



The Taming of the Shrew –

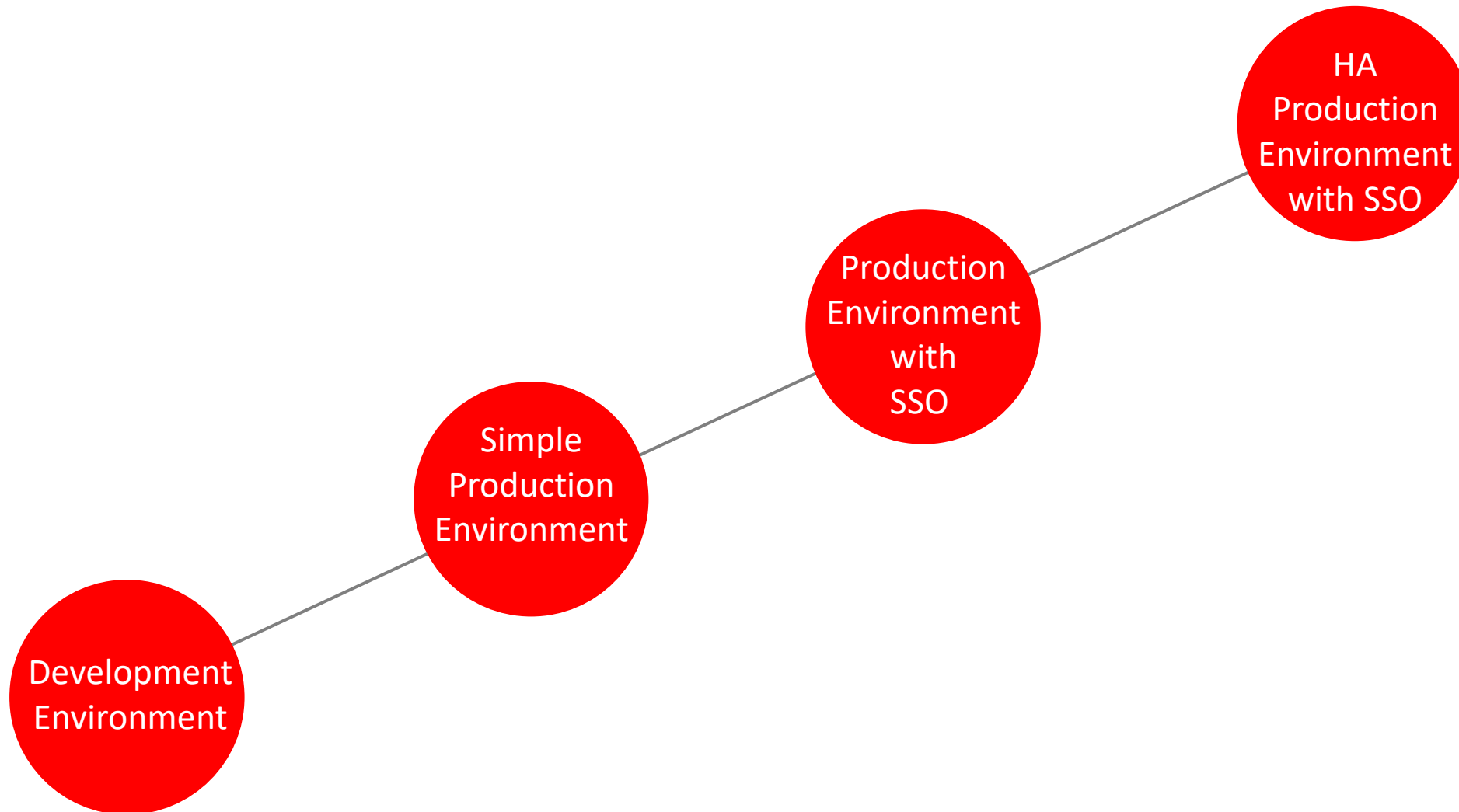
Setting up Oracle Fusion Middleware 12c to run Forms, Reports, BI Publisher

