Oracle® Process Manager and Notification Server

Administrator's Guide

10*g* (9.0.4)

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Oracle Process Manager and Notification Server Administrator's Guide, 10*g* (9.0.4)

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Preface

This guide describes how to administer Oracle Process Manager and Notification Server (OPMN) in order to manage Oracle Application Server components.

This preface contains these topics:

- Audience
- Documentation Accessibility
- Organization
- Related Documentation
- Conventions

Audience

The *Oracle Process Manager and Notification Server Administrator's Guide* is intended for administrators of Oracle Application Server.

Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Standards will continue to evolve over time, and Oracle Corporation is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For additional information, visit the Oracle Accessibility Program Web site at:

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Organization

This document contains:

Chapter 1, "What's New in OPMN?"

This chapter describes new OPMN features available in Oracle Application Server 10*g* (9.0.4).

Chapter 2, "OPMN: Overview"

This chapter provides an overview of the OPMN.

Chapter 3, "Using OPMN"

This chapter provides command-line examples on how to use OPMN.

Chapter 4, "opmn.xml Common Configuration"

This chapter provides common configuration examples, and descriptions of elements and attributes for the `opmn.xml` file.

Chapter 5, "Configuring Oracle HTTP Server"

This chapter describes Oracle HTTP Server configuration in the `opmn.xml` file.

Chapter 6, "Configuring OC4J"

This chapter describes Oracle Application Server Containers for J2EE (OC4J) configuration in the `opmn.xml` file.

Chapter 7, "Configuring OracleAS Web Cache"

This chapter describes Oracle Application Server Web Cache (OracleAS Web Cache) configuration in the `opmn.xml` file.

Chapter 8, "Configuring Oracle Internet Directory"

This chapter describes Oracle Internet Directory configuration in the `opmn.xml` file.

Chapter 9, "Configuring OracleAS Port Tunnel"

This chapter describes Oracle Application Server Port Tunnel (OracleAS Port Tunnel) configuration in the `opmn.xml` file.

Chapter 10, "Configuring OracleAS Wireless"

This chapter describes Oracle Application Server Wireless (OracleAS Wireless) configuration in the `opmn.xml` file.

Chapter 11, "Configuring OracleAS ProcessConnect"

This chapter describes Oracle Application Server Process Connect (OracleAS ProcessConnect) configuration in the `opmn.xml` file.

Chapter 12, "Configuring OracleAS Reports Services"

This chapter describes Oracle Application Server Reports Services (OracleAS Reports Services) configuration in the `opmn.xml` file.

Chapter 13, "Configuring OracleAS Discoverer"

This chapter describes Oracle Application Server Discoverer (OracleAS Discoverer) configuration in the `opmn.xml` file.

Chapter 14, "Configuring Log Loader"

This chapter describes Log Loader configuration in the `opmn.xml` file.

Chapter 15, "Configuring DCM Daemon"

This chapter describes DCM Daemon configuration in the `opmn.xml` file.

Chapter 16, "Configuring Custom Process"

This chapter describes custom process configuration in the `opmn.xml` file.

Chapter 17, "OPMN Troubleshooting"

This chapter describes some troubleshooting tips for OPMN.

Related Documentation

For more information, see these Oracle resources:

- Oracle Application Server Documentation Library
- Oracle Application Server Platform-Specific Documentation on Oracle Application Server Disk 1

Printed documentation is available for sale in the Oracle Store at

`http://oraclestore.oracle.com/`

To download free release notes, installation documentation, white papers, or other collateral, please visit the Oracle Technology Network (OTN). You must register online before using OTN; registration is free and can be done at

`http://otn.oracle.com/membership/`

If you already have a username and password for OTN, then you can go directly to the documentation section of the OTN Web site at

`http://otn.oracle.com/documentation/`

Conventions

This section describes the conventions used in the text and code examples of this documentation set. It describes:

- Conventions in Text
- Conventions in Code Examples
- Conventions for Windows Operating Systems

Conventions in Text

We use various conventions in text to help you more quickly identify special terms. The following table describes those conventions and provides examples of their use.

Convention	Meaning	Example
Bold	Bold typeface indicates terms that are defined in the text or terms that appear in a glossary, or both.	When you specify this clause, you create an **index-organized table**.
Italics	Italic typeface indicates book titles or emphasis.	*Oracle Application Server 10g Concepts* Ensure that the recovery catalog and target database do *not* reside on the same disk.
`UPPERCASE monospace (fixed-width) font`	Uppercase monospace typeface indicates elements supplied by the system. Such elements include parameters, privileges, datatypes, RMAN keywords, SQL keywords, SQL*Plus or utility commands, packages and methods, as well as system-supplied column names, database objects and structures, usernames, and roles.	You can specify this clause only for a `NUMBER` column. You can back up the database by using the `BACKUP` command. Query the `TABLE_NAME` column in the `USER_TABLES` data dictionary view. Use the `DBMS_STATS.GENERATE_STATS` procedure.

Convention	Meaning	Example
`lowercase monospace (fixed-width) font`	Lowercase monospace typeface indicates executables, filenames, directory names, and sample user-supplied elements. Such elements include computer and database names, net service names, and connect identifiers, as well as user-supplied database objects and structures, column names, packages and classes, usernames and roles, program units, and parameter values. **Note:** Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	Enter `sqlplus` to open SQL*Plus. The password is specified in the `orapwd` file. Back up the datafiles and control files in the `/disk1/oracle/dbs` directory. The `department_id`, `department_name`, and `location_id` columns are in the `hr.departments` table. Set the `QUERY_REWRITE_ENABLED` initialization parameter to `true`. Connect as `oe` user. The `JRepUtil` class implements these methods.
`lowercase italic monospace (fixed-width) font`	Lowercase italic monospace font represents placeholders or variables.	You can specify the *`parallel_clause`*. Run `U`*`old_release`*`.SQL` where *`old_release`* refers to the release you installed prior to upgrading.

Conventions in Code Examples

Code examples illustrate SQL, PL/SQL, SQL*Plus, or other command-line statements. They are displayed in a monospace (fixed-width) font and separated from normal text as shown in this example:

```
SELECT username FROM dba_users WHERE username = 'MIGRATE';
```

The following table describes typographic conventions used in code examples and provides examples of their use.

Convention	Meaning	Example
`[ ]`	Brackets enclose one or more optional items. Do not enter the brackets.	`DECIMAL (`*`digits`*` [ , `*`precision`*` ])`
`{ }`	Braces enclose two or more items, one of which is required. Do not enter the braces.	`{ENABLE | DISABLE}`
`|`	A vertical bar represents a choice of two or more options within brackets or braces. Enter one of the options. Do not enter the vertical bar.	`{ENABLE | DISABLE}` `[COMPRESS | NOCOMPRESS]`

Convention	Meaning	Example
. . .	Horizontal ellipsis points indicate either: ■ That we have omitted parts of the code that are not directly related to the example ■ That you can repeat a portion of the code	CREATE TABLE ... AS *subquery*; SELECT *col1*, *col2*, ... , *coln* FROM employees;
. . .	Vertical ellipsis points indicate that we have omitted several lines of code not directly related to the example.	SQL> SELECT NAME FROM V$DATAFILE; NAME ---------- /fsl/dbs/tbs_01.dbf /fs1/dbs/tbs_02.dbf . . . /fsl/dbs/tbs_09.dbf 9 rows selected.
Other notation	You must enter symbols other than brackets, braces, vertical bars, and ellipsis points as shown.	acctbal NUMBER(11,2); acct CONSTANT NUMBER(4) := 3;
Italics	Italicized text indicates placeholders or variables for which you must supply particular values.	CONNECT SYSTEM/*system_password* DB_NAME = *database_name*
UPPERCASE	Uppercase typeface indicates elements supplied by the system. We show these terms in uppercase in order to distinguish them from terms you define. Unless terms appear in brackets, enter them in the order and with the spelling shown. However, because these terms are not case sensitive, you can enter them in lowercase.	SELECT last_name, employee_id FROM employees; SELECT * FROM USER_TABLES; DROP TABLE hr.employees;
lowercase	Lowercase typeface indicates programmatic elements that you supply. For example, lowercase indicates names of tables, columns, or files. **Note:** Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	SELECT last_name, employee_id FROM employees; sqlplus hr/hr CREATE USER mjones IDENTIFIED BY ty3MU9;

Conventions for Windows Operating Systems

The following table describes conventions for Windows operating systems and provides examples of their use.

Convention	Meaning	Example
Choose Start >	How to start a program.	To start the Database Configuration Assistant, choose Start > Programs > Oracle - *HOME_NAME* > Configuration and Migration Tools > Database Configuration Assistant.
File and directory names	File and directory names are not case sensitive. The following special characters are not allowed: left angle bracket (<), right angle bracket (>), colon (:), double quotation marks ("), slash (/), pipe (|), and dash (-). The special character backslash (\) is treated as an element separator, even when it appears in quotes. If the file name begins with \\, then Windows assumes it uses the Universal Naming Convention.	`c:\winnt"\"system32 is the same as C:\WINNT\SYSTEM32`
`C:\>`	Represents the Windows command prompt of the current hard disk drive. The escape character in a command prompt is the caret (^). Your prompt reflects the subdirectory in which you are working. Referred to as the *command prompt* in this manual.	`C:\oracle\oradata>`
Special characters	The backslash (\) special character is sometimes required as an escape character for the double quotation mark (") special character at the Windows command prompt. Parentheses and the single quotation mark (') do not require an escape character. Refer to your Windows operating system documentation for more information on escape and special characters.	`C:\>exp scott/tiger TABLES=emp QUERY=\"WHERE job='SALESMAN' and sal<1600\"` `C:\>imp SYSTEM/`*`password`*` FROMUSER=scott TABLES=(emp, dept)`
HOME_NAME	Represents the Oracle home name. The home name can be up to 16 alphanumeric characters. The only special character allowed in the home name is the underscore.	`C:\> net start Oracle`*`HOME_NAME`*`TNSListener`

Convention	Meaning	Example
ORACLE_HOME and *ORACLE_BASE*	In releases prior to Oracle8*i* release 8.1.3, when you installed Oracle components, all subdirectories were located under a top level *ORACLE_HOME* directory. For Windows NT, the default location was `C:\orant`. This release complies with Optimal Flexible Architecture (OFA) guidelines. All subdirectories are not under a top level *ORACLE_HOME* directory. There is a top level directory called *ORACLE_BASE* that by default is `C:\oracle`. If you install the latest Oracle release on a computer with no other Oracle software installed, then the default setting for the first Oracle home directory is `C:\oracle\ora`*nn*, where *nn* is the latest release number. The Oracle home directory is located directly under *ORACLE_BASE*. All directory path examples in this guide follow OFA conventions. Refer to *Oracle9i Database Getting Starting for Windows* for additional information about OFA compliances and for information about installing Oracle products in non-OFA compliant directories.	Go to the *ORACLE_BASE*`\`*ORACLE_HOME*`\rdbms\admin` directory.

1

What's New in OPMN?

This chapter describes the new features of OPMN in Oracle Application Server. OPMN allows you to manage Oracle Application Server components.

This chapter includes the following topics:

- Additional Oracle Application Server Component Management
- New Commands
- Start Order Dependencies
- Event Scripts
- Improved Monitoring
- Operating System-Level Statistics
- Changes to opmn.xml
- DCM

1.1 Additional Oracle Application Server Component Management

In 10*g* (9.0.4), OPMN allows you to manage additional Oracle Application Server components when compared to Oracle9*i* Application Server (Oracle9*i*AS) Release 2 (9.0.2 and 9.0.3).

