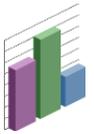




This guide explains how to scale your deployment of Oracle Business Intelligence across the same or multiple computers. It describes how to set up shared files and directories and how to use Fusion Middleware Control to scale system components.

For more detailed information about these and other tasks, see the [Oracle BI EE documentation](#) on Oracle Technology Network.



Understanding Scaling

You can expand or reduce the capacity of the system by adjusting the number of processes that are available to the cluster. A **cluster** consists of multiple server instances that run simultaneously and work together to provide increased scalability and reliability. **Scaling** is the process of expanding or reducing the capacity of the system by changing the number of processes that are available to service requests from Oracle Business Intelligence clients. Scaling is also a critical part of configuring a deployment for high availability.

You can:

- Scale horizontally, which involves adding more computers to the environment.
- Scale vertically, which involves adding more Oracle Business Intelligence components to the same computer, to make increased use of the hardware resources on that computer.
- Scale both Oracle Business Intelligence Java components and system components.

Determining When to Scale and What Processes to Scale

Use these guidelines to determine when to scale and what processes to scale:

- Scale out system components and Managed Servers based on observed load. You can have zero or more of each component type on a given computer in the deployment.

Use the performance metrics that are provided in Fusion Middleware Control to monitor process state and to determine when you must increase capacity to improve performance.

Note: You do not need to scale any configured HTTP servers along with either the Managed Servers or system components. HTTP server configuration is independent of the number of processes that you run.

- Do not remove individual Java components, because many perform essential services for the system. Keep a full set of Java components on each Managed Server. Any unused components should not have a significant performance impact.
- Ensure that you run one Managed Server on each computer in the deployment. The Oracle Business Intelligence installer automatically provisions one Managed Server. Do not disable or remove it. It is not necessary to run multiple Managed Servers on a given computer.

Scaling Out Vertically and Horizontally

Task Summary for Vertical Scale-Out

- Configure shared files and directories for the Oracle BI repository, Oracle BI Presentation Catalog, and global cache (described in this guide)
- Scale out the necessary Oracle Business Intelligence system components (described in this guide)

Task Summary for Horizontal Scale-Out

- Configure shared files and directories for the Oracle BI repository, Oracle BI Presentation Catalog, and global cache (described in this guide)
- Run the Oracle Business Intelligence installer on the new host and select the Enterprise Install option (described in "Enterprise Install to Scale Out Existing Installations" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*)
- Scale out the Oracle Business Intelligence system components on the new host (described in this guide)
- Configure an HTTP server with a load balancer to distribute requests across multiple Managed Servers (described in *Oracle Fusion Middleware Using Web Server Plug-Ins with Oracle WebLogic Server* and "Load Balancing in a Cluster" in *Oracle Fusion Middleware Using Clusters for Oracle WebLogic Server*)

Configuring Shared Files and Directories

When you have multiple instances of a given Oracle Business Intelligence component, you can share certain files and directories on a shared storage device (such as NAS or SAN) to simplify management of your system. It is recommended that you host the Oracle BI repository (RPD file), Oracle BI Presentation Catalog, and global cache on shared storage before you scale out Oracle Business Intelligence components.

To configure shared files and directories, you:

- Ensure that shared network files are accessible in Windows environments
- Upload and share the Oracle BI repository
- Share the Oracle BI Presentation Catalog
- Set up the global cache

Ensuring that Shared Network Files Are Accessible in Windows Environments

In Windows environments, shared storage is typically specified using Universal Naming Convention (UNC). UNC is a PC format for specifying locations of resources on a local area network. UNC uses the following format:

```
\\server_name\shared_resource_path_name
```

In addition, you must use named users to run OPMN processes in Windows environments so that the shared network files are accessible.

To run OPMN processes using a named user:

1. Open the Services dialog. For example, select **Start, Programs, Administrative Tools, Services**.
2. Right-click **OracleProcessManager_instance** and select **Properties**.
3. Select the **Log On** tab.
4. Select **This account** and enter the user name and password.
5. Click **OK**.

Uploading and Sharing the Oracle BI Repository

It is recommended that you configure a repository publishing directory so that the repository can be shared by all Oracle BI Servers participating in a cluster. This directory holds the master copies of repositories that are edited in online mode. The clustered Oracle BI Servers examine this directory upon startup for any repository changes.

1. Create a shared directory for the repository publishing directory. The Master BI Server must have read and write access to this directory. All other Oracle BI Servers must have read access.
2. Use the Repository tab of the Deployment page in Fusion Middleware Control (see below) to designate the shared location for the Oracle BI repository. For more information, see *Modifying Commonly Changed Settings in Oracle BI Enterprise Edition Quick Start Guide*.

The screenshot shows the Oracle BI Deployment console with the following elements:

- Navigation Tabs:** Overview, Availability, Capacity Management, Diagnostics, Security, **Deployment** (selected), Presentation, **Repository** (selected), Scheduler, Marketing, Mail.
- Section Header:** BI Server Repository
- Description:** This section shows the current installed RPD. You can use this section to configure a shared RPD location.
- Default RPD:** SampleAppLite_BI0001
- Share Repository:** Share Repository
- RPD Publishing Directory:** (Empty text field)
- Upload BI Server Repository:** Use this section to upload a new RPD and its password to your BI Server domain. You may also use this section to re-enter the password if a mistake was made on a previous upload.
 - Repository File:** (Empty text field)
 - Repository Password:** (Empty text field)
 - Confirm Password:** (Empty text field)
- BI Presentation Catalog:** This section shows the current location of the catalog used by Presentation Services. Use this section to change the location of the catalog, or to share the catalog by pointing to a shared location.
 - Catalog Location:** \$ORACLE_INSTANCE/bifoundation/OracleBIPresentationServicesComponent/\$COMPONENT_NAME/catalog/SampleAppLite
- Apply Button:** Located in the top right corner of the main configuration area.