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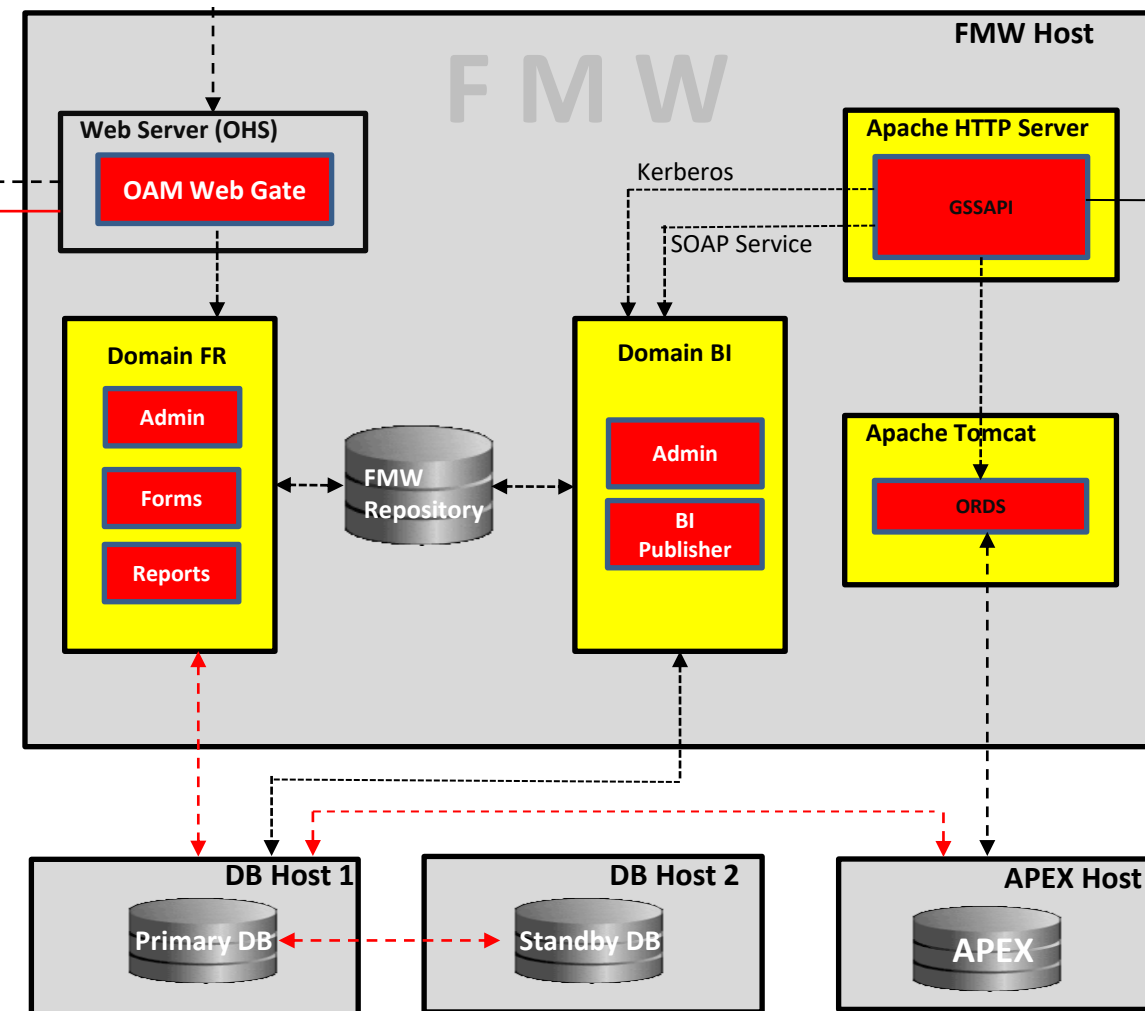
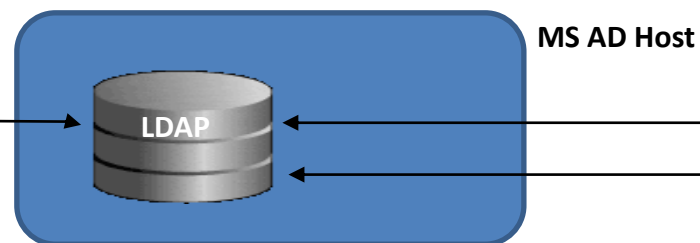
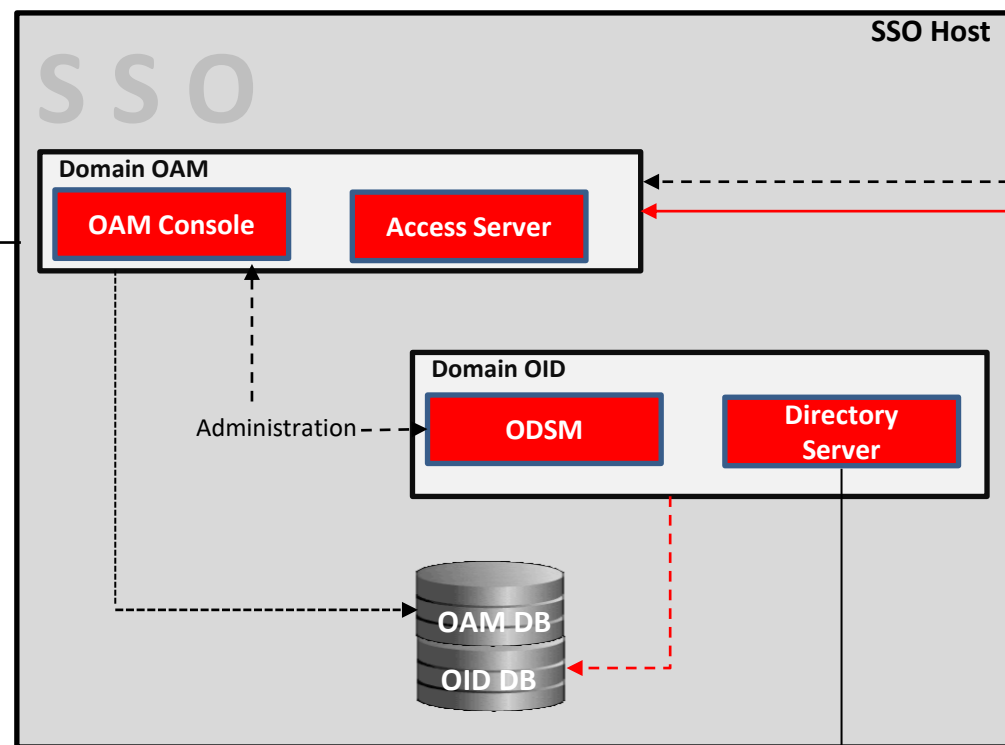


Installation & Configuration becomes more complex



LDAP
HTTP/HTTPS
JDBC
DIP
OAP
SQL*Net

Clients
*java -jar frmsal.jar -url
https://host:7777/forms/frmservlet?config=forms_sso*



How many Domains do we need ?