Table 1–1 shows the additional Oracle Application Server components managed by OPMN in 10*g* (9.0.4):

Table 1–1 Oracle Application Server Component Management

	OPMN Management	
Oracle Application Server Component	**Release 2 (9.0.2 and 9.0.3)**	**10*g* (9.0.4)**
Oracle HTTP Server	**YES**	**YES**
OC4J	**YES**	**YES**
Distributed Configuration Management (DCM) daemon (server)		**YES**
OracleAS Log Loader		**YES**
Oracle Internet Directory		**YES**
OracleAS Port Tunnel		**YES**
OracleAS Web Cache		**YES**
OracleAS Discoverer		**YES**
OracleAS Wireless		**YES**
OracleAS Reports Services		**YES**
OracleAS ProcessConnect		**YES**

OPMN explicitly manages the listed10*g* (9.0.4) components. OPMN also manages other Oracle Application Server components implicitly; the constituent parts of the implicit Oracle Application Server components are managed by OPMN as part of one or more other Oracle Application Server components. For example, Oracle Application Server Portal while not explicitly managed by OPMN is implicitly managed because it is operational using OC4J and Oracle HTTP Server.

The following components are implicitly managed by OPMN:

- Oracle Business Components for Java (BC4J)
- Oracle Application Server Forms Services
- Oracle Application Server Single Sign-On
- Oracle HTTP Server Adapter of Oracle Application Server InterConnect
- Oracle Distributed Authoring and Versioning (OraDAV)
- Oracle Personalization Server
- Oracle Application Server Portal
- Oracle Application Server SOAP
- Oracle Syndication Server
- Oracle Application Server UDDI Registry Server
- Oracle Ultra Search
- Oracle Application Server TopLink

1.2 New Commands

`opmnctl` is the recommended command-line tool for starting and stopping Oracle Application Server components. `opmnctl` is the centralized way to control and monitor Oracle Application Server components from the command line. You can use `opmnctl` to execute control and monitoring commands across multiple Oracle Application Server instances simultaneously.

For Oracle9*i*AS Release 2 (9.0.2 and 9.0.3), command-line start and stop was accomplished using `dcmctl` and a number of component-specific tools, such as `webcachectl` and `oidctl`.

In Oracle Application Server 10*g* (9.0.4), `opmnctl` is the supported tool for starting and stopping all components in an Oracle Application Server instance, with the exception of the Oracle Application Server Metadata Repository and the Oracle Enterprise Manager Application Server Control (Application Server Control). `opmnctl` also allows you to perform operations on a specified Oracle Application Server instance on the application server farm, all instances in the farm, and all instances in a cluster using an optional parameter called `scope`. You can also use the `scope` option to control an individual Oracle Application Server process.

See Also:

- *Oracle Application Server 10g Administrator's Guide*
- Chapter 2, "OPMN: Overview"
- Chapter 3, "Using OPMN"

1.3 Start Order Dependencies

Some Oracle Application Server components and services require that other components and services are up and running before starting. OPMN is configured at installation with default start order dependencies, which allows you to start all of the components in an instance in the proper order with a single command. Refer to the *Oracle Application Server 10g Administrator's Guide* for more information on Oracle Application Server dependencies.

OPMN is configured with a set of dependencies but you can configure additional dependencies according to the environment

See Also: Chapter 2, "OPMN: Overview"

1.4 Event Scripts

You can configure OPMN to execute your own custom event scripts whenever a particular component starts, stops, or crashes. You can select from one or more of the following event types:

- **pre-start**: OPMN runs the pre-start script after any configured dependency checks have been performed and passed, and before the Oracle Application Server component starts. For example, the pre-start script can be used for site-specific initialization of external components.
- **pre-stop**: OPMN runs the pre-stop script before stopping a designated Oracle Application Server component. For example, the pre-stop script can be used for collecting Java Virtual Machine stack traces prior to stopping OC4J processes.
- **post-crash**: OPMN runs the post-crash script after the Oracle Application Server component has terminated unexpectedly. For example, a user could learn of component crashes by supplying a script or program to be executed at post-crash events which sends a notification to the administrator's pager."

See Also: Chapter 2, "OPMN: Overview"

1.5 Improved Monitoring

For Oracle9*i*AS Release 2 (9.0.2 and 9.0.3), OPMN provided several undocumented commands for obtaining information from OPMN about the Oracle Application Server components and processes it managed. However, the obtained information did not provide enough detail about the OPMN processes. Additionally, the obtained information was not in an standard format.

In Oracle Application Server 10*g* (9.0.4), OPMN has consolidated all the Release 2 (9.0.2 and 9.0.3) commands into a single command that provides more flexibility and returns information in a choice of standard formats.

The following are some examples of the process level information that can be obtained from OPMN:

- status information about multiple Oracle Application Server instances with a single command
- information on CPU and memory utilization
- what ports are in use by a process (for those Oracle Application Server components that can report them)
- operating system-level process identifiers (pid)
- the Oracle Application Server component to which a process belongs
- whether a process is up, down, or initializing

See Also: Chapter 2, "OPMN: Overview"

1.6 Operating System-Level Statistics

The Application Server Control reports CPU and memory utilization information for all of Oracle Application Server.

For Oracle9*i*AS Release 2 (9.0.2 and 9.03), Oracle Enterprise Manager obtained CPU and memory utilization statistics by identifying running components at the operating system level. The internal operating interfaces for obtaining such utilization statistics vary greatly from one operating system to another. Additionally, there was no easy and efficient way to do this within Java environment.

In Oracle Application Server 10*g* (9.0.4), OPMN tracks CPU and memory statistics and stores the information for all Oracle Application Server components directly launched by OPMN. Application Server Control obtains this information from OPMN by sending requests. OPMN obtains the operating system level process statistics in a very efficient manner thereby improving the time it takes to load Application Server Control pages.

1.7 Changes to opmn.xml

The `opmn.xml` file in Oracle Application Server 10*g* (9.0.4) has changed when compared to the previous Oracle9*i*AS Release 2 (9.0.2 and 9.0.3) versions.

For Oracle9*i*AS Release 2 (9.0.2 and 9.0.3), the `opmn.xml` file contained XML element names specific to each Oracle Application Server component; an Oracle HTTP Server element encloses the Oracle HTTP Server configuration, and an OC4J element encloses the OC4J configuration. Because of this requirement, Oracle9*i*AS Release 2 (9.0.2 and 9.0.3) `opmn.xml` lacked flexibility. Adding management of new Oracle9*i*AS components required changes to the XML schema and changes to the configuration processing code to look for the new elements.

In Oracle Application Server 10*g* (9.0.4), all component-specific element names have been removed. In addition, all component specific management code has been moved into Process Management (PM) modules which get loaded by OPMN at startup according to what has been specified in the **modules** section of `opmn.xml`.

Each level has a specific set of configurations. In addition, there are several configuration elements that are accepted at more than one level to provide the flexibility of applying a configuration across an entire Oracle Application Server component or just part of a component.

1.8 DCM

DCM manages the configuration of `opmn.xml` and manages configurations among application server instances that are associated with a common Infrastructure (members of an Oracle Application Server farm). It enables Oracle Application Server cluster-wide deployment so you can deploy an application to an entire cluster, or make a single host or instance configuration change applicable across all instances in a cluster. The Application Server Control uses DCM to make configuration changes and to propagate configuration changes and deployed applications across the cluster.

All command line process control should be through the OPMN `opmnctl` command. The DCM `dcmctl` command should be used only for configuration related operations and application deployment.

See Also: *Oracle Application Server 10g Administrator's Guide*

2

OPMN: Overview

This chapter provides an overview of OPMN for Oracle Application Server. It features the following topics:

- What is OPMN?
- How OPMN Works
- What Oracle Application Server Components Does OPMN Manage?
- OPMN Configuration Files
- opmnctl Command Location
- opmnctl Command Quick Reference
- opmnctl Detailed Command Description
- OPMN Log Files
- Security
- iHAT

2.1 What is OPMN?

OPMN is installed and configured with every Oracle Application Server installation type and is essential for running Oracle Application Server.

OPMN features the following functionality:

- Provides a command-line interface for process control and monitoring for single or multiple Oracle Application Server components and instances.
- Provides an integrated way to manage Oracle Application Server components.
- Enables management of Oracle Application Server subcomponents and sub-subcomponents.
- Channels all events from different Oracle Application Server component instances to all Oracle Application Server components that can utilize them.
- Solves interdependency issues between Oracle Application Server components by enabling you to start and stop components in order.
- Enables customizing of enterprise functionality by using event scripts.
- Enables gathering of host and Oracle Application Server process statistics and tasks.
- Provides automatic restart of Oracle Application Server processes when they become unresponsive, terminate unexpectedly, or become unreachable as determined by ping and notification operations.
- Provides automatic death detection of Oracle Application Server processes.
- Does not depend on any other Oracle Application Server component being up and running before it can be started and used.

The OPMN server should be started as soon as possible after turning on the host. OPMN must be running whenever OPMN-managed components are turned on or off.

Oracle Application Server components managed by OPMN should never be started or stopped manually. Do not use command line scripts or utilities from previous versions of Oracle Application Server for starting and stopping Oracle Application Server components. OPMN must be the last service turned off whenever you reboot or turn off your computer.

Use the Application Server Control and the `opmnctl` command line utility to start or stop Oracle Application Server components.

2.2 How OPMN Works

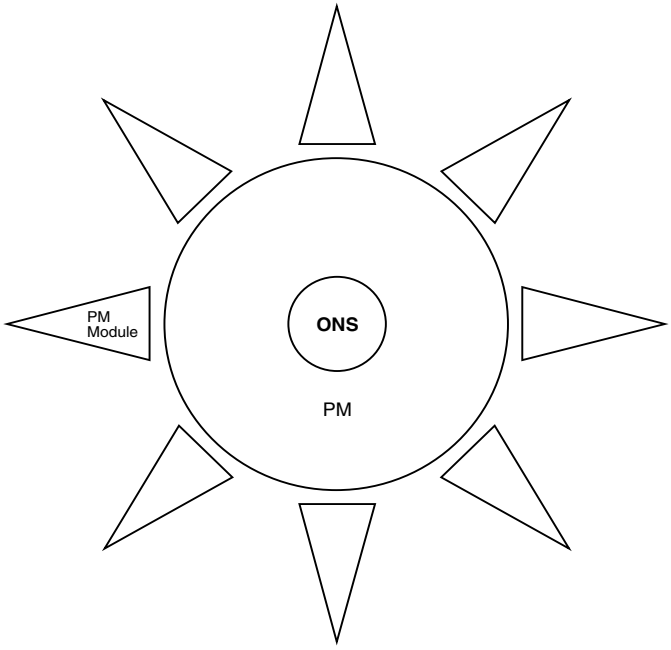
OPMN consists of a core grouping of three components that interpret and convey notification information sent between Oracle Application Server processes within the same or different OPMN servers.

The core of OPMN consists of the following three components:

- Oracle Notification Server
- Oracle Process Manager
- PM Modules

Figure 2–1 shows the architecture of the core of OPMN.

Figure 2–1 OPMN Architecture



2.2.1 Oracle Notification Server

Oracle Notification Server (ONS) is the transport mechanism for failure, recovery, startup, and other related notifications between components in Oracle Application Server. It operates according to a publish-subscribe model: an Oracle Application Server component receives a notification of a certain type per its subscription to ONS. When such a notification is published, ONS sends it to the appropriate subscribers.

2.2.2 Oracle Process Manager

Oracle Process Manager (PM) is the centralized process management mechanism in Oracle Application Server and is used to manage Oracle Application Server processes. It starts, stops, restarts, and detects death of these processes. The Oracle Application Server processes that PM is configured to manage are specified in the `opmn.xml` file.

The PM waits for a user command to start specific, or all processes. When a specific process or all processes are to be stopped, the PM receives a request as specified by the request parameters. OPMN is monitored by a shadow process that restarts upon request or after a catastrophic failure.

The PM uses the ONS to:

- detect that a process has completed initialization and is ready to receive requests
- determine what ports are in use
- obtain component specific runtime information

The Application Server Control also uses PM to manage processes.

2.2.3 PM Modules

The Oracle Process Manager Modules (PM Modules) implement Oracle Application Server component-specific process management functionality. The PM Modules pass notification information returned by other Oracle Application Server component PM Modules within the same or different OPMN servers.

The PM Modules:

- the Oracle Application Server component specific notification information is sent from running component processes.
- construct Oracle Application Server component specific control information.
- test responsiveness in an Oracle Application Server component specific manner to determine if a component is responding to requests.

