuration Console

Secure Configuration Console performs basic Oracle EBS configuration security checks

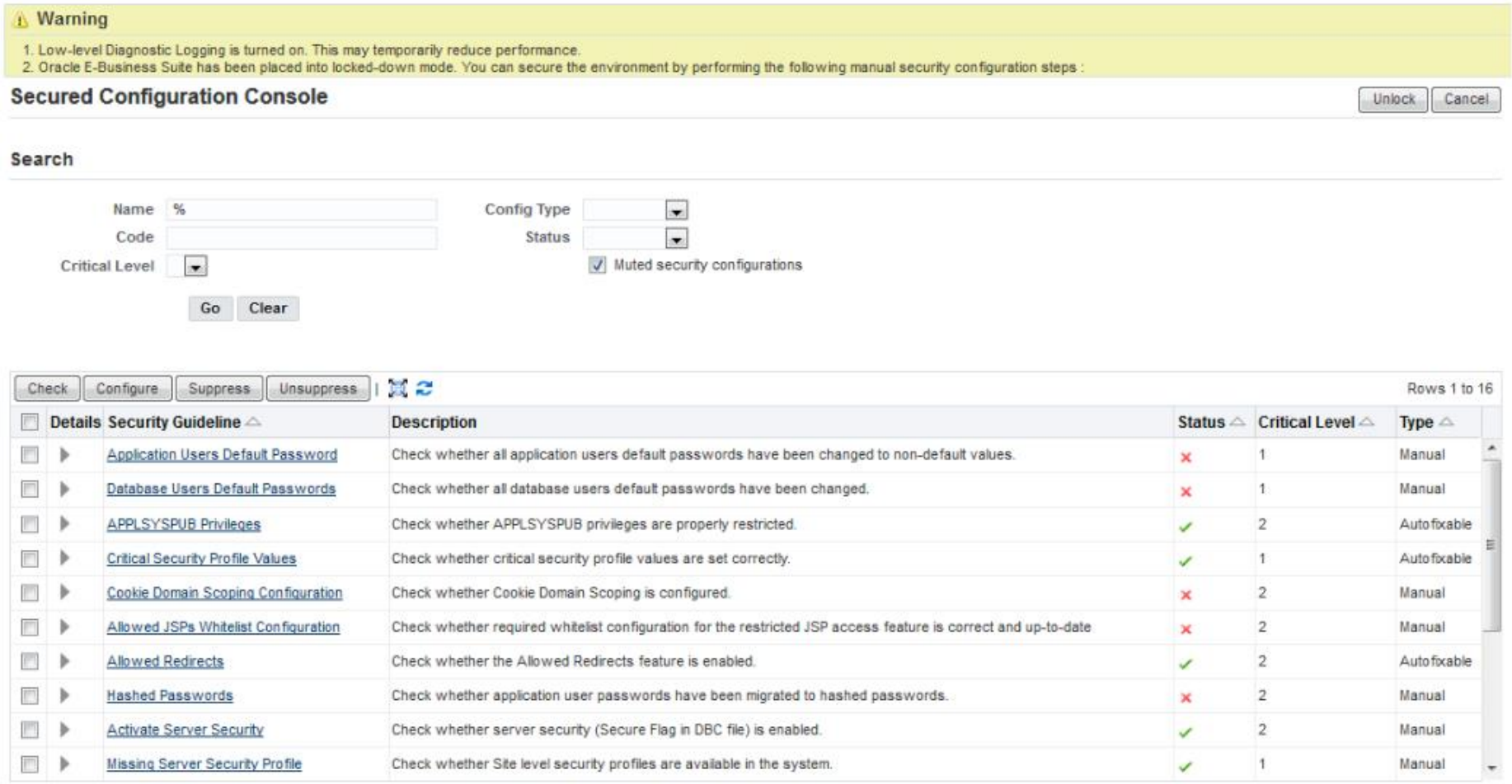
- 12.1.3 = 18 checks (26090737:R12.FND.B)
- 12.2.6 = 14 checks
- 12.2.7 = 24 checks