Forms/Reports and BI Publisher

- There are doubts that an existing Forms Domain can be extended by adding BI Publisher
 - There is no experience if it will work
 - Oracle Product Managers do not recommend it
 - It is more difficult to maintain (administration, patching, version upgrades, etc.)
- ⇒ We decided to install two completely separate environments
- 2 Middleware Homes
 - 2 Domains
 - 2 Admin Servers
 - 2 Node Managers



Attention

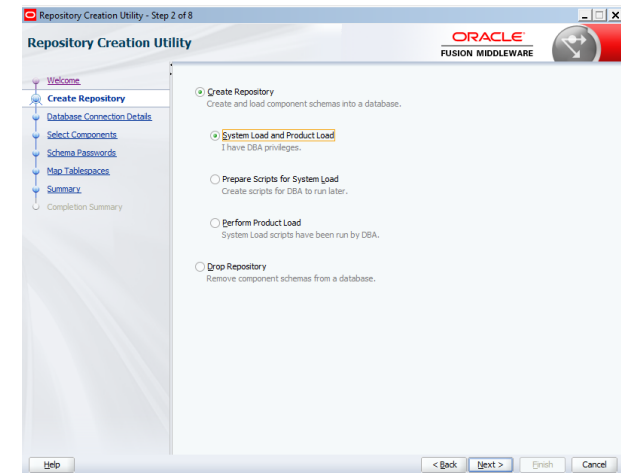
You cannot run two domains in different modes (production/development) on the same machine (because of Coherence Cache)

Fusion Middleware Repository

Creation

- Required prerequisite in Oracle Fusion Middleware 12c
- Required schemas have to be created by Repository Creation Utility (RCU)
 - GUI
 - Silent

```
$ORACLE_HOME/oracle_common/bin/rcu -silent -createRepository -  
connectString localhost:1521:wls -dbUser SYS -dbRole SYSDBA -  
schemaPrefix WLS -component IAU  
-component IAU_APPEND -component IAU_VIEWER -component OPSS -
```



- You can separate products or environments by using different schema prefixes (example: DEV, PRD)
- Pay attention to licencing conditions for the database !

Is it possible to **migrate** a repository to a different database instance ?

- yes, but complicated (a simple user export/import won't do it)
- It is a good idea to have a separate database for the repository (database export/import will work)
- After the migration change the connection details for the data sources in WLS console



but there are still references to old data sources in files
\$DOMAIN_HOME/config/fmwconfig/jps-config-jse.xml
\$DOMAIN_HOME/config/fmwconfig/jps-config.xml

- Monitors and restarts servers and system components in Fusion Middleware
- Replaces OPMN completely in Fusion MW 12c
- Do we need node manager ?
 - Not necessarily on a development desktop
 - Recommended for development or production servers
 - It has only a small footprint
- Node manager has its own credentials (username/password)
 - Credentials can be stored encrypted by adding the option *storeUserConfig* once to a node manager related command



Node manager tries to restart servers and components also after system recovers from a crash when *CrashRecoveryEnabled* is true

- Two different architectural models
 - One node manager per machine
 - "Old" BEA model
 - Can monitor multiple domains on the same machine
 - Example: OAM and IDM domain (11g) on the same server with only one node manager
 - One node manager per domain
 - "New" Oracle model
 - Can monitor remote components on different machines
 - Example: FR and BI domain (12c) on the same server with two node managers and different ports
- Communication can be non-secure (Plain) or secured (SSL)
 - Configuration in different locations should be consistent
 - `$DOMAIN_HOME/nodemanager/nodemanager.properties` (for the node manager)
 - WLS console: Domain => Environment => Machine => Node Manager

Performance Parameter setUserOverrides.sh

- Will be called at the beginning of \$DOMAIN_HOME/bin/setDomainEnv.sh
- Example

```
#!/bin/bash
export JAVA_OPTIONS="$JAVA_OPTIONS -Dweblogic.MaxMessageSize=300000000"
export USER_MEM_ARGS="-Xms256m -Xmx512m"

if [ "${SERVER_NAME}" = "WLS_FORMS" ]
then
    echo "Customizing USER_MEM_ARGS for SERVER_NAME ${SERVER_NAME}"
    export USER_MEM_ARGS="-Xms2g -Xmx2g -XX:+UseParNewGC -XX:+UseConcMarkSweepGC -
XX:NewSize=1g"
    export JAVA_OPTIONS="$JAVA_OPTIONS -Djava.awt.headless=true -
Djava.net.preferIPv4Stack=true -Dweblogic.SelfTuningThreadPoolSizeMin=100 -
Dweblogic.SelfTuningThreadPoolSizeMax=500"
fi
```


Oracle HTTP Server (OHS)

- OHS in Fusion MW 12c is based on Apache 2.4
- Recommended architecture
 - WebLogic servers are only listening to localhost (direct access only from the machine)
 - Remote access through HTTP server and single port
 - Defining location directives for WLS Console, EM, Forms, Reports and BI Publisher in *mod_wl_ohs.conf*
 - For long-running queries in Forms set two additional parameters



Most OHS config files are maintained twice (for the OHS component and the instance)

- It is recommended to make changes through Enterprise Manager GUI



```
<Location /forms>
  SetHandler weblogic-handler
  WebLogicHost localhost
  WebLogicPort 9001
  WLIOTimeoutSecs 600
  Idempotent OFF
</Location>
```

Oracle HTTP Server (OHS)

Single Sign-On (SSO)

- Webgate is a Web Server Plug-In for access management
- It redirects all URLs to the Access Server
- Webgate software will be installed with Fusion Middleware 12c
- The only steps are
 - Deploying and activating Webgate
 - Using the FormsHelperScript command *enable_sso* to configure SSO (Oracle Access Manager and Webgate)