2.3 What Oracle Application Server Components Does OPMN Manage?

OPMN manages all Oracle Application Server components except the OracleAS Metadata Repository or the Application Server Control.

You can also configure OPMN to manage other components; for example, OracleAS Port Tunnel, and custom processes.

Because of the extensible design of OPMN, add-on components are managed by OPMN without having to update OPMN itself.

See Also:

- Chapter 9, "Configuring OracleAS Port Tunnel"
- Chapter 16, "Configuring Custom Process"

2.3.1 Oracle Enterprise Manager Application Server Control

In addition to OPMN, you can also manage your enterprise using the Application Server Control. Application Server Control leverages the functionality of OPMN to manage your Oracle Application Server enterprise. Using a Web browser, Application Server Control provides a graphical interface that enables management of all Oracle Application Server components in your network and enterprise.

See Also: *Oracle Application Server 10g Administrator's Guide*

2.4 OPMN Configuration Files

OPMN reads the following configuration files when started or reloaded:

- *ORACLE_HOME*/opmn/conf/opmn.xml

  The opmn.xml file is the main configuration file for OPMN. The opmn.xml file contains information for the ONS, the PM, and Oracle Application Server component specific configuration.The opmn.xml file shows you which Oracle Application Server components OPMN is managing on your system.

  The opmn.xml file contains Oracle Application Server component entries arranged in the following hierarchical structure:

  ```
  <ias-component>
     <process-type>
        <process-set>
  ```

  <ias-component>: This entry represents the Oracle Application Server component. It enables management of the component for processes such as starting and stopping.

  <process-type>: This subcomponent of the <ias-component> entry declares the type of process to run by association with a specific PM module.

  <process-set>: This sub-subcomponent of the <ias-component> entry enables you to declare different sets of optional runtime arguments and environments for the Oracle Application Server component.

  The following Example 2–1 shows an example of the <ias-component>, <process-type>, <process-set> entries in an opmn.xml file.

Example 2–1 opmn.xml file

```
<ias-component id="OC4J">
   <process-type id="home">
      <process-set id="default_island">....
```

  You can edit opmn.xml using Application Server Control. Click the **Process Management** link at the bottom of the Oracle Application Server instance home page. Do not stop the OPMN server after you edit the opmn.xml file. Application Server Control automatically reloads the updated opmn.xml file after you edit the file.

  If you manually edit the opmn.xml file run the dcmctl updateConfig command on the command line. dcmctl updateConfig reloads the updated file and updates the configuration repository with the manual changes.

- *ORACLE_HOME*/opmn/conf/ons.conf

  OPMN uses the ons.conf file to find all the different Oracle Application Server instances in the farm. The ons.conf file is automatically generated and maintained by DCM. Do not edit the ons.conf file; edits to this file are overwritten by DCM.

- *ORACLE_HOME*/dcm/config/dcm.conf

  The dcm.conf file specifies the instance name and cluster name of the local Oracle Application Server installation.The dcm.conf file is automatically generated and maintained by DCM. The dcm.conf file should not be edited manually.

2.5 Automatic Restart

OPMN gives the user control over automatic death detection and restart of components; you can configure the parameters by which OPMN determines a process has died and disable automatic restart for individual components.

OPMN monitors the operation of its managed processes by the following methods:

- Operating system level detection of Oracle Application Server process death
- Periodic ping requests to Oracle Application Server processes
- Periodic status notification from Oracle Application Server processes ("reverse-ping")

The ping and notification functionality is only used where appropriate according to the functionality of the Oracle Application Server component.

OPMN automatically restarts Oracle Application Server components that terminate unexpectedly. OPMN will also restart processes that are unresponsive according to the result of notification and ping operations.

See Also: Chapter 4, "opmn.xml Common Configuration"

2.6 opmnctl Command Location

`opmnctl` is the command-line utility for OPMN. The `opmnctl` command is located in the following directory locations:

(UNIX) *ORACLE_HOME*`/opmn/bin/opmnctl`

(Windows) *ORACLE_HOME*`\opmn\bin\opmnctl`

Note: Oracle Application Server components managed by OPMN should never be started or stopped manually. Do not use command line scripts or utilities from previous versions of Oracle Application Server for starting and stopping Oracle Application Server components. Use the Application Server Control and the `opmnctl` command line utility to start or stop Oracle Application Server components.

2.6.1 opmnctl Syntax

The command below shows an example of the syntax of the `opmnctl` command:

```
opmnctl [verbose] [<scope>] <command> [<options>]
```

Table 2–1 provides a description about `opmnctl` syntax.

Table 2–1 opmnctl Syntax

Syntax	Description
`verbose`	Prints detailed execution message, if available.
`scope`	Specifies where the request is routed. Refer to Section 2.8.3.1, "Scope" for a list of options.
`command`	Specifies an `opmnctl` command. Refer to Example 2–2 for a list of commands.
`options`	Specifies options for the command. Refer to Section 2.8.3.4, "Options" for a list of options.

2.7 opmnctl Command Quick Reference

Example 2–2 lists `opmnctl` commands for quick reference. You can obtain the same output information by executing the `opmnctl help` command.

Example 2–2 opmnctl Commands

```
prompt > opmnctl help

  scope      command      options
_________   __________   __________
            start                        - Start opmn
            startall                     - Start opmn and all managed processes
            stopall                      - Stop opmn and all managed processes
            shutdown                     - Shutdown opmn and all managed processes
[<scope>]   startproc    [<attr>=<val>..]  - Start opmn managed processes
[<scope>]   restartproc  [<attr>=<val>..]  - Restart opmn managed processes
[<scope>]   stopproc     [<attr>=<val>..]  - Stop opmn managed processes
[<scope>]   reload                         - Trigger opmn to reread opmn.xml
[<scope>]   status       [<options>]       - Get managed process status
            ping         [<max_retry>]     - Ping local opmn
            validate     [<filename>]      - Validate the given xml file
            help                           - Print brief usage description
            usage        [<command>]       - Print detailed usage description
```

2.8 opmnctl Detailed Command Description

The following sections contains detailed descriptions of the `opmnctl` commands listed in Example 2–2. The `opmnctl` commands are displayed in the following sections:

- Server Control Commands
- Process Control Commands
- Command Definitions
- Status Commands
- Help Commands

2.8.1 Server Control Commands

The `opmnctl start, startall, reload, stopall,` and `shutdown` commands enable you to control the OPMN server.

- opmnctl start
- opmnctl startall
- opmnctl stopall and opmnctl shutdown
- opmnctl reload

Output is not generated for the successful execution of an `opmnctl` server control command. Refer to Chapter 17, "OPMN Troubleshooting" if you receive any error messages during `opmnctl` command execution.

2.8.1.1 opmnctl start

Syntax: `opmnctl start`

Use this command to start the OPMN server for a local Oracle Application Server instance without starting OPMN-managed processes.

Execute this command as soon as possible after starting your computer.

See Also: Chapter 3, "Using OPMN"

2.8.1.2 opmnctl startall

Syntax: `opmnctl startall [timeout=<seconds>]`

Use this command to start OPMN as well as the OPMN-managed processes for a local Oracle Application Server instance. The `startall` is equivalent to the `start` command and the `startproc` command without arguments. Oracle recommends using the `start` or `startproc` command.

This command operates synchronously and waits for the operation to complete before returning. To set a timeout for the request, specify the timeout value in seconds.

Enter the following command for additional detailed information.

```
prompt > opmnctl usage startall
```

2.8.1.3 opmnctl stopall and opmnctl shutdown

Syntax: `opmnctl stopall, opmnctl shutdown`

Use either of these commands to shut down the OPMN server as well as the OPMN-managed processes for the local Oracle Application Server instance. This request operates synchronously; it waits for the operation to complete before returning.

The `opmnctl stopall` or the `opmnctl shutdown` command should only be executed prior to shutting down OPMN and your computer.

Shutting down the OPMN server is not necessary during normal operation. Shutting down the OPMN server prevents remote commands to OPMN from executing on the Oracle Application Server instance until OPMN is restarted.

Use the `opmnctl stopproc` command if you want to stop all OPMN managed processes.

Use the `opmnctl reload` if you want OPMN to reread its configuration.

Enter one of the following commands to obtain additional information.

```
prompt > opmnctl usage stopall
```

or

```
prompt > opmnctl usage shutdown
```

2.8.1.4 opmnctl reload

Syntax: `opmnctl [scope] reload`

Use this command to trigger the OPMN to re-read its configuration files in the requested scope. This command restarts the OPMN server without restarting any Oracle Application Server processes managed by OPMN. The OPMN server for the Oracle Application Server instance must be up and running.

Enter the following command for additional detailed information.

```
prompt > opmnctl usage reload
```

See Also: Section 2.8.3, "Command Definitions"

2.8.2 Process Control Commands

The `opmnctl` process control commands enable you to start, stop, or restart single or multiple Oracle Application Server components. You can control an Oracle Application Server component at the `<ias-component>`, `<process-set>`, or `<process-type>` level.

This section describes the process control commands available with `opmnctl`. It includes the following process control commands:

- opmnctl startproc, opmnctl restartproc and opmnctl stopproc

Output is not generated for the successful execution of an `opmnctl` process control command. Refer to Chapter 17, "OPMN Troubleshooting" if you receive any error messages during `opmnctl` command execution.

2.8.2.1 opmnctl startproc, opmnctl restartproc and opmnctl stopproc

Syntax: `opmnctl [<scope>] startproc [<attr>=<value>...]`

`opmnctl [<scope>] restartproc [<attr>=<value>...]`

`opmnctl [<scope>] stopproc [<attr>=<value>...]`

Use these commands to start, restart, or stop OPMN-managed processes in the requested scope. The OPMN server for the Oracle Application Server instance must be up and running.

The following attributes and values can be used with the `startproc`, `stopproc`, and `restartproc` commands:

- ias-component, process-type, and process-set: The values for these attributes should be the same as the id value specified in the opmn.xml file. If no attribute is supplied, the command is applied to all OPMN-managed processes.
- mode: The mode attribute value can be either sync or async; the default value is sync. The sync value for mode causes the opmnctl command to operate synchronously and wait for the command to be executed completely before a return prompt is displayed. The timeout element can only be specified when the value of mode is sync. The value is specified in number of seconds. After the specified timeout expires, the operation is aborted for startproc but not for restartproc or stopproc. The opmnctl command prompt returns, the OPMN server continues to perform the opmnctl restartproc or stopproc command request until the operation is finished.

  The async value for mode causes the return prompt to be displayed immediately, while the OPMN server continues to perform the opmnctl command request until the operation is finished.
- uniqueid: This value is assigned by OPMN after starting up. You can use this value when you execute the restartproc and stopproc commands. You can obtain this value by entering the following command and obtaining the unique number for the Oracle Application Server component in the uid column of the generated output.

  ```
  prompt > opmnctl status -l
  ```

Attribute names other than the those listed may be specified for some types of Oracle Application Server processes managed by OPMN. Unique attribute name should be specific to each type of Oracle Application Server process.

Using the opmnctl startproc, restartproc, or stopproc commands with a specified scope and attributes enables control of specific processes in your enterprise. You can execute the opmnctl startproc, restartproc, or stopproc commands at the <ias-component>, <process-type> and the <process-set> level.

For example, the following command starts OracleAS Wireless at the <process-set> level.

```
prompt > opmnctl startproc ias-component=wireless process-type=alert_server
process-set=alert_instance_1
```

The following command restarts OC4J at the <process-type> level.

```
prompt > opmnctl restartproc ias-component=OC4J process-type=home
```

The following command stops Oracle HTTP Server at the <ias-component> level.

```
prompt > opmnctl stopproc ias-component=HTTP_Server
```

Enter one of the following commands to obtain additional information.

```
prompt > opmnctl usage startproc
```

or

```
prompt > opmnctl usage restartproc
```

or

```
prompt > opmnctl usage stopproc
```

See Also:

- Section 2.8.3, "Command Definitions"
- Chapter 3, "Using OPMN"

2.8.3 Command Definitions

opmnctl features command definitions that enable you to further define the action you would like to execute with OPMN.