12.1	12.1.3	▪ Patch 26090737:R12.FND.B ▪ Secure Configuration Console in Oracle E-Business Suite Release 12.1.3 (MOS ID 2311308.1)
12.2	12.2.6+	▪ Included with 12.2.6+ ▪ See latest version *Oracle E-Business Suite Security Guide*

Secure Configuration Console



Secure Configuration Console



Warning

1. Low-level Diagnostic Logging is turned on. This may temporarily reduce performance.
2. Oracle E-Business Suite has been placed into locked-down mode. You can secure the environment by performing the following manual security configuration steps :

Secured Configuration Console

Unlock | Cancel

Search

Name: %
Code:
Critical Level:
Config Type:
Status:
Muted security configurations

Go | Clear

Check | Configure | Suppress | Unsuppress

Rows 1 to 16

Details	Security Guideline	Description	Status	Critical Level	Type
	Application Users Default Password	Check whether all application users default passwords have been changed to non-default values.	✗	1	Manual
	Database Users Default Passwords	Check whether all database users default passwords have been changed.	✗	1	Manual
	APPLSYSPUB Privileges	Check whether APPLSYSPUB privileges are properly restricted.	✓	2	Autofixable
	Critical Security Profile Values	Check whether critical security profile values are set correctly.	✓	1	Autofixable
	Cookie Domain Scoping Configuration	Check whether Cookie Domain Scoping is configured.	✗	2	Manual
	Allowed JSPs Whitelist Configuration	Check whether required whitelist configuration for the restricted JSP access feature is correct and up-to-date	✗	2	Manual
	Allowed Redirects	Check whether the Allowed Redirects feature is enabled.	✓	2	Autofixable
	Hashed Passwords	Check whether application user passwords have been migrated to hashed passwords.	✗	2	Manual
	Activate Server Security	Check whether server security (Secure Flag in DBC file) is enabled.	✓	2	Manual
	Missing Server Security Profile	Check whether Site level security profiles are available in the system.	✓	1	Manual

Secure Configuration Console Lock-Down

- **EBS is locked down and can not be used until the system administrator resolves any open issues or accepts the risks**
  - After applying a 12.2 ATG_PF RUP patch
  - 12.1.3 Secure Configuration Console patch
- **Access to limited to local EBS users only with responsibility such as System Administration or System Administrator**

"After you upgrade to the latest ATG_PF Release Update Pack, your system will be 'locked down' until a local system administrator resolves or acknowledges the recommended security configurations in the Secure Configuration Console."

Secure Configuration Console Lock-Down

EBS may also be unlocked using a command line utility or by logging in as System Administrator

```
java oracle.apps.fnd.security.AdminSecurityCfg <APPS Username/APPS password[@<DB
Host>] [-check|-fix|-status|-lock|-unlock] [DBC=<DBC File Path>]
[CODES=<code1>,<code2>,<code3>...]
-unlock = To take the system out of locked down mode.
-check = To compute the status of a certain configuration or all configurations.
-fix = To configure a certain configuration or all configurations of type
'Autofixable’.
-status = To view the status of a certain configuration or all configurations
```

12.2 = How to Run Secure Configuration Console Non-Interactively(Doc ID 2312409.1)

12.1.3 = Secure Configuration Console in Oracle E-Business Suite Release 12.1.3 (MOS ID 2311308.1)