Forms Standalone Launcher (FSAL)

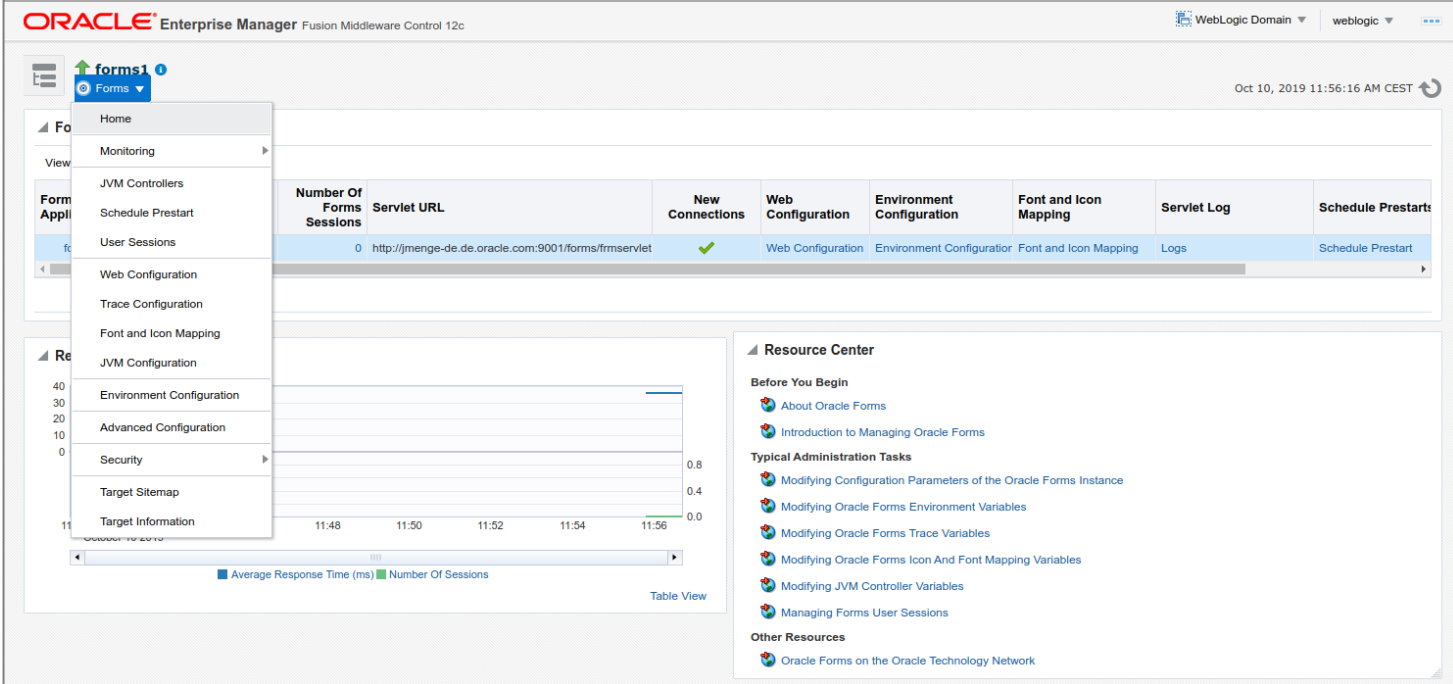
- Only future-proof option for the client runtime
 - Oracle Support Note 2310266.1

"On a case by case basis, Java versions beyond v9 (e.g. 18.x and newer) will be considered for certification with Forms 12+, but only for use with the Forms 12.x Standalone Launcher (FSAL)."
 - Platform-specific (version depends from server OS)
- Uses command *java* or *javaw* to start the launcher

```
java -jar frmsal.jar -url "http://jmenge-de.de.oracle.com:9001/forms/frmservlet?config=standaloneapp" -t 10000
```
- Support for SSO is available since 12.2.1.4

Configuration of Oracle Forms

- Configuration files: *formsweb.cfg*, *default.env*, *registry.dat*, ...
- GUI in FMW Control (recommended)



Number Of Forms Sessions	Servlet URL	New Connections	Web Configuration	Environment Configuration	Font and Icon Mapping	Servlet Log	Schedule Prestart
0	http://jmenge-de.de.oracle.com:9001/forms/frmservlet	✓	Web Configuration	Environment Configuration	Font and Icon Mapping	Logs	Schedule Prestart