This section describes the command definitions available with the opmnctl command. It includes the following sections:

- Scope
- Attributes
- Verbose
- Options

2.8.3.1 Scope

Syntax: `@instance[:name[:name...]]`

`@cluster[:name]`

`@farm`

The `scope` option specifies which Oracle Application Server instances the `opmnctl` command applies to. You can use the scope option for `opmnctl` commands for single or multiple Oracle Application Server instances, clusters and farms.

- **`@instance:`** If you do not specify a name after `@instance` option, the `opmnctl` command is applied to the local Oracle Application Server instance; local refers to the Oracle Application Server instance or cluster containing the OPMN server handling the request. The default is the local Oracle Application Server instance. If the `@instance` option is followed by Oracle Application Server instance names, the request will be routed to Oracle Application Server instances. To apply the command to one or more Oracle Application Server instances, specify `@instance[:instname[:instname...]]`.
- **`@cluster:`** If you do not specify a name after `@cluster` option, the `opmnctl` command is applied to the local Oracle Application Server cluster. If `@cluster` is followed by a set of 1 or more cluster names, the request will be routed to the all Oracle Application Server instances contained in the specified Oracle Application Server clusters. To apply the command to all Oracle Application Server instances within one or more Oracle Application Server clusters, specify `@cluster[:clusname[:clusname...]]`.
- **`@farm:`** To apply the command query to all Oracle Application Server instances in the Oracle Application Server farm.

For example, the following command starts OC4J on Oracle Application Server instance named "myInst2.foo.com":.

```
prompt > opmnctl @instance:myInst2.foo.com startproc ias-component=HTTP_Server
```

See Also: Chapter 3, "Using OPMN"

2.8.3.2 Attributes

syntax: <attribute>=<value>

The opmnctl attributes enable you to apply process control operations to specific Oracle Application Server components. If no attributes are specified, all OPMN-managed processes are started, stopped, or restarted.

For example, the following command starts all Oracle Application Server processes configured for OracleAS Wireless.

```
prompt > opmnctl startproc ias-component=wireless
```

Refer to Chapter 3, "Using OPMN" for additional opmnctl command examples.

Table 2–2 lists the attribute names and values that OPMN can use this command:

Table 2–2 opmnctl Attribute Names and Values

Attribute Name	Attribute Values
ias-component	Value should be the same as the value for the id attribute for the <ias-component> element in the opmn.xml file.
process-type	Value should be the same as the value for the id attribute for the <process-type> element in the opmn.xml file.
process-set	Value should be the same as the value for the id attribute for the <process-set> element in the opmn.xml file.
mode	Value can either be “sync” or “async”. The default value is “sync”, meaning that this request operates synchronously, and waits for the operation to complete before returning. “async” indicates that the request returns immediately, while OPMN continues to perform the request until the operation finishes.
timeout	This can only be specified in “sync” mode. The value is in seconds. After this timeout expires, OPMN does not continue to perform the request for startproc operations. The request does continue for restartproc and stopproc operations.

See Also: Chapter 3, "Using OPMN"

2.8.3.3 Verbose

Syntax: `opmnctl verbose command`

The `opmnctl verbose` option enables you to obtain detailed information about the command you are executing.

For example, the following command outputs the information shown in Example 2–3.

```
> opmnctl verbose startproc ias-component=HTTP_Server
```

Example 2–3 opmnctl verbose output

```
HTTP/1.1 200 OK
Content-Length: 0
Content-Type: text/html
Response: Ping succeeded.

opmnctl: starting opmn managed processes...
HTTP/1.1 200 OK
Content-Length: 571
Content-Type: text/html
Response: 1 of 1 processes started.

<response>
<opmn id="jerichar-sun.us.oracle.com:6200" http-status="200" http-response="1 of
1 processes started.">
   <ias-instance id="M140801.jerichar-sun.us.oracle.com">
      <ias-component id="HTTP_Server">
         <process-type id="HTTP_Server">
            <process-set id="HTTP_Server">
               <process id="1954086921" pid="9355" status="Alive" index="1"
               log="/home/demoas/M140801/opmn/logs/HTTP_Server~1"
               operation="request" result="success">
               </process>
            </process-set>
         </process-type>
      </ias-component>
   </ias-instance>
</opmn>
</response>
```

2.8.3.4 Options

The following are the options you can specify for the <options> parameter:

- **-l:** Use this option to obtain the uniqueid (uid) value.

  For example, the following command outputs the information shown in Example 2–4.

  ```
  prompt > opmnctl status -l
  ```

Example 2–4 opmnctl status -l output

```
ias-component|process-type|pid   |status |uid      |memused|uptime   | ports
-------------------+-------------------+-------+----------+-----------+-----------------------
-OC4J        | home       | 5611 | Alive |632225812|105008 |17:55:58 |jms:3701,rmi:3201,ajp:3000
```

  Wrong: cannot be used for "starting a single" process. Only for stopping and restarting.

  The uid information allows you to stop or restart an individual Oracle Application Server process.

  For example, the following command stops the home process-type.

  ```
  prompt > opmnctl stopproc uniqueid=632225812
  ```

- **-fsep <string>**: Use this option to assign a field separator value for your opmnctl status output. The default value is "|".
- **-rsep <string>**: Use this option to assign a record separator value for your opmnctl status output. The default value is "\n".
- **-noheaders**: Use this option if you do not want a header displayed after you run the opmnctl status command.
- **-fmt <fmtlist>**: This is a single string containing one or more statistic identifiers connected together where each identifier has the following format: <statname>[<width>{<justification>]. The default value is: %cmp18%prt18%pid5R%sta8.

  Table 2–3 lists the format string syntax for the <fmtlist> option:

Table 2–3 Format String Syntax

Format String Syntax	Description
<statname>	This must be one of the following: ■ clu: Oracle Application Server cluster name ■ ins: Oracle Application Server instance name ■ cmp: Oracle Application Server component ID ■ prt: process-type ID ■ prs: process-set ID ■ idx: index of process in process-set ■ pid: OS process ID ■ uid: OPMN uniqueid ■ typ: name for this kind of process ■ sta: process status ■ stm: start time (ms) ■ utm: up time (ms) ■ cpu: cpu time (ms) ■ mem: memory used (in KB) ■ por: port list
<width>	Specifies the size for the field. Output shorter than this value receives padding according to the specified <justification>. Output longer than this value is truncated, and terminated with '~'. Default: width of each datum.
<justification>	Specifies the justification for the field. This enables you to justify output when it is less than the width. It is L, R, or C (left, right, or center justification). Default: L

For example, the following command displays the output shown in Example 2–5.

```
prompt> opmnctl status -noheaders -fsep @ -fmt %cmp%prt%pid%sta
```

Example 2–5 opmnctl status -noheaders output

```
OC4J@home@N/A@Down
dcm-daemon@dcm-daemon@13875@Alive
LogLoader@logloaderd@9800@Alive
HTTP_Server@HTTP_Server@13926@Alive
```

See Also: Section 2.8.3, "Command Definitions"

Enter the following command for additional detailed information.

```
prompt > opmnctl usage status
```

2.8.4 Status Commands

The `opmnctl status` commands enable you to determine the status of OPMN-managed processes.

This section describes the command options available with the `opmnctl` command. It includes the following sections:

- opmnctl status
- opmnctl ping

See Also:

- Section 2.8.3.1, "Scope"
- Section 2.8.3.4, "Options"

2.8.4.1 opmnctl status

Syntax: `opmnctl [<scope>] status [<options>]`

The `status` command enables you to obtain information on the Oracle Application Server processes managed by OPMN.

The output is a text table. Each row in the table represents one Oracle Application Server process.

You can customize the status command in the following ways:

- Supply a scope to obtain status of processes running on other Oracle Application Server instances
- Change the information displayed about each Oracle Application Server process
- Remove the table headers from the output
- Change the field separator
- Change the record separator
- Change the width of individual columns
- Change the justification of the data in an individual column

Enter the `opmnctl usage status` command to obtain full details on how to use the status command.

Example 2–6 shows the output after entering the `opmnctl status` command for the `AppSrv1` instance on host `comp1` for the domain `yourcompany.com`:

Example 2–6 opmctl Status Output

```
prompt > opmnctl status

Processes in Instance: AppSrv1.comp1.yourcompany.com
ias-component       | process-type         |    pid | status
--------------------------------------------------------------
WebCache            | WebCacheAdmin        |  29121 | Alive
WebCache            | WebCache             |  29120 | Alive
OC4J                | OC4J_Demos           |    N/A | Down
OC4J                | home                 |  29268 | Init
dcm-daemon          | dcm-daemon           |  29113 | Alive
LogLoader           | logloader            |    N/A | Down
HTTP_Server         | HTTP_Server          |  29099 | Alive
```

You can use the `opmnctl status` command with `<scope>` to obtain additional detailed information. For example, the following command gives you the status of every process of every component of every OracleAS Instance in an entire farm.:

```
opmnctl @farm status
```

See Also: Section 2.8.3.1, "Scope"

2.8.4.2 opmnctl ping

Syntax: `opmnctl ping` [<max_retry>]

The `opmnctl ping` command enables you to contact the local OPMN server to verify operation. <max_retry> specifies the maximum number of retry times. If <max_retry> is specified, the local OPMN is pinged every one second, until the command execution succeeds or max_retry is reached.

For example, the following command,

```
prompt > opmnctl ping 10
```

designates pinging of OPMN 10 times until the ping command succeeds

2.8.5 Help Commands

The `opmnctl help` commands enable you to obtain additional information regarding OPMN.

This section describes the help command options available with the `opmnctl` command. It includes the following sections:

- opmnctl help
- opmnctl usage
- opmnctl validate

2.8.5.1 opmnctl help

Syntax: `opmnctl help`

Use this command to print a short syntax description of `opmnctl` commands.

Example 2–7 shows the output from the `opmnctl help` command.

Example 2–7 opmnctl help Output

```
prompt > opmnctl help

usage: /ORACLE_HOME/bin/opmnctl [verbose] [<scope>] <command> [<options>]

verbose: print detailed execution message if available

Permitted <scope>/<command>/<options> combinations are:

  scope      command      options
_________   __________   __________
            start                        - Start opmn
            startall                     - Start opmn & all managed processes
            stopall                      - Stop opmn & all managed processes
            shutdown                     - Shutdown opmn & all managed
processes
[<scope>]   startproc   [<attr>=<val>..]  - Start opmn managed processes
[<scope>]   restartproc [<attr>=<val>..]  - Restart opmn managed processes
[<scope>]   stopproc    [<attr>=<val>..]  - Stop opmn managed processes
[<scope>]   reload                        - Trigger opmn to reread opmn.xml
[<scope>]   status      [<options>]       - Get managed process status
            ping        [<max_retry>]     - Ping local opmn
            validate    [<filename>]      - Validate the given xml file
            help                          - Print brief usage description
            usage       [<command>]       - Print detailed usage description
```

2.8.5.2 opmnctl usage

Syntax: `opmnctl usage [<command>]`

The `usage` command displays help for all `opmnctl` commands, or only for the specified command.

The command can be one or more of the following:

- `start`
- `startall`
- `startproc`
- `stopall`
- `stopproc`
- `restartproc`
- `reload`
- `shutdown`
- `ping`
- `status`
- `help`

For example, enter the following command to receive the output shown in Example 2–8.

```
prompt > opmnctl usage stopall
```

Example 2–8 opmnctl usage stopall output

```
opmnctl stopall
    Stop opmn daemon and opmn managed processes for local ias instance.

    This request first tries to stop all opmn managed processes gracefully.
    Processes which will not stop gracefully will be forcefully shutdown.  After
    stopping all managed processes, the opmn daemon will shutdown itself.

    This request should only be performed when it is necessary to stop the opmn
    daemon.  Once started, the opmn daemon should remain up until it is
    necessary to reboot the computer or some other rare administrative event
    occurs.

    To stop all opmn managed processes without stopping the opmn daemon,
    consider using the stopproc command without any arguments.

    To restart the opmn daemon without restarting any managed processes,
    consider using the the reload command.  The reload command is the
    appropriate command to use when the only goal is to restart the opmn daemon
    with a new configuration.

    This request operates synchronously and will wait for the operation to
    complete before returning.
```

2.8.5.3 opmnctl validate

Syntax: `opmnctl validate` [<filename>]

The `opmnctl validate` command validates the XML syntax of the `opmn.xml` file. The default *ORACLE_HOME*`/opmn/conf/opmn.xml` is validated if the filename parameter is not specified. The <filename> can be specified by either the relative or absolute path.