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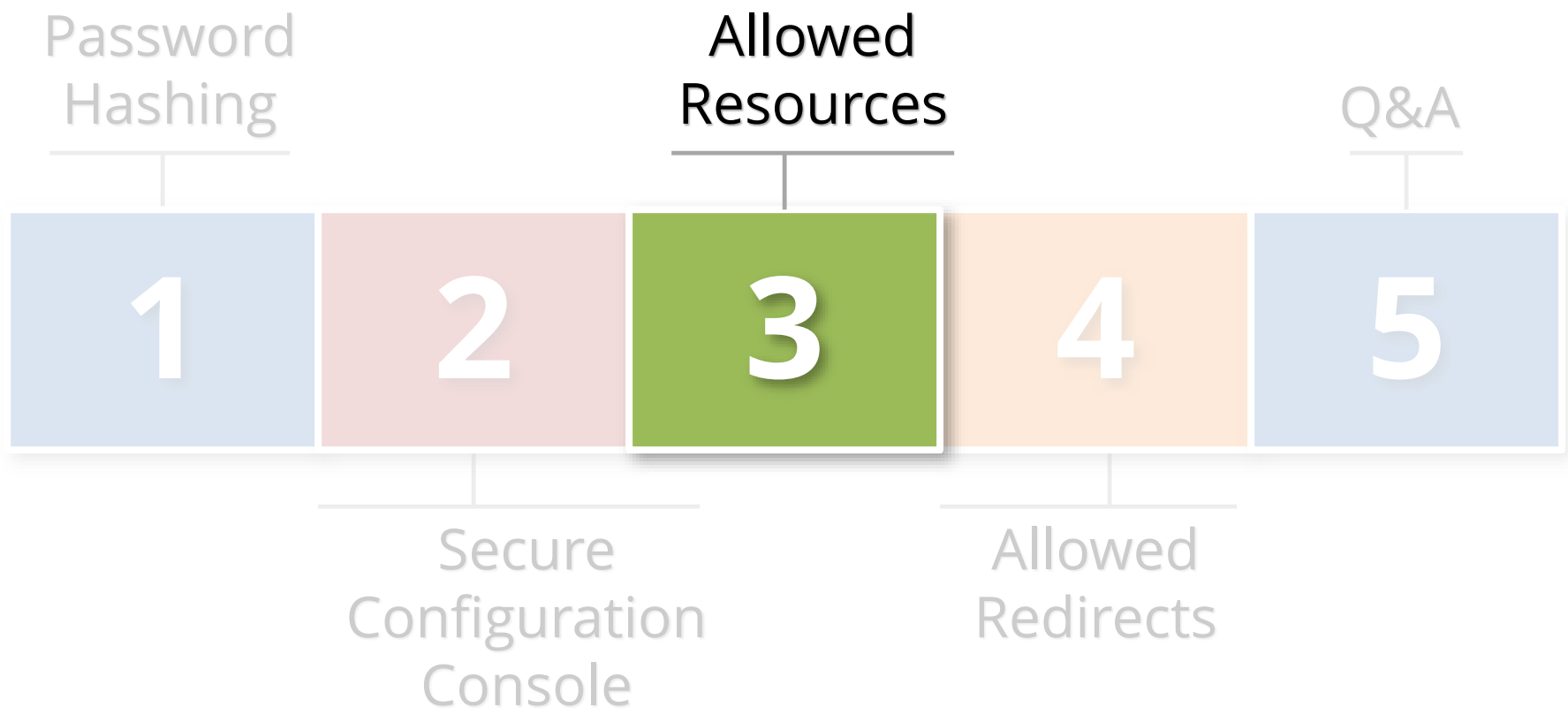
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