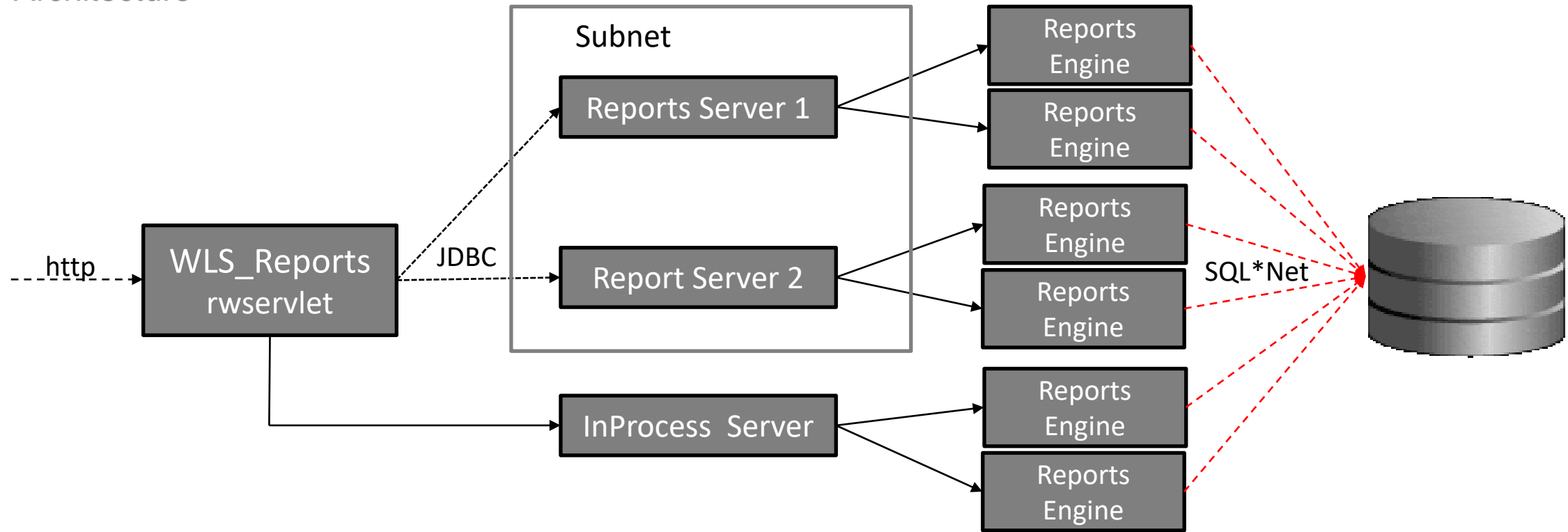


Manual editing files

- Stop WLS_FORMS and Admin Server before editing files

Oracle Reports

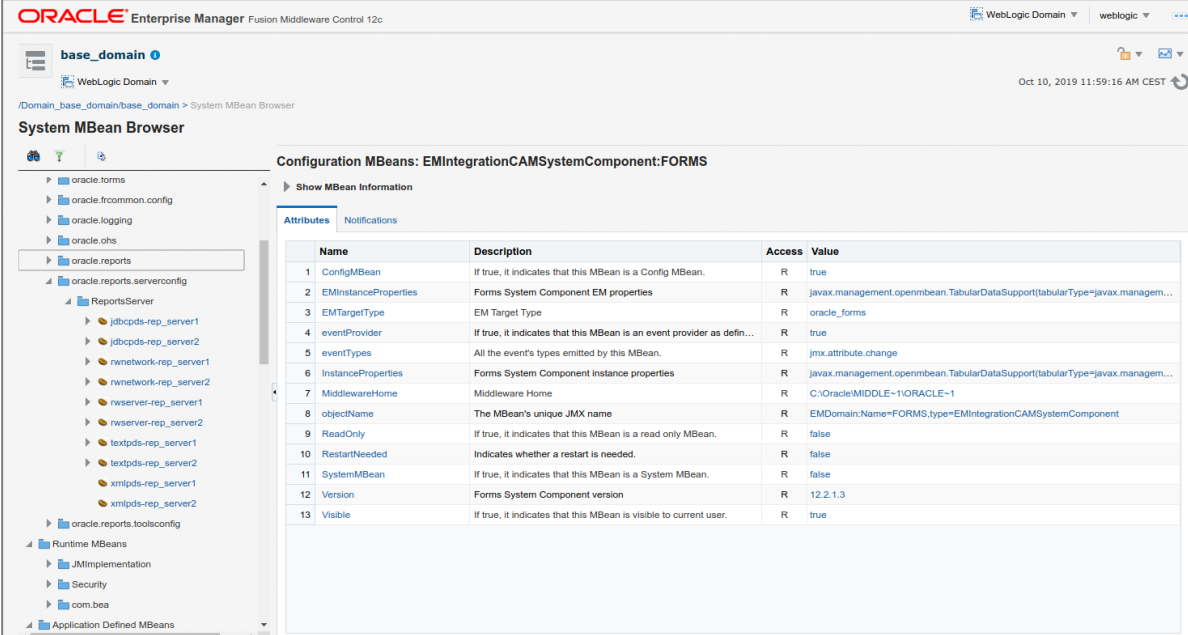
Architecture



- Find all running reports servers in subnet: `rwdiag.sh -findAll`
- Do you want to have reports server with same name in subnet (test, prod)
=> use `rwnetwork.conf` to define different network ports for broadcasting

Configuration of Oracle Reports

- Configuration files: *rwervlet.properties*, *rwserver.conf*, *rwnetwork.conf*, ...
- Use System MBean browser in FMW Control (recommended)
 - Difficult to find the correct MBean
 - Takes a lot of time



The screenshot shows the Oracle Enterprise Manager Fusion Middleware Control 12c interface. The left pane displays the 'System MBean Browser' tree, with 'oracle.reports.serverconfig' expanded. The right pane shows the 'Configuration MBeans: EMIntegrationCAMSystemComponent:FORMS' table.