Only one file can be validated at a time. No output is generated for successful `opmn.xml` file validation.

2.9 OPMN Log Files

The log files generated by OPMN provide important information that can help you identify and diagnose performance and configuration issues. The Application Server Control makes reviewing these log files easier by helping you locate and view Oracle Application Server component log files:

See Also:

- Section 17.1.1, "OPMN log Files"
- *Oracle Application Server 10g Administrator's Guide*

2.10 Security

The OPMN local listener port used by ONS clients and PM administrative processes do not use Secure Socket Layer (SSL) encryption for security, but rely on two other mechanisms to ensure authorized access to the OPMN server:

- OPMN binds the local listener port to the local host. Users on the local system can connect to this port and issue OPMN process control requests. Information requests are allowed on the OPMN request port, which is bound to the system IP. The request port does not have SSL encryption.
- When the OPMN server process first starts up and successfully binds to the local port, it creates a string of printable ASCII characters which it uses as a key for local connections. All connection attempts on the local port must include this key or the connection is closed by the OPMN server. The ASCII character string is written into the *ORACLE_HOME*`/opmn/conf/.formfactor` file. The `.formfactor` file is created with read-only permission for the OPMN user. The OPMN user in this case is usually the application server administrator. Only Oracle Application Server processes run as either the application server administrator or the system super user can access the contents of the `.formfactor` file. The application server administrator or the system super user uses the correct key string in their connection with the OPMN server. OC4J also uses the OPMN `.formfactor` file for similar request validation.

For security reasons, the OPMN server logs any attempts to connect to its local port with an invalid form factor key (a key that does not match the value written by this OPMN process into the `.formfactor` file).

In addition to attempted security violations, there are three common user errors that can cause this error to occur.

1. The user attempts to run the OPMN client manually with the wrong user identification. Only the application server user can read the value from the `.formfactor` file, and so requests or processes run as the wrong user will not be able to provide the correct key to the OPMN server.
2. The user is attempting to run an OPMN client from the wrong *`ORACLE_HOME`*. It is possible to have multiple *`ORACLE_HOME`* instances set up on the same system. If the other *`ORACLE_HOME`* instances have OPMN configured to use the same local port then the Oracle Application Server process request from the wrong *`ORACLE_HOME`* will read the wrong `.formfactor` file.
3. The user has manually changed the local port configuration in the `opmn.xml` file and started a new OPMN process without first stopping the previous OPMN process. The new OPMN process will run, bind to the new port, and overwrite the `.formfactor` file. The previous OPMN process is now unreachable via the local port, and can only be shutdown via remote OPMN requests (if SSL and authentication are configured) or by manually stopping the previous OPMN processes.

2.10.1 Remote Security

OPMN supports remote requests to other OPMN servers in the same farm, but for security reasons all process control requests (start, restart and stop) are only enabled if SSL is enabled in the `opmn.xml` file and a wallet file is configured. If neither SSL nor a wallet file are configured, OPMN will reject any remote process control request with HTTP code 403.

The remote port used for remote administration must be SSL-enabled. The remote port should only be used for communication between multiple OPMN servers. Oracle Application Server components and Application Server Control transmit through the local port which is inaccessible to remote administration. All access control and authentication is controlled by going through Application Server Control.

See Also: *Oracle Application Server 10g Security Guide*

2.11 iHAT

The Oracle Application Server Hi-Av Tool (iHAT) provides a real time, graphical interface view of your enterprise. iHAT displays all Oracle Application Server processes managed by one or more OPMN servers including useful performance metrics about each process. The snapshot of the system is updated continuously at a configurable interval.

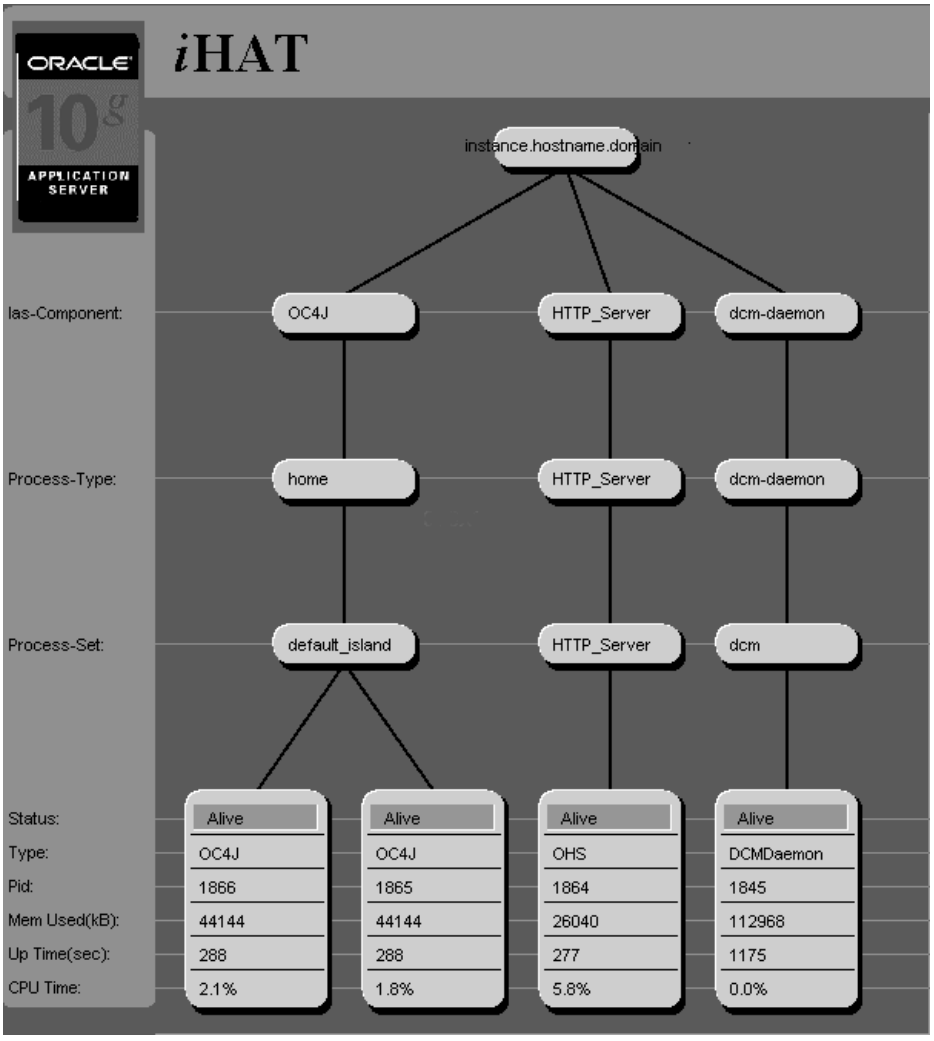
iHAT shows your Oracle Application Server instance with Oracle Application Server components. The `ias-component`, `process-set`, and `process-type` levels are displayed for each Oracle Application Server component. The child process display of the `process-type` shows the status, `process-type`, process identification (pid), memory usage, uptime, and CPU usage.

Figure 2–2 shows an example of the iHAT display for an enterprise with two Oracle Application Server instances.

To download iHAT, visit the Oracle Technology Network (OTN):

`http://otn.oracle.com/membership`

Figure 2–2 Example iHAT Display



3

Using OPMN

This chapter provides command-line examples on how to use OPMN for Oracle Application Server. It features the following topics:

- Starting OPMN
- Starting and Stopping OPMN Managed Processes for a Local Oracle Application Server Instance
- Starting and Stopping all OPMN Managed Processes for a Remote Oracle Application Server Instance
- Starting and Stopping an Oracle Application Server Component in a Local Oracle Application Server Instance
- Starting and Stopping an Oracle Application Server Process Type in a Local Oracle Application Server Instance
- Starting and Stopping a Multi-Oracle Application Server Instance Environment
- Starting a Component on an Oracle Application Server Farm

Note: Oracle Application Server Components managed by OPMN should never be started or stopped manually. Do not use command line scripts or utilities from previous versions of Oracle Application Server for starting and stopping Oracle Application Server components. Use the Application Server Control and the `opmnctl` command line utility to start or stop Oracle Application Server components.

3.1 Starting OPMN

OPMN does not depend on any other Oracle Application Server component being up and running before it can be started and used. The OPMN server should be started as soon as possible after turning on the host.

Use the following command to start OPMN without starting other Oracle Application Server components:

```
prompt > opmnctl start
```

3.2 Starting and Stopping OPMN Managed Processes for a Local Oracle Application Server Instance

Use the following command to **start** OPMN managed processes for a local Oracle Application Server instance:

```
prompt > opmnctl startproc
```

Use the following command to **stop** OPMN managed processes for a local Oracle Application Server instance:

```
prompt > opmnctl stopproc
```

Note: Without arguments the `opmnctl startproc` and `opmnctl stopproc` commands start and stop all OPMN managed processes.

3.3 Starting and Stopping all OPMN Managed Processes for a Remote Oracle Application Server Instance

Use the following command to **start** OPMN and OPMN managed processes for a remote Oracle Application Server instance:

```
prompt > opmnctl @instance:oracleas2 startproc
```

Use the following command to **stop** OPMN and OPMN managed processes for a remote Oracle Application Server instance:

```
prompt > opmnctl @instance:oracleas2 stopproc
```

3.4 Starting and Stopping an Oracle Application Server Component in a Local Oracle Application Server Instance

Use the following command to **start** Oracle Internet Directory in a local Oracle Application Server instance:

```
prompt > opmnctl startproc ias-component=OID
```

Use the following command to **stop** Oracle Internet Directory in a local Oracle Application Server instance:

```
prompt > opmnctl stopproc ias-component=OID
```

3.5 Starting and Stopping an Oracle Application Server Process Type in a Local Oracle Application Server Instance

Use the following command to **start** the `performance_server process-type` in a local Oracle Application Server instance:

```
prompt > opmnctl startproc ias-component=wireless
process-type=performance_server
```

Use the following command to **stop** the `performance_server process-type` in a local Oracle Application Server instance:

```
prompt > opmnctl stopproc ias-component=wireless process-type=performance_server
```

3.6 Starting and Stopping a Multi-Oracle Application Server Instance Environment

Use the following command to **start** a multi-Oracle Application Server instance environment from local instance `oracleas1`:

```
prompt > opmnctl @instance:oracleas1:oracleas2:oracleas3 startproc
```

This command starts all processes of all components on all three instances specified with the `<scope>` argument. Notice that the local instance `oracleas1` is specified in the command.

Use the following command to **stop** a multi-Oracle Application Server instance environment from local instance `oracleas1`:

```
prompt > opmnctl @instance:oracleas1:oracleas2:oracleas3 stopproc
```

This command stops all processes of all components on all three instances specified with the `<scope>` argument. Notice that the local instance `oracleas1` is specified in the command.

Note: You must also indicate your local Oracle Application Server instance when using the `@instance <scope>` with other Oracle Application Server instances. Commands with a `<scope>` argument only operates on the instances described by the `<scope>` argument. The command will only be applied to the local instance if it is described in the `<scope>` argument.

3.7 Starting a Component on an Oracle Application Server Farm

Use the following command to **start** the same Oracle Application Server component on multiple Oracle Application Server instances:

```
prompt > opmnctl @farm startproc ias-component=HTTP_Server
```

Use the following command to **stop** the same Oracle Application Server component on multiple Oracle Application Server instances:

```
prompt > opmnctl @farm stopproc ias-component=HTTP_Server
```

4

opmn.xml Common Configuration

This chapter provides common configuration examples, and descriptions of elements and attributes for the OPMN `opmn.xml` file.

It contains the following topics:

- Example of opmn.xml Elements and Attributes
- opmn.xml Element and Attribute Descriptions

4.1 Example of opmn.xml Elements and Attributes

Example 4–1 shows all possible elements and attributes that may appear in an `opmn.xml` file that are not specific to any Oracle Application Server component.