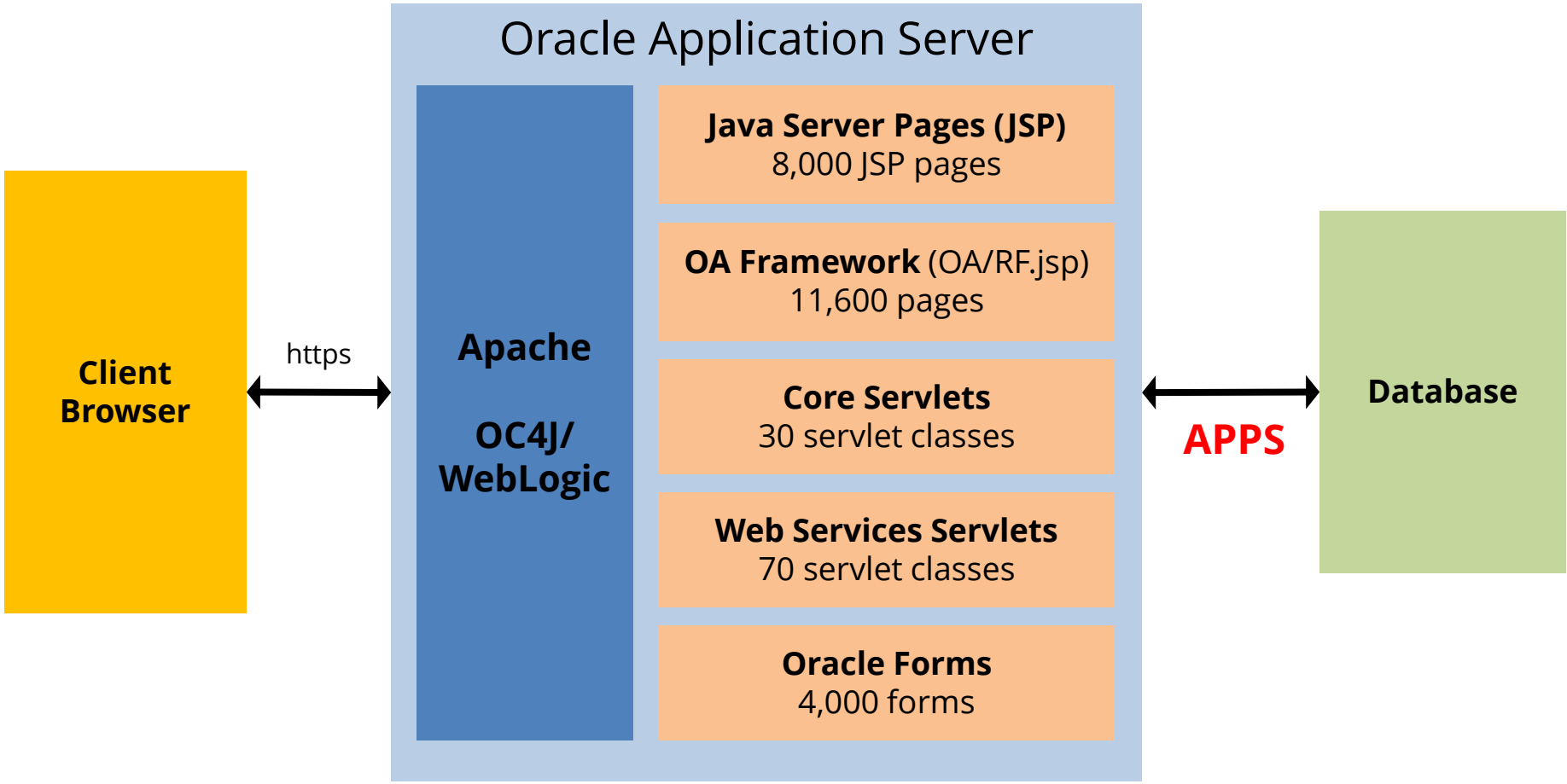
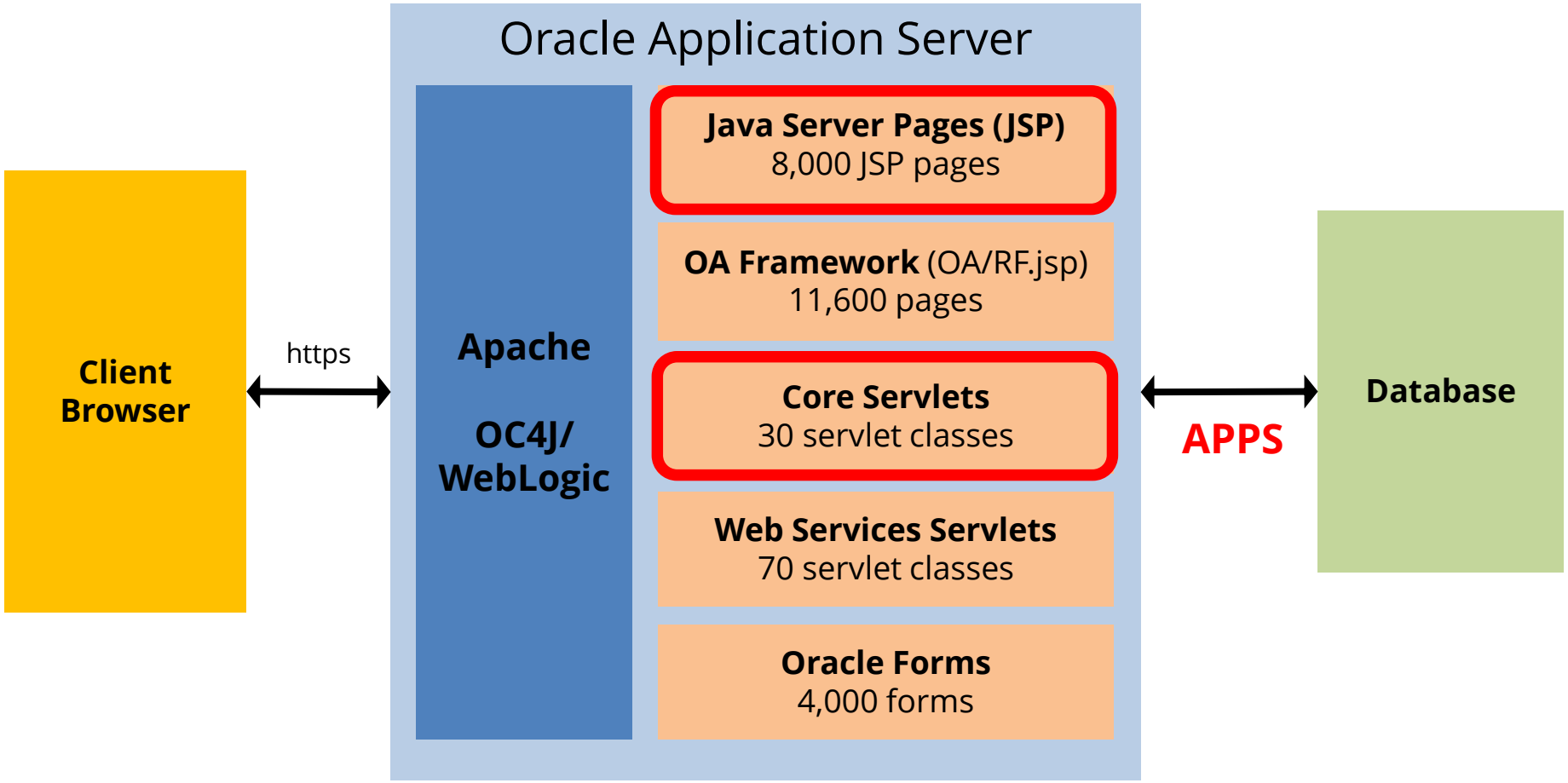
Oracle EBS R12 Architecture