Sharing the Oracle BI Presentation Catalog

It is recommended that you configure a shared directory for the Oracle BI Presentation Catalog so that it can be shared by all Presentation Services components in a cluster. Because the Oracle BI Presentation Catalog consists of a large number of heavily accessed small files, there are two important considerations for the shared file system:

- **File Limits:** The Oracle BI Presentation Catalog can consist of thousands of files. In some cases, this might exceed file limits for shared file systems. Check the storage vendor documentation for instructions on extending the file limit.
- **Snapshots:** Backup activity such as snapshots might affect the performance of Oracle BI Presentation Catalog files, which are small, dynamic files. Ensure snapshot activity is at a reasonable level that maximizes performance without impacting availability.

Configuring the Global Cache

The global cache is a query cache that is shared by all Oracle BI Servers participating in a cluster.

It is recommended that you configure the global cache so that cache seeding and purging events can be shared by all Oracle BI Servers participating in a cluster.

1. Create a network share for the Oracle BI Presentation Catalog. All Presentation Services components in the cluster must have read and write access to this share.
2. Place the catalog on the network share.
3. Use the Repository tab of the Deployment page in Fusion Middleware Control to change the location of the Oracle BI Presentation Catalog to the shared location. For more information, see *Modifying Commonly Changed Settings in Oracle BI Enterprise Edition Quick Start Guide*.

1. Create a shared directory for the global cache. All Oracle BI Servers must have read and write access to this directory.
2. Use the Performance tab of the Capacity Management page in Fusion Middleware Control to set the **Global cache path** and **Global cache size** options. For more information, see *Monitoring and Optimizing Performance of Oracle BI Enterprise Edition Quick Start Guide*.

The screenshot shows the 'Performance Options' configuration page in Fusion Middleware Control. The page is divided into several sections for tuning performance:

- Enable BI Server Cache:** Includes a checkbox for 'Cache enabled' (checked), 'Maximum cache entry size' (20 MB), and 'Maximum cache entries' (1000).
- Global Cache:** Includes 'Global cache path' (text input) and 'Global cache size' (0 MB).
- RPD Updates:** Includes a checkbox for 'Disallow RPD Updates' (unchecked).
- User Session Expiry:** Includes 'Expiry Time' (210 Minutes).
- Maximum Number of Rows Processed when Rendering a Table View:** Includes 'Number Of Rows' (65000).
- Maximum Number of Rows to Download:** Includes 'Number Of Rows' (2500).
- Maximum Number of Rows Per Page to Include:** Includes 'Number Of Rows' (75).

Scaling System Components Using Fusion Middleware Control

You can scale the system components both vertically (on the same computer) or horizontally (on multiple computers).

Keep in mind that the number of servers and hosts that you define has an impact on the amount of disk space that is required for the Oracle Business Intelligence installation. Ensure that you monitor the disk space on the systems when scaling out the environment. Additional log file activity also results when you scale out the environment.

To scale Oracle Business Intelligence system components:

1. Start Fusion Middleware Control and go to the Business Intelligence Overview page.
2. Display the Scalability tab of the Capacity Management page.
To find out more about the settings on this page, click the **Help** button.
3. Click **Lock and Edit Configuration**.
4. Change the number of **BI Servers**, **Presentation Servers**, or **JavaHosts** using the arrow keys.

If you have just scaled out the Oracle BI system on a new host using the Enterprise Install option or the Configuration Assistant, then the number of system components initially configured on that host is zero. Add system components on the new host to complete the horizontal scale-out operation.

To vertically scale the system components, increment the number of each component to be greater than 0 for a given host.

5. A default port range is assigned automatically for use by the components within the given Oracle instance. Note that Oracle BI Scheduler and Cluster Controller component processes in this instance are also assigned ports within this range, in addition to the BI Server, Presentation Services, and JavaHost component processes.

Typically, you can keep the default port range. If necessary, enter a different range of ports available using the **Port Range From** and **Port Range To** arrows, or enter a value directly.

6. Optionally, for **Listen Address**, you can enter the DNS name or IP address for the components in the given Oracle instance to use to listen for incoming connections. Typically, you can keep this element blank (the default value) to indicate that the components are to listen on *all* available local interfaces.
7. Click **Apply**, then click **Activate Changes**.
8. Return to the Business Intelligence Overview page and click **Restart**.

The changes are automatically written to the corresponding configuration files, and the new processes join the cluster.

Overview Availability **Capacity Management** Diagnostics Security Deployment
Metrics **Scalability** Performance

Scalability

This page shows whether or not this instance is scaled out.

System Components

Edit the table below to increase/decrease/modify the system components for each instance.

Host	Oracle Instance	BI Servers	Presentation Servers	JavaHosts	Port Range From	Port Range To	Listen Address
*****.oracle.com	instance4	1	1	1	9700	9810	

JEE Components

By default JEE components are symmetrically distributed across every BI Instance in the domain.

- [Go to the Oracle WebLogic Server Administration Console to configure and manage JEE components.](#)
- [Go to the Oracle WebLogic Server Administration Console Servers page to manage JEE vertical scaleout.](#)