Example 4–1 Common Configuration Elements and Attributes

```
<opmn>
   <notification-server>
      <ipaddr local="ip" remote="ip" request="ip"/>
      <port local="port" remote="port" request="port"/>
      <log-file path="path" level="level" rotation-size="kBytes" rotation-hour="HOD"/>
      <ssl enabled="boolean" wallet-file="path" wallet-password="password"/>
   </notification-server>
   <process-manager insecure-remote-requests="boolean">
      <log-file path="path" level="level" rotation-size="kBytes" rotation-hour="HOD"/>
   <process-modules>
      <module path="path" tag="tag-id" status="state" cron="interval">
      <module-data>
         <category id="id">
            <data id="id" value="value" process-conversion="boolean"/>
         </category>
      </module-data>
         <module-id id="module-id"/>
      </module>
   </process-modules>
      <ias-instance id="ias-instance-name" ORACLE_HOME="path">
         <environment>
            <variable id="id" value="value" append="boolean" process-conversion="boolean"/>
         </environment>
         <!-- module-data -->
         <ias-component id="component-id" id-matching="boolean" status="state">
            <!-- environment -->
            <!-- module-data -->
            <dependencies>
               <database db-connect-info="connect" infrastructure-key="key"
               timeout="depend-timeout"cache-timeout="cache-timeout"/>
               <OID address="address" timeout="depend-timeout" cache-timeout="cache-timeout">
                  <ssl enabled="boolean" wallet-file="path" wallet-password="password">
               </OID>
               <OSSO host="hostname" port="port" URI="uri" timeout="depend-timeout"
               cache-timeout="cache -timeout"/>
                  <ssl enabled="boolean" wallet-file="path" wallet-password="password">
               </OSSO>
```

```
            <managed-process ias-instance="ias-instance-id" ias-component="ias-component-id"
            process-type="process-type-id" process-set="process-set-id" autostart="boolean"
            autostop="boolean" timeout="depend-timeout" cache-timeout="cache-timeout"/>
         </dependencies>
         <process-type id="process-type-id" module-id="module-id" status="state"
         working-dir="path">
            <!--<environment>-->
            <!-- module-data -->
            <!-- dependencies -->
            <event-scripts>
               <pre-start path="path">
               <pre-stop path="path">
               <post-crash path="path">
            </event-scripts>
            <start timeout="timeout" retry="num"/>
            <stop timeout="timeout"/>
            <restart timeout="timeout" retry="num"/>
            <ping timeout="timeout" retry="num" interval="interval"/>
            <port id="id" range="range"/>
            <process-set id="process-set-id" restart-on-death="boolean" numprocs="num"
            status="state" working-dir="path">
               <!-- environment -->
               <!-- module-data -->
               <!-- dependencies -->
               <!-- event-scripts -->
               <!-- start -->
               <!-- stop -->
               <!-- restart -->
               <!-- ping -->
               <!-- port -->
            </process-set>
         </process-type>
      </ias-component>
   </ias-instance>
</process-manager>
</opmn>
```

4.2 opmn.xml Element and Attribute Descriptions

This section describes the elements and attributes in the `opmn.xml` file that are not specific to any Oracle Application Server component. This section also provides attribute descriptions of the elements.

<opmn>

Required: true
Default: none
Parents: none
Attributes: none

Top-level element for `opmn.xml`

<notification-server>

Required: true
Default: none
Parents: `<opmn>`
Attributes: none

Configures or, contains elements to configure the ONS portion of OPMN.

<ipaddr>

Required: true
Default: none
Parents: `<notification-server>`
Attributes: `local, remote, request`

Specifies host information for ONS listener threads and host port bindings.

`local= "ip or hostname"`

Required: true
Default: none
Valid Values: IP address (in ###.###.###.### format) or host name to which ONS will bind its local port.

IP address or host name to which ONS will bind its local port. All local OPMN requests are routed through the local port. All local applications connect to ONS through the local port to send and receive notifications.

remote="ip or hostname"

Required: false
Default: none
Valid Values: IP address (in ###.###.###.### format) or host name to which ONS will bind its remote port.

IP address or host name to which ONS will bind its remote port. The remote port is used for ONS to ONS communication. Notifications pass from ONS to ONS via the remote port, and OPMN uses ONS to route remote requests to other OPMNs via the remote port.

request="ip or hostname"

Required: false
Default: none
Valid Values: IP address (in ###.###.###.### format) or host name to which ONS will bind its request port.

IP address or host name to which ONS will bind its request port. This port is only used for Oracle Dynamic Monitoring Service (DMS) dump requests (and the obsolete global-dumps in Oracle9*i*AS Release 2 (9.0.2/9.0.3) from some OC4J configurations and some monitoring tools. Only dump requests will be processed from this port.

For example: `<ipaddr local="`*`ip`*`" remote="`*`ip`*`" request="`*`ip`*`"/>`

<port>

Required: true
Default: none
Parents: `<notification-server>`
Attributes: `local, remote, request`

Configuration of the `port` information for ONS listener threads host and port bindings.

`local="port"`

Required: true
Default: none
Valid Values: A port number.

ONS local port value.

`remote="port"`

Required: false
Default: none
Valid Values: A port number.

ONS remote port value.

`request="port"`

Required: false
Default: none
Valid Values: A port number.

ONS request `port` value.

<log-file>

Required: true
Default: none
Parents: `<notification-server>`
Attributes: `path, level, rotation-size, rotation-hour`

Configuration definitions for the ONS log mechanism.

`path="path"`

Required: true
Default: none
Valid Values: A file name path for the ONS log file.

The `path` attribute is a value string. All directories specified in the path must already exist, and OPMN must have read and write permissions for the directory in which the log file resides. `$ORACLE_HOME` may be used.

`ORACLE_HOME` is the root directory in which Oracle software is installed.

OPMN will convert slashes in the path value string to be those of the directory path separator character for the system on which OPMN is running (for UNIX each \ character is converted to /; for Windows each / is converted to \).

OPMN uses the ^ character as an escape character to disable slash conversion. ^/ on a Windows system will yield a / in the string. Specify two ^ characters if you need to specify the ^ character in the resultant string. For example, ^^ yields ^.

level="level"

Required: true
Default: none
Valid Values: An integer value of 0 through 9.

This value specifies the ONS logging level.

0 No logging

1 Fatal errors

2 Errors

3 Warnings

4 Events worth noting

5 Listener and resource management, opmn.xml parse information

6 Connection management, internal notification routing, and worker thread management

7 Notification parsing and processing, subscription addition and removal, and high level send queue checking

8 Received notification content, detailed send queue processing, detailed subscription processing

9 Sent notification content and detailed subscription processing

rotation-size="kBytes"

Required: false
Default: none
Valid Values: An integer.

The maximum size in kilobytes of the log file. When the log file reaches the configured size, the ONS logging mechanism will close the log file, rename it with an integer time stamp, and then create a new log file. This attribute may be used with `rotation-hour`.

rotation-hour="HOD"

Required: false
Default: none
Valid Values: An integer value of 0 through 23.

At the prescribed hour of the day, the ONS logging mechanism will close the log file, rename it with an integer time stamp, and then create a new log file. This attribute may be used with `rotation-size`.

<ssl>

Required: false
Default: none
Parents: `<notification-server>`
Attributes: `enabled, wallet-file, wallet-password`

enabled="boolean"

Required: true
Default: none
Valid Values: `true` or `false`

If the value is true, enables SSL for ONS.

wallet-file="path"

Required: false
Default: none
Valid Values: A path to an Oracle wallet.

Specify the Oracle wallet to use for authentication on ONS connections. `$ORACLE_HOME` may be used.

OPMN will convert slashes in the path value string to be those of the directory path separator character for the system on which OPMN is running (for UNIX each \ character is converted to /; for Windows each / is converted to \).

OPMN uses the ^ character as an escape character to disable slash conversion. ^/ on a Windows system will yield a / in the string. Specify two ^ characters if you need to specify the ^ character in the resultant string. For example, ^^ yields ^.

wallet-password="password"

Required: false
Default: none
Valid Values: A string for the wallet password.

The password string for the specified wallet.

<process-manager>

Required: true
Default: none
Parents: `<opmn>`
Attributes: `insecure-remote-requests`

Contains the configuration definitions for the PM portion of OPMN.

insecure-remote-requests="boolean"

Required: false
Default: false
Valid Values: `true` or `false`

By default OPMN will only allow start, stop, restart, shutdown and reload requests rerouted from remote OPMNs if ONS SSL is `enabled` and a wallet file is configured for authentication.

Note: Setting this attribute to `true` overrides that security check and allows these requests to be issued remotely with no security features configured.

Setting this attribute to `true` is a major security risk and should only be done for testing purposes with all connected OPMNs behind a well secured fire wall or completely disconnected from any external network.

<log-file>

Required: true
Default: none
Parents: `<process-manager>`
Attributes: `path, level, rotation-size, rotation-hour`

Configuration definitions for the PM log mechanism.

`path="path"`

Required: true
Default: none
Valid Values: A file name path for the PM log file.

All directories specified in the path must already exist, and OPMN must have read and write permissions for the directory in which the log file resides. `$ORACLE_HOME` may be used.

OPMN will convert slashes in the path value string to be those of the directory path separator character for the system on which OPMN is running (for UNIX each \ character is converted to **/**; for Windows each **/** is converted to \).

OPMN uses the **^** character as an escape character to disable slash conversion. **^/** on a Windows system will yield a **/** in the string. Specify two **^** characters if you need to specify the **^** character in the resultant string. For example, **^^** yields **^**.

level="level"

Required: true
Default: none
Valid Values: An integer value of 0 through 9.

This value specifies the PM logging level.

0 No logging

1 Fatal errors

2 Errors

3 Warnings

4 Events worth noting

5 Internal and module initialization, process monitoring, and dependency check results

6 Process resource management, http request and process job scheduling and execution, and dependency check details

7 Http request parsing and resource management

8 Http request response, and DMS statistics collection and requests

9 Low level thread tracing

rotation-size="kBytes"

Required: false
Default: none
Valid Values: An integer.

The maximum size in kilobytes of the log file. When the log file reaches the configured size, the PM logging mechanism will close the log file, rename it with an integer time stamp, and then create a new log file. This attribute may be used with `rotation-hour`.

rotation-hour="HOD"

Required: false
Default: none
Valid Values: An integer value of 0 through 23.

At the prescribed hour of the day, the PM logging mechanism will close the log file, rename it with an integer time stamp, and then create a new log file. This attribute may be used with `rotation-size`.

<process-modules>

Required: true
Default: none
Parents: `<process-manager>`
Attributes: none

The PM dynamically loads in a library for each specified process module. Each process module is designed to support a specific set of `process-type`, and is only required if those `process-type` are configured.

<module>

Required: true
Default: none
Parents: `<process-modules>`
Attributes: `path, tag, status, cron`

A module is used to provide `process-type` specific support for the PM. Each module is implemented as a shared library which exports a set of standard functions and uses the PM process module API. A module must provide a list of the `process-types` it supports, and only one configured process module may list a specific `process-type`; no two modules can list the same `process-type`.

path="path"

Required: true
Default: none
Valid Values: A path for the module shared library.

The path must specify the shared library file, but if the library file has the standard system suffix (`.so` for UNIX and `.dll` for Windows), the suffix may be omitted and OPMN will automatically append it. `$ORACLE_HOME` may be used.

OPMN will convert slashes in the path value string to be those of the directory path separator character for the system on which OPMN is running (for UNIX each \ character is converted to /; for Windows each / is converted to \).

OPMN uses the ^ character as an escape character to disable slash conversion. ^/ on a Windows system will yield a / in the string. Specify two ^ characters if you need to specify the ^ character in the resultant string. For example, ^^ yields ^.

tag="tag-id"

Required: false
Default: The value specified by path.
Valid Values: A string uniquely identifying the module.