Name	Description	Access	Value
1 ConfigMBean	If true, it indicates that this MBean is a Config MBean.	R	true
2 EMInstanceProperties	Forms System Component EM properties	R	javax.management.openmbean.TabularDataSupport(tabularType=javax.managem...
3 EMTargetType	EM Target Type	R	oracle_forms
4 eventProvider	If true, it indicates that this MBean is an event provider as defin...	R	true
5 eventTypes	All the event's types emitted by this MBean.	R	jmx.attribute.change
6 InstanceProperties	Forms System Component instance properties	R	javax.management.openmbean.TabularDataSupport(tabularType=javax.managem...
7 MiddlewareHome	Middleware Home	R	C:\Oracle\MIDDLE-1\ORACLE-1
8 objectName	The MBean's unique JMX name	R	EMDomain.Name=FORMS.type=EMIntegrationCAMSystemComponent
9 ReadOnly	If true, it indicates that this MBean is a read only MBean.	R	false
10 RestartNeeded	Indicates whether a restart is needed.	R	false
11 SystemMBean	If true, it indicates that this MBean is a System MBean.	R	false
12 Version	Forms System Component version	R	12.2.1.3
13 Visible	If true, it indicates that this MBean is visible to current user.	R	true



Manual editing files

- Stop WLS_REPORTS and Admin Server before editing files
- Admin Server distributes config files when servers are running on different machines

- Use *setUserOverrides.sh* to modify domain settings like JVM memory
- Startup / Shutdown
 - Option 1: Shipped Oracle scripts in \$DOMAIN_HOME/bin
 - Pay attention that scripts don't outpace each other
 - Option 2: Custom WLST scripts
 - Optimized and tailored to your needs
 - Can be more or less generic
 - Include exception handling
- Connect startup/shutdown scripts with system service for automation (*systemd*)



Node Manager Service for MS Windows

- Pay attention to the OS user the service is associated with

Monitoring of Log Files

- Monitoring of Log Files
 - Detect problems (technical issues or security threats)
 - Control the size
- Directories
 - <domain_home>/servers/<server>/logs
 - <domain_home>/system_components/<system_component>/..
- Activities
 - Log Settings in WLS Console: Environment => Server => Logs
 - Log Analysis in FMW Control (EM): Domain => Log Messages
 - Package logrotate (Linux)
 - OS Monitoring

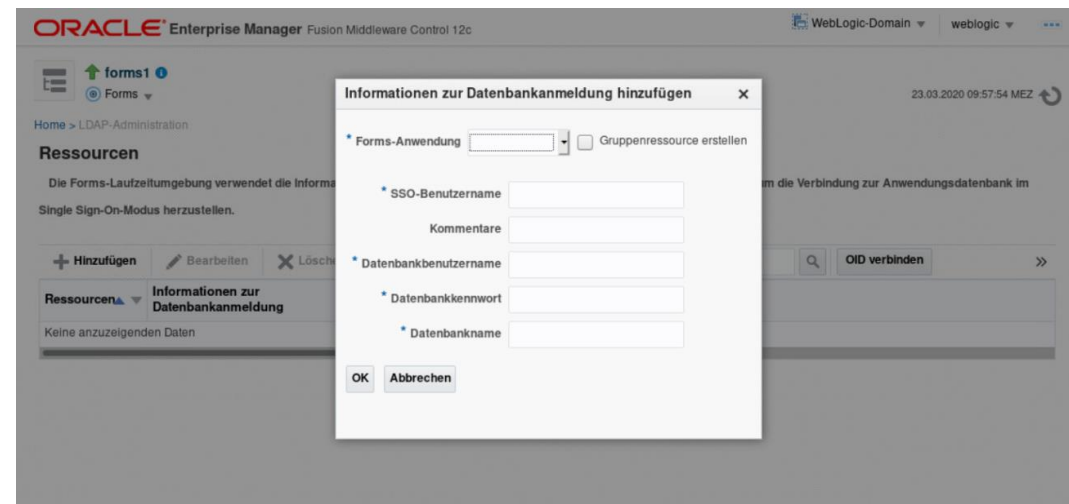
Single Sign-On (SSO)

Forms & Reports

- Authentication against MS ActiveDirectory
 - Direct
 - Synchronized with OID by Directory Integration Program (DIP)
- SSO integration for Oracle Forms and Reports is quite complex and requires several configuration steps
 - Register WebGate agent at Oracle Access Manager by using FormsHelper script (enable_sso)
 - Configure protected resources (URL) for Forms and Reports in Oracle Access Manager
 - Associate Forms with Oracle Internet Directory (OID)
 - Associate Reports Server with Oracle Internet Directory (OID)
 - Add Forms and Reports application to OID group *oraclemanageextendedpreferences*
 - Create Job status repository in the database (recommended)

Why do we still need Oracle Internet Directory ?

- Connect Information for Oracle Forms (RAD) can be stored in
 - Oracle Internet Directory (OID)
 - or
 - OPSS Schema of FMW Repository



- Unfortunately we cannot switch off OID because Oracle Reports does not support OPSS

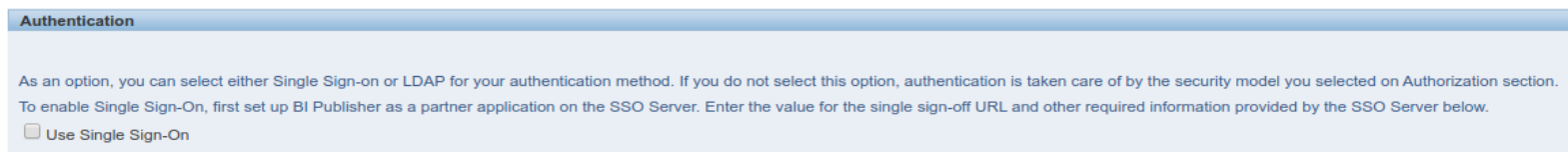
Single Sign-On (SSO)

BI Publisher

- SSO integration for BI Publisher is much easier because of the modern modular architecture but ...
 - ... only if you don't leave the correct way
 - If security model is "Fusion Middleware" (default) all the security stuff is handled by WLS !
 - Configure protected resources (URL) for BI Publisher in OAM
 - Configure security provider in WLS
 - Define groups in OID and associate these groups with application roles in Enterprise Manager (Admin, Content Author, Consumer)



Do not set the SSO flag in BI Publisher !