Threat

Large Oracle EBS application surface area with many unused modules and web page.



12.2 Allowed Resources (formerly known as Allowed JSPs)

- Explicit list of allowed JSP pages and servlets
- Limits access to unused JSP pages and servlets for modules not configured or licensed
- Initially released in 12.2.4 as Allowed JSPs
- Rebranded and enhanced in 12.2.6 from Allowed JSPs to Allowed Resources
- See the Oracle EBS Security Guide manual for instructions on usage
- See MOS Note “Significance of Profile Allow Unrestricted JSP Access” (Doc ID 2172584.1)

Allowed Resources – Configuration

- Allowed Resources enabled by default starting with 12.2.6
- Allowed JSPs in 12.2.4 and 12.2.5 not enabled by default
- New profile option for enabling of Allowed Resources
- Allowed Resources lists stored in database

Profile Option Name	Description
Security: Allowed Resources (FND_SEC_ALLOWED_RESOURCES)	Set at Site or Server Level **CONFIG** – Allow only whitelisted **(default)** **ALL** – Allow all web resources

Allowed Resources – Configuration

- **12.2.7 New web interface released to allow configuration**
  - Functional Administrator responsibility → Allowed Resources
- **12.2.4 and 12.2.5 Allowed JSP configuration is through the `allowed_jsp.conf` file.**