A module may report its tag value when logging errors to the PM log file or as part of the response to a request. While optional, it is a good idea to set this attribute to a meaningful value to help track any issues with process management.

status="state"

Required: false
Default: `enabled`
Valid Values: `critical, enabled, or disabled`

A module may be `enabled`, in which case PM loads in its shared library when it starts and calls the module's initialization functions, or `disabled` in which case the module entry is completely ignored. If the module `process-types` are configured in `opmn.xml` they must also be `disabled`. The `critical` state is the same as `enabled`, except that OPMN will terminate with a fatal error code if the module initialization fails.

cron="interval"

Required: false
Default: none
Valid Values: An integer.

Specify the interval in seconds between calls to the module's `cron` callback function. Configuring a `cron` interval for a module that does not support the `cron` callback is not allowed. Unless you have designed the module, you should neither add nor alter this attribute.

<module-data>

Required: false
Default: none
Parents: <module>, <ias-instance>, <ias-component>, <dependencies>, <process-set>
Attributes: none

The module-data blocks are used to define module specific name-value pairs that are meaningful only to a specific module. Each module-data block is organized into categories, which contain the name-value data pairs.

The module-data blocks can be defined for multiple elements within opmn.xml, and OPMN will create an aggregate module-data block at the process-set level that contains all values defined at or above it. If multiple definitions exist in this hierarchy with the same category id and data id, the value defined at the lowest level is used.

Table 4–1 illustrates the module-data defined at each level in the hierarchy (with the highest level displayed at the top) and the resultant union at the process-set level of all of the module-data definitions:

Table 4–1 module-data Hierarchy

Module	Definition
ias-instance	<category id="CatA"> <data id= "DataAA" value="aaaa"/> </category>
ias-component	<category id="CatA"> <data id= "DataAB" value="abab"/> </category> <category id="CatB"> <data id= "DataBA" value="baba"/> </category>
module	<category id="CatA"> <data id= "DataAC" value="acac"/> </category>
process-type	<category id="CatA"> <data id= "DataAA" value="XXXX"/> </category>

Table 4–1 module-data Hierarchy (Cont.)

Module	Definition
process-set	<category id="CatB"> <data id= "DataBB" value="bbbb"/> </category>
RESULT	<category id="CatA"> <data id= "DataAA" value="XXXX"/> <data id= "DataAB" value="abab"/> <data id= "DataAC" value="acac"/> </category> <category id="CatB"> <data id= "DataBA" value="baba"/> <data id= "DataBB" value="bbbb"/> </category>

<category>

Required: true
Default: none
Parents: `<module-data>`
Attributes: `id`

The category is an organizational level within a `module-data` block.

`id="id"`

Required: true
Default: none
Valid Values: A string.

This string identifies a data category. Each category `id` within a single `module-data` block must be unique, but multiple `module-data` blocks may contain the same data category `ids`, in which case the categories are considered to be related.

<data>

Required: true
Default: none
Parents: `<category>`
Attributes: `id, value, process-conversion`

A data name value definition within a `module-data` category.

`id="id"`

Required: true
Default: none
Valid Values: A string.

This string identifies a data element. Each data `id` within a single category must be unique, but multiple categories may contain the same data identifications. Data elements with the same identification as others, defined in different categories with the same identification are related.

value="value"

Required: true
Default: none
Valid Values: A string.

The value string associated with the data element `id`. Any environment variable defined anywhere within the scope of the `process-set` (any level at or above the `process-set`) in which the data value is defined (again, any level at or above the `process-set`) referenced within the value string as `$variable` will be expanded to the variable value.

process-conversion="boolean"

Required: false
Default: `true`
Valid Values: `true` or `false`

By default OPMN converts slashes in the data value string to be those of the directory path separator character for the system on which OPMN is running (on UNIX each '\' character is converted to '/' and on Windows each '/' is converted to '\'). Set this attribute to `false` to disable conversion.

<module-id>

Required: true
Default: none
Parents: `<module>`
Attributes: `id`

The `module-id` name defines the type of process and associates the configuration with a process module.

This identifier is used by each `process-type` to specify which module supports it. A module may be configured with multiple `module-ids`.

id="module-id"

Required: true
Default: none
Valid Values: A string.

<ias-instance>

Required: true
Default: none
Parents: `<process-manager>`
Attributes: `id`, `ORACLE_HOME`

The configuration definitions for an Oracle Application Server instance. Only one `ias-instance` is supported per OPMN.

id="ias-instance-name"

Required: true
Default: none
Valid Values: A string.

This string should match the DCM configured `ias-instance` name in `dcm.conf`. OPMN itself ignores the value of this string and always uses the DCM configured value.

ORACLE_HOME="path"

Required: true
Default: none
Valid Values: A path string.

This path must be the `$ORACLE_HOME` equivalent for this Oracle Application Server instance.

OPMN will convert slashes in the path value string to be those of the directory path separator character for the system on which OPMN is running (for UNIX each \ character is converted to /; for Windows each / is converted to \).

OPMN uses the ^ character as an escape character to disable slash conversion. ^/ on a Windows system will yield a / in the string. Specify two ^ characters if you need to specify the ^ character in the resultant string. For example, ^^ yields ^.

<environment>

Required: true
Default: *Refer to the following paragraph.*
Parents: <ias-instance>, <ias-component>, <dependencies>, <process-set>
Attributes: none

Like module-data blocks, environment blocks can be defined for multiple elements within the opmn.xml file, and OPMN will create an aggregate environment block at the process-set level that contains all values defined at, or above it. If multiple definitions exist in this hierarchy with the same id, the value defined at the lowest level is used.

Note: OPMN sets the following default environment variables at the ias-instance level, with the values extracted either from the ias-instance configuration or from the OPMN run time environment:

UNIX: ORACLE_HOME, ORACLE_NLS, OPMN_ENV_LC_ALL, OPMN_ENV_LANG, OPMN_ENV_NLS_LANG, SHELL

Windows: COMSPEC, SYSTEM_DRIVE, and SYSTEM_ROOT

<variable>

Required: true
Default: none
Parents: <environment>
Attributes: id, value, append, process-conversion

The environment variable name and value are defined with this element.

id="name"

Required: true
Default: none
Valid Values: A string.

The environment variable name. An `environment id` may be duplicated within an `environment` block, with the last defined value taking priority over earlier definitions. The same `environment id` may be defined within `environment` blocks for different elements, and the value defined at the lowest level will take priority over values defined at higher levels.

value="value"

Required: true
Default: none
Valid Values: A string.

The environment value. Environment variables referenced within the value string as `$variable` will be expanded to the variable value. The same environment variable may reference itself to use a definition defined at a higher level, or earlier within this same `environment` block.

You may use the UNIX shell syntax for referencing an environment variable, `$variable` or `${variable}`, or the Windows format `%variable%`. Referenced variables that have not been defined remain in place as referenced, and so `value="_notdefined_"` would remain unchanged if `notdefined` was not defined.

For example, the following environment block yields a value for `accumulate` of "`foobar`".

```
<environment>
   <variable id="accumulate" value="foo">
   <variable id="accumulate" value="${accumulate}bar">
</environment>
```

append="boolean"

Required: false
Default: false
Valid Values: `true` or `false`

You can force OPMN to append the new environment variable value to the previously defined value, with the system library delimeter placed in between the two values (':' for UNIX and ';' for Windows) by specifying a value of `true` for this attribute. This is useful when assembling a value for a variable such as `CLASSPATH`.

For example, the following `environment` block yields a value for `CLASSPATH` of "`/foo:/bar`" on a UNIX system.

```
<environment>
   <variable id="CLASSPATH" value="/foo">
   <variable id="CLASSPATH" value="/bar" append="true">
</environment>
```

`process-conversion="boolean"`

Required: false
Default: `true`
Valid Values: `true` or `false`

OPMN converts slashes in the environment value string to be those of the directory path separator character for the system on which OPMN is running (for UNIX each \ character is converted to **/**; for Windows each **/** is converted to \).

If the process conversion is `true`, OPMN uses the **^** character as an escape character to disable slash conversion. **^/** on a Windows system will yield a **/** in the string. Specify two **^** characters if you need to specify the **^** character in the resultant string. For example, **^^** yields **^**.

<ias-component>

Required: true
Default: none
Parents: `<ias-instance>`
Attributes: `id, id-matching, status`

An `ias-component` is a logical grouping of `process-type` for administrative purposes.

`id="component-id"`

Required: true
Default: none
Valid Values: a string

The `id` attribute uniquely identifies this `ias-component` within the `ias-instance`.

id-matching="boolean"

Required: false
Default: false
Valid Values: `true` or `false`

By default OPMN requests that do not specify `ias-components` match all configured `ias-components`, unless the `id-matching` attribute for a component is set to `true`, in which case the request must explicitly include the `ias-component id` in order to affect the `ias-component` or any `process-type` or `process-set` configured for that `ias-component`.

status="state"

Required: false
Default: `enabled`
Valid Values: `enabled` or `disabled`

An `ias-component` may be `enabled`, in which case OPMN parses all of its configured attributes and elements and allows requests to operate upon it, or `disabled`, in which case the `ias-component` entry is completely ignored.

<dependencies>

Required: false
Default: none
Parents: `<ias-component>`, `<dependencies>`, `<process-set>`
Attributes: none

OPMN uses dependencies to determine if a process should be started or not. Like `module-data`, `environment` blocks can be defined for multiple elements within `opmn.xml`. OPMN will create an aggregate dependency list at the `process-set` level that contains all dependencies defined at or above it. If duplicate dependencies are defined at different levels, then duplicate checks on the dependency will be made before starting a process.

There are two primary types of dependencies: external and internal. External dependencies are for those resources not managed by OPMN. For example: OracleAS Metadata Repository and Application Server Control.

An external program is executed by OPMN to perform the check on the resource. Internal dependencies are for OPMN-managed processes (unit), which may include processes managed on a remote OPMN.

OPMN maintains a cache of dependency states which contains the last known state of each dependency, and the time it was last checked. A `cache-timeout` parameter for each dependency allows users to specify how long to use its state in the cache, or if it should be used at all. Similarly, a general timeout parameter for each dependency will determine how long OPMN will wait for a status update from that dependency before aborting the dependency check and the process start.

OPMN checks dependencies in the order in which they are declared. The traversal of this list of dependencies concludes either with the full sequence of successful checks, the dependency is available, or the first check failure, the dependency is not available, or the dependency check timed out.

<database>

Required: false
Default: none
Parents: `<dependencies>`
Attributes: `db-connect-info, infrastructure-key, timeout, cache-timeout`

Specifies the database to check: either `db-connect-info` or `infrastructure-key` is used to identify the database.

`db-connect-info="connect"`

Required: true if `infrastructure-key` is not specified.
Default: none
Valid Values: A string

The string required to connect to the database.

`infrastructure-key="key"`

Required: true if `db-connect` is not specified.
Default: none
Valid Values: A string

The `infrastructure key` required to identify the database.

timeout="depend-timeout"

Required: false
Default: `1200`
Valid Values: An integer

The `timeout` attribute specifies in seconds how long OPMN will wait for a dependency check to complete. If the check takes longer than the configured timeout, then OPMN will consider the check to have failed.

cache-timeout="cache-timeout"

Required: false
Default: `600`
Valid Values: An integer

The `cache-timeout` attribute specifies how long in seconds OPMN will use the current "up" status for this dependency's entry in the cache. If the last successful dependency check was within the prescribed number of seconds from the current check, then the dependency check is instantly flagged as successful, otherwise another dependency check will be performed. Note that the `cache-timeout` is only for the last successful check of the dependency, and if the previous check failed, another access of the dependency will be performed for this check. A value of 0 indicates OPMN will always perform the check.