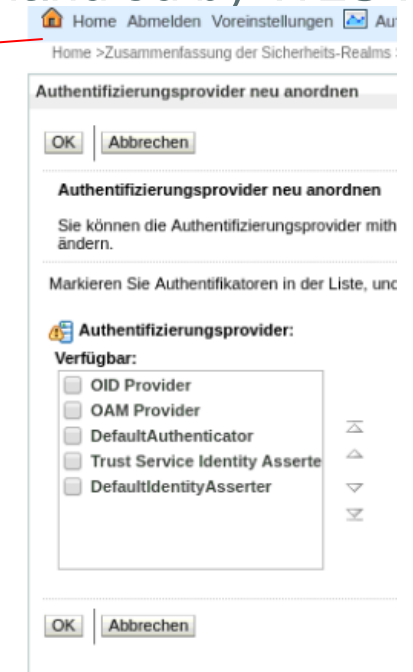


Authentication

As an option, you can select either Single Sign-on or LDAP for your authentication method. If you do not select this option, authentication is taken care of by the security model you selected on Authorization section.

To enable Single Sign-On, first set up BI Publisher as a partner application on the SSO Server. Enter the value for the single sign-off URL and other required information provided by the SSO Server below.

☐ Use Single Sign-On



Home Abmelden Voreinstellungen Au

Home > Zusammenfassung der Sicherheits-Realm:

Authentifizierungsprovider neu anordnen

OK Abbrechen

Authentifizierungsprovider neu anordnen

Sie können die Authentifizierungsprovider mith ändern.

Markieren Sie Authentifikatoren in der Liste, unc

Authentifizierungsprovider:

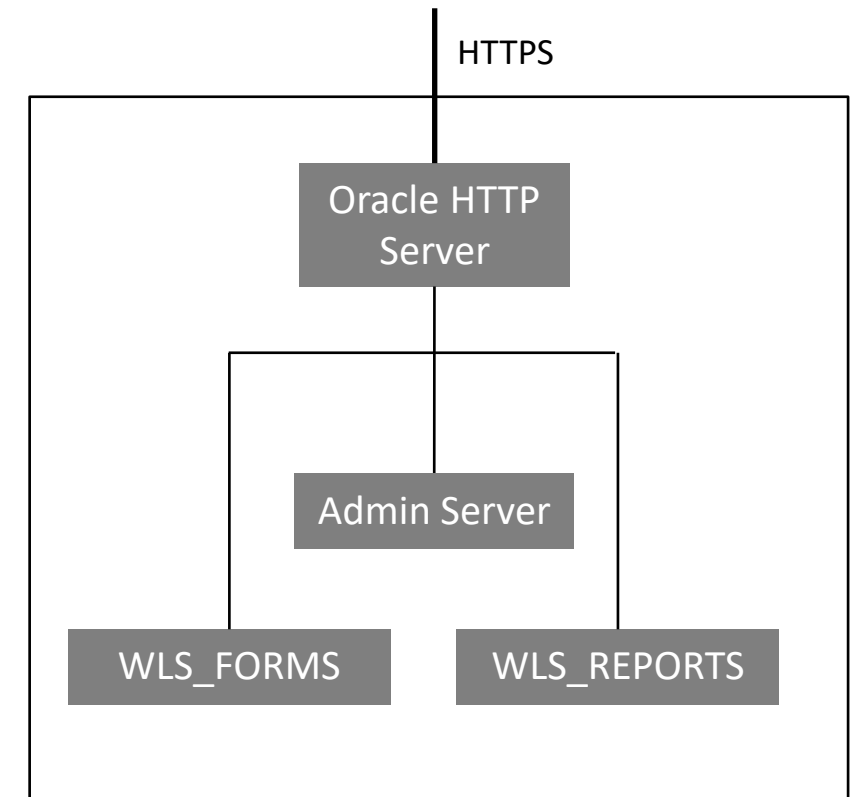
Verfügbar:


- ☐ OID Provider
- ☐ OAM Provider
- ☐ DefaultAuthenticator
- ☐ Trust Service Identity Asserter
- ☐ DefaultIdentityAsserter

OK Abbrechen

Securing the Network Traffic (SSL)

- SSL Endpoint
 - Load Balancer
 - Apache HTTP Server / **Oracle HTTP Server**
 - Oracle WLS
- Securing Oracle HTTP Server
 - Regular or self-signed certificates required
 - Credentials and keys are stored in Oracle Wallet
 - Generate certificate request with ***openssl***
 - Import certificates and key with ***orapki***



- Server-side Java (when Java > 1.8.161 is used)
 - Reports Server continuously crashes and will be restarted by Node Manager
 - Download Java Policy files

<http://www.oracle.com/technetwork/java/javase/downloads/jce8-download-2133166.html>
 - Replace Java Policy Files at different locations
- Client-side Java

Checking Compliance with License Restrictions

- Compliance with WebLogic Basic License
 - Run script *wls-basic-measurement.py* from Oracle Support (Note 885587.1)
 - Change referred properties using System MBean Browser

Patching Fusion Middleware

- Oracle Critical Patch Updates (CPU)
 - Find most critical and relevant CVEs (Oracle CPU Advisory)

CVE#	Product	Component	Protocol	Remote Exploit without Auth.?	CVSS VERSION 3.1 RISK (see Risk Matrix Definitions)									Supported Versions Affected	Notes
					Base Score	Attack Vector	Attack Complex	Privs Req'd	User Interact	Scope	Confidentiality	Integrity	Availability		
CVE-2021-42575	Oracle Middleware Common Libraries and Tools	Third Party Patch (AntiSamy)	HTTP	Yes	9.8	Network	Low	None	None	Un-changed	High	High	High	12.2.1.3.0, 12.2.1.4.0	