12.2.4/12.2.5 allowed_jsp.conf

```
# $Header: allowed_jsps.conf
120.0.12020000.3 2013/06/11 21:37:29
srveerar noship $
/OA_HTML/AppsLocalLogin.jsp
/OA_HTML/cabo/jsps/a.jsp
/OA_HTML/cabo/jsps/frameRedirect.jsp
/OA_HTML/fndgfm.jsp
/OA_HTML/jsp/fnd/close.jsp
/OA_HTML/jsp/fnd/fnderror.jsp
/OA_HTML/OADownload.jsp
/OA_HTML/OAErrorDetailPage.jsp
/OA_HTML/OAErrorPage.jsp
/OA_HTML/OAExport.jsp
/OA_HTML/OA.jsp
/OA_HTML/OALogout.jsp
/OA_HTML/OARegion.jsp
/OA_HTML/RF.jsp
/OA_HTML/GWY.jsp
/OA_HTML/runforms.jsp
/OA_HTML/xdo_doc_display.jsp
/OA_HTML/OAD.jsp
/OA_HTML/OAP.jsp

include allowed_jsps_FIN.conf
include allowed_jsps_HR.conf
include allowed_jsps_Leasing.conf
include allowed_jsps_Procurement.conf
include allowed_jsps_SCM.conf
include allowed_jsps_CRM.conf
include allowed_jsps_VCP.conf
include allowed_jsps_diag_tests.conf
```

Allowed JSPs – If Not Allowed (12.2.4/12.2.5)

Error
Requested resource or page is
not allowed in this site

Allowed JSPs – If Not Allowed (12.2.6+)

403 Forbidden
Requested resource or page is
not allowed in this site

Allowed JSPs – 12.2.6 Automatic Config

- 12.2.6 introduces an utility to automatically configure the allowed JSPs lists
- Script handles modules and pages – disabled inactive application modules

```
perl txkCfgJSPWhitelist.pl -contextfile=<path>
-mode=<report/update>
```

Allowed JSPs – Logging (12.2.4/12.2.5)

- **Logging is disabled by default – no visibility if a disallowed page is accessed**
  - No HTTP error
  - Redirects to `/jsp/fnd/fnderror.jsp?msg_app=FND&msg_name=FND_INVALID_RESOURCE`
- **Must enable Allowed JSPs logging in web.xml**
  - Logging is verbose and not recommended for production

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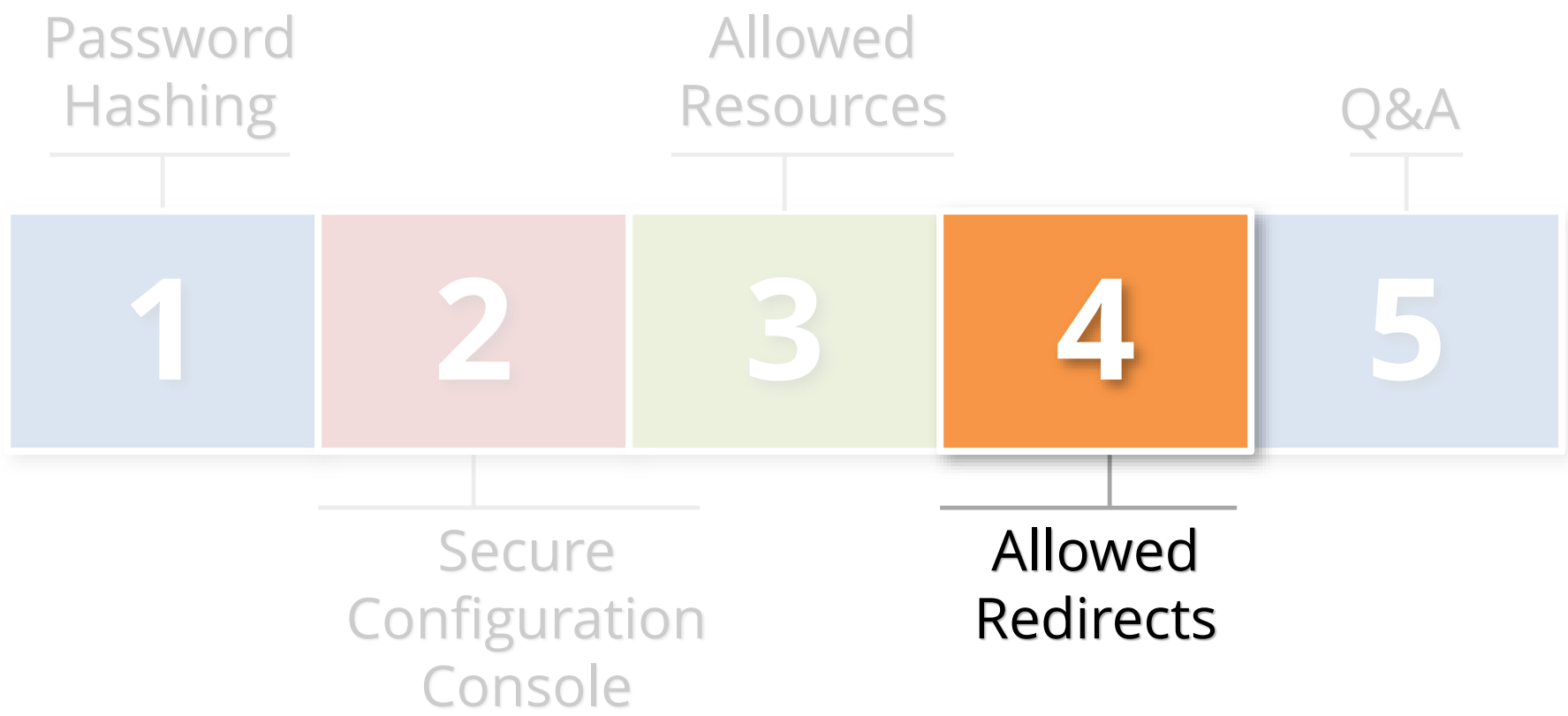
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Allowed Redirects