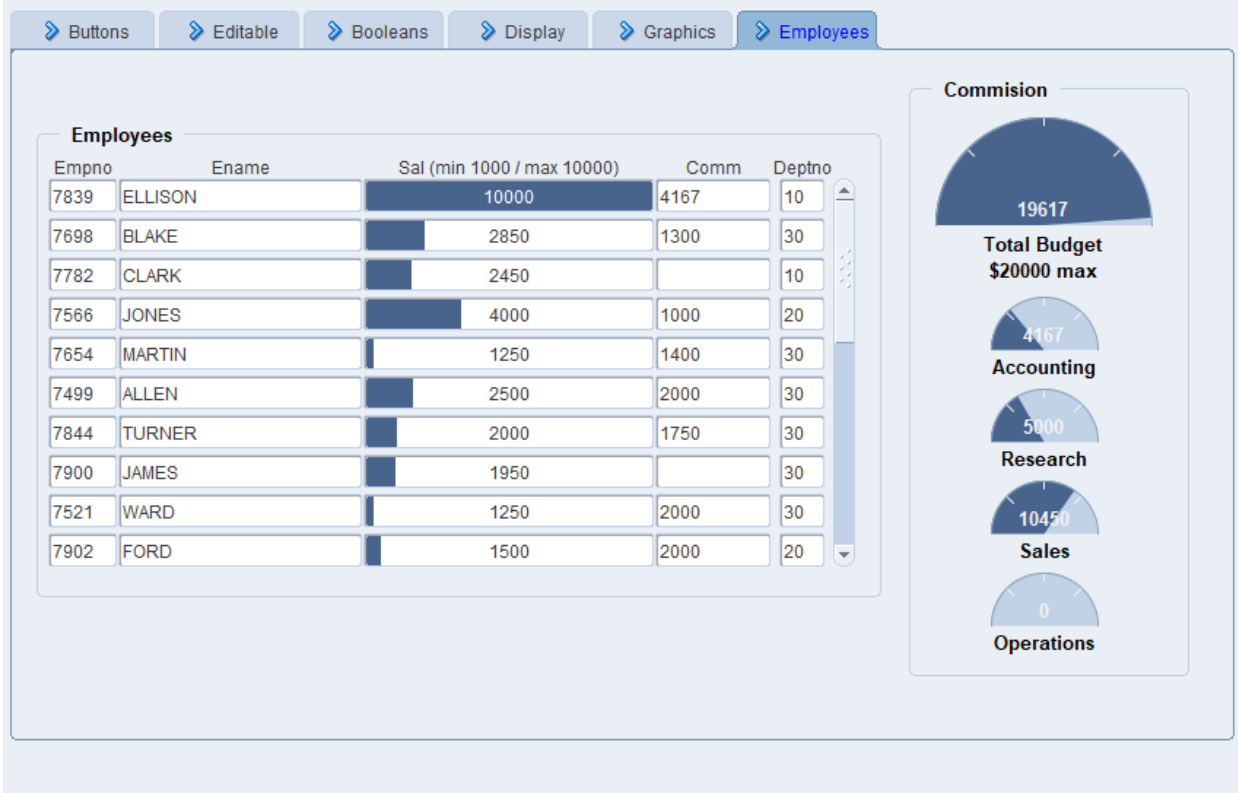
- Find the adequate (bundled) Patches
- Apply these Patches to Development Environment
- Test the patched Environment
- Apply these Patches to all other Environments

- Oracle Forms Quarterly Patch Release (QPR) – Doc ID 2834458.2
 - Includes bug fixes between main Releases of Forms
 - Should be applied to the Runtime Servers and to Development Machines
 - Nearly all jar-Files will be replaced => *frmsal.jar* has to be distributed to all Clients !!!!

Oracle Forms 12.2.1.19

- Oracle Forms 12.2.1.19
 - Based on Required SupportFiles 19.14.0
 - Improved Forms Standalone Launcher (FSAL)
 - Support for Identity CloudService (IDCS)
 - Improvement for Forms in Cloud Marketplace
 - Translation Utility

- Oracle Forms 14
 - New Types of Display Items
 - Autocomplete Item
 - Item with included LOV Button
 - Rounded Buttons
 - Buttons with Rollover Event
 - Prompts inside the Field
 -



The screenshot displays an Oracle Forms application with a menu bar at the top containing: Buttons, Editable, Booleans, Display, Graphics, and Employees (which is currently selected). The main content area is divided into two sections. On the left, a table titled 'Employees' lists employee data. On the right, a section titled 'Commission' displays summary statistics using gauge-like visualizations.

Empno	Ename	Sal (min 1000 / max 10000)	Comm	Deptno
7839	ELLISON	10000	4167	10
7698	BLAKE	2850	1300	30
7782	CLARK	2450		10
7566	JONES	4000	1000	20
7654	MARTIN	1250	1400	30
7499	ALLEN	2500	2000	30
7844	TURNER	2000	1750	30
7900	JAMES	1950		30
7521	WARD	1250	2000	30
7902	FORD	1500	2000	20

Commission Summary:

- Total Budget:** \$20000 max (Gauge value: 19617)
- Accounting:** 4167 (Gauge value: 4167)
- Research:** 5000 (Gauge value: 5000)
- Sales:** 10450 (Gauge value: 10450)
- Operations:** 0 (Gauge value: 0)

Question & Answers

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