- **Introduced in 12.2.4 to protect against phishing redirect attacks**
- **Whitelist of allowed redirect locations located in `$FND_TOP/secure/allowed_redirects.conf`**
  - Can be host, domain, or profile option value

Profile Option Name	Description
Allow Unrestricted Redirects (FND_SEC_ALLOW_UNRESTRICTED_REDIRECT)	Set at Site or Server Level **Yes** – Allow any redirect **(default 12.2.4/12.2.5)** **No** – Use allowed list **(default 12.2.6+)**

Allowed Redirects – Standard EBS

- Report Launcher
- Self-Service Applications
- Help System
- Single sign-on integration with Oracle Access Manager using Oracle E-Business
- AccessGate and Oracle Directory Services
- Reporting with Oracle Discoverer Viewer, Oracle Discoverer Server and Oracle
- Business Intelligence Enterprise Edition
- Integration with Oracle Portal
- iRecruitment Background Check URL

Allowed Redirects – Custom

- **Oracle E-Business Suite iProcurement with Punchout (Add host or domain entry for each Punchout site)**
  - Only for Releases 12.2 through 12.2.5
  - Starting with Release 12.2.6, configuration of allowed redirects for Oracle E-Business Suite iProcurement is performed automatically
- **Oracle E-Business Suite Configurator integration with Agile or Siebel using Oracle Application Integration Architecture (Add host or domain entry for each integration point)**
- **Any custom redirects used in your environment**

Testing Allowed Redirects

- **Create and compile custom JSP page as follows –**

```
<html>
<head>
   <title>Testing a redirect</title>
</head>
<body>
   <%
     String redirectURL =
"https://example.org/wiki/HTTP_302";
     response.sendRedirect(redirectURL);
   %>
</body>
```

- **Remember to delete this page when done testing!!!**

Other New Security Features (SSL/TLS)

- **Oracle EBS TLS 1.2 certified**
  - Enabled in 12.1 (see 376700.1) and 12.2 (see 1367293.1)
  - Use an SSL termination point (load balancer/reverse proxy) for a much more robust TLS implementation
- **HTTP Strict Transport Security (HSTS) supported**
  - Tells browser to only communicate using HTTPS
  - Enabled in 12.1 (see 376700.1) and 12.2 (see 1367293.1)
  - Use an SSL termination point (load balancer/reverse proxy) for a much more robust TLS implementation

Other New Security Features (Web)

- **HTTP web header X-Content-Type-Options = Nosniff**
  - Prevents web browser from guessing the mime-type and prevents some types of web attacks
  - New feature included in the October 2018 Critical Patch Update for 12.1 and 12.2.4+
- **HTTP cookie flag HTTPOnly**
  - Flag set on cookies sent from the server to the browser to prevent scripts running in the browser from accessing session cookies
  - 12.2 = R12.ATG_PF.C.DELTA.7 (24690680)
  - 12.1.3 = backport in progress

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