<OID>

Required: false
Default: none
Parents: `<dependencies>`
Attributes: `address, infrastructure, timeout, cache-timeout`

Specifies the Oracle Internet Directory service to check either an address string for a specific Oracle Internet Directory, or that the OracleAS Infrastructure flag is set to `true` to use the default infrastructure Oracle Internet Directory.

address="address"

Required: true
Default: none
Valid Values: A string

The `address` string required to connect to Oracle Internet Directory.

infrastructure="boolean"

Required: true if `address` is not set.
Default: none
Valid Values: `true` or `false`

Use the default infrastructure Oracle Internet Directory for this Oracle Application Server instance.

timeout="depend-timeout"

Required: false
Default: `1200`
Valid Values: An integer

The `timeout` attribute specifies in seconds how long OPMN will wait for a dependency check to complete. If the check takes longer than the configured timeout, then OPMN considers the check to have failed.

cache-timeout="cache-timeout"

Required: false
Default: `600`
Valid Values: An integer

The `cache-timeout` attribute specifies how long in seconds OPMN will use the current "up" status for the dependency entry in the cache. If the last successful dependency check was within the prescribed number of seconds from the current check, then the dependency check is flagged as successful. Otherwise, OPMN performs another dependency check. The `cache-timeout` is only for the last successful check of the dependency. If the previous check failed, OPMN performs another access of the dependency check. A value of 0 indicates OPMN will always perform the check.

<ssl>

Required: false
Default: none
Parents: `<OID>`
Attributes: `enabled, wallet-file, wallet-password`

The SSL information for the Oracle Internet Directory connection.

enabled="boolean"

Required: true
Default: none
Valid Values: `true` or `false`

To enable SSL on the Oracle Internet Directory connection, set this attribute to `true`.

wallet-file="path"

Required: false
Default: none
Valid Values: A path

The path to a wallet file for authentication of the Oracle Internet Directory connection.

wallet-password="password"

Required: false
Default: none
Valid Values: A string

The password for the specified wallet-file.

timeout="depend-timeout"

Required: false
Default: `1200`
Valid Values: An integer

The `timeout` attribute specifies in seconds how long OPMN will wait for a dependency check to complete. If the check takes longer than the configured timeout, then OPMN considers the check to have failed.

cache-timeout="cache-timeout"

Required: false
Default: `600`
Valid Values: An integer

The `cache-timeout` attribute specifies how long in seconds OPMN will use the current "up" status for the dependency entry in the cache. If the last successful dependency check was within the prescribed number of seconds from the current check, then the dependency check is flagged as successful. Otherwise, OPMN performs another dependency check. The `cache-timeout` is only for the last successful check of the dependency. If the previous check failed, OPMN performs another access of the dependency check. A value of 0 indicates OPMN will always perform the check.

<OSSO>

Required: false
Default: none
Parents: `<dependencies>`
Attributes: `host, port, URI, timeout, cache-timeout`

Specifies the OracleAS Single Sign-On service to check.

host="hostname"

Required: true
Default: none
Valid Values: A string

The hostname for the OracleAS Single Sign-On connection.

port="port"

Required: true
Default: none
Valid Values: A port number

The port for the OracleAS Single Sign-On connection.

URI="uri"

Required: true
Default: none
Valid Values: A string

The URI for the OracleAS Single Sign-On connection.

<ssl>

Required: false
Default: none
Parents: <OSSO>
Attributes: enabled, wallet-file, wallet-password

The SSL information for the OracleAS Single Sign-On connection.

enabled="boolean"

Required: true
Default: none
Valid Values: true or false

To enable SSL on the OracleAS Single Sign-On connection, set this attribute to true.

wallet-file="path"

Required: true
Default: none
Valid Values: A path

The path to a wallet file for authentication of the OracleAS Single Sign-On connection.

wallet-password="password"

Required: false
Default: none
Valid Values: A string

The password for the specified wallet-file.

timeout="depend-timeout"

Required: false
Default: `1200`
Valid Values: An integer

The `timeout` attribute specifies in seconds how long OPMN will wait for a dependency check to complete. If the check takes longer than the configured timeout, then OPMN considers the check to have failed.

cache-timeout="cache-timeout"

Required: false
Default: `600`
Valid Values: An integer

The `cache-timeout` attribute specifies how long in seconds OPMN will use the current "up" status for the dependency entry in the cache. If the last successful dependency check was within the prescribed number of seconds from the current check, then the dependency check is flagged as successful. Otherwise, OPMN performs another dependency check. The `cache-timeout` is only for the last successful check of the dependency. If the previous check failed, OPMN performs another dependency check. A value of 0 indicates OPMN will always perform the check.

<managed-process>

Required: false
Default: none
Parents: `<dependencies>`
Attributes: `ias-instance, ias-component, process-type, process-set, autostart, autostop, timeout, cache-timeout`

Specifies the managed process to check. A process for `process-type` or `process-set` does not start unless the specified dependency managed process is alive. Circular dependencies are detected and rejected for local managed processes, but not for remote managed processes; this may result in a dependency check deadlock, which times out.

ias-instance="ias-instance-id"

Required: false
Default: The `ias-instance` of the current `process-type` or `process-set`.
Valid Values: A string

The `ias-instance` for the managed process dependency. If the specified `ias-instance` is not managed by the current OPMN, it is assumed to be a remote managed process dependency.

ias-component="ias-component-id"

Required: true
Default: none
Valid Values: A string

The `ias-component` for the managed process dependency.

process-type="process-type-id"

Required: true
Default: none
Valid Values: A string

The `process-type-id` for the managed process dependency.

process-set="process-set-id"

Required: true
Default: none
Valid Values: A string

The `process-set-id` for the managed process dependency.

autostart="boolean"

Required: false
Default: false
Valid Values: `true` or `false`

If the managed process dependency is not running when the check is performed, attempt to start it.

autostop="boolean"

Required: false
Default: false
Valid Values: `true` or `false`

When the managed process dependency is stopped, then stop the managed process. The attribute is always `false` for remote managed process dependencies.

timeout="depend-timeout"

Required: false
Default: `1200`
Valid Values: An integer

The `timeout` attribute specifies, in seconds, how long OPMN will wait for a dependency check to complete. If the check takes longer than the configured timeout, then OPMN considers the check to have failed.

cache-timeout="cache-timeout"

Required: false
Default: `600`
Valid Values: An integer

This parameter is only used for a process managed by a remote OPMN. The `cache-timeout` attribute specifies how long in seconds OPMN will use the current "up" status for the dependency entry in the cache. If the last timeout dependency check was within the prescribed number of seconds from the current check, then the dependency check is instantly flagged as successful, otherwise OPMN performs another dependency check. Note that the `cache-timeout` is only for the last successful check of the dependency, and if the previous check failed, OPMN another access of the dependency will be performed for this check. A value of 0 indicates OPMN will always perform the check.

Note: The `cache-timeout` is only for the last successful check of the dependency, and if the previous check failed, OPMN will perform another dependency check.

<process-type>

Required: true
Default: none
Parents: `<ias-component>`
Attributes: `id, module-id, status, working-dir`

A `process-type` is a grouping of `process-sets` that are supported by the same module.

`id="process-type-id"`

Required: true
Default: none
Valid Values: a string

The `id` attribute uniquely identifies this `process-type` within the `ias-component`.

`module-id="module-id"`

Required: true
Default: none
Valid Values: a string

The `module-id` attribute must map directly map to the `module-id` element that supports this `process-type`.

`status="state"`

Required: false
Default: `enabled`
Valid Values: `enabled` or `disabled`

A `process-type` may be `enabled`, in which case OPMN parses all of its configured attributes and elements and allows requests to operate upon it, or `disabled`, in which case the `process-type` entry is completely ignored and treated as if it were not listed in `opmn.xml`.

working-dir="path"

Required: false
Default: None
Valid Values: A path

This path specifies the working directory set for managed processes created that belong to this `process-type`. If a `process-set` also defines a `working-dir` attribute, then that path takes precedence over the `process-type` path.

<event-scripts>

Required: false
Default: none
Parents: `<process-type>`, `<process-set>`
Attributes: none

A configured event script is executed when a specific process related event has occurred. OPMN waits until the script completes or times out before proceeding with the next action for the process.

Table 4–2 shows event script arguments.

Table 4–2 Event Script Arguments

Option Name	Option Argument	Description
`-timeStamp`	`<time>`	An integer value for the current `time` on the system (in seconds).
`-instanceName`	`<instance-name>`	The `instance-name` of the managed process.
`-componentId`	`<component-id>`	The `component-id` of the managed process.
`-processType`	`<process-type-id>`	The `process-type` of the managed process.
`-processSet`	`<process-set-id>`	The `process-set` of the managed process.
`-processIndex`	`<index>`	The `process-index` of the managed process.
`-stderr`[1]	`<path>`	The path for the `stderr` file pointer of the process.
`-stdout`[1]	`<path>`	The path for the `stdout` file pointer of the process. Note: this argument will only be given for a pre-start script if the start is part of a process restart request.

Table 4–2 Event Script Arguments(Cont.)

Option Name	Option Argument	Description
-reason	<reason>	A string indicating the reason script was executed. The http_request indicates the process action is the result of the user http request to OPMN. The non_http_request indicates the process action was initiated by OPMN itself.
-pid[2]	<process-id>	The operating system integer value given for the process-id.
-startTime[2]	<time>	An integer value for the system start time of the process (in seconds).

[1] This argument will only be given for a pre-start script if the start is part of a process restart request. The pre-start event is triggered only prior to performing a start. A restart operation may be composed of a stop operation followed by a start operation. A start operation can occur as an operation all by itself or as a sub-operation of a restart.

[2] This argument is only available with pre-stop or post-crash event scripts.

<pre-start>

Required: false
Default: none
Parents: <event-scripts>
Attributes: path

OPMN runs the specified script after any configured dependency checks have been performed (and passed) and before the process is actually started. The timeout for this script is the timeout value configured for starting the process itself, and any time consumed by the execution of this script counts towards the process start timeout. If the script times out, the process will not be started and any associated http request will fail.

Be cautious when you execute any OPMN process requests such as start, stop or restart within an event script. These requests are serialized at the `process-set` level. If the script invokes a request on a `process-set` on which the current request (or another already queued request) is operating, then the script will hang until it times out.

`path="path"`

Required: true
Default: none
Valid Values: A path to the executable script.

The path must specify either an executable program for which OPMN has execute permission, or a script file for which OPMN has both read and executable permission.

<pre-stop>

Required: false
Default: none
Parents: `<event-scripts>`
Attributes: `path`

OPMN runs the specified script before stopping the associated process. The timeout for this script is the value configured for stopping the process itself. Any time consumed by the execution of this script counts towards the process stop timeout. If the script times out, any associated http request will fail. However, OPMN will proceed with stopping the process.

Be cautious when you execute any OPMN process requests such as start, stop or restart. These requests are serialized at the `process-set` level. If the script invokes a request on a `process-set` on which the current request (or another already queued request) is operating, then the script will hang until it times out.

`path="path"`

Required: true
Default: none
Valid Values: A path to the executable script.

The `path` must specify either an executable program for which OPMN has execute permission, or a script file for which OPMN has both read and executable permission.

<post-crash>

Required: false
Default: none
Parents:<event-scripts>
Attributes: path

OPMN runs the specified script after the associated process has terminated unexpectedly. The timeout for this script is the timeout value configured for stopping the process itself. After the script has terminated OPMN schedules a replacement of the dead process.

Be cautious when you execute any OPMN process requests such as start, stop or restart. These requests are serialized at the process-set level. If the script invokes a request on a process-set on which the current request (or another already queued request) is operating, then the script will hang until it times out.

path="path"

Required: true
Default: none
Valid Values: A path to the executable script.

The path must specify either an executable program for which OPMN has execute permission, or a script file for which OPMN has both read and executable permission.

<start>

Required: false
Default: Refer to the values in the following paragraphs.
Parents: `<process-type>, <process-set>`
Attributes: `timeout, retry`

The start parameters for managed processes.

`timeout="timeout"`

Required: false
Default: `60`
Valid Values: An integer

The timeout value in seconds for the start of a managed process.

`retry="num"`

Required: false
Default: `0`
Valid Values: An integer

The number of consecutive attempts that will be made to start the process for a single request.

<stop>

Required: false
Default: Refer to the values in the following paragraphs.
Parents: `<process-type>, <process-set>`
Attributes: `timeout`

The stop parameters for managed processes.

`timeout="timeout"`

Required: false
Default: `30`
Valid Values: An integer

The `timeout` value in seconds for the stopping a managed process.

<restart>

Required: false
Default: Refer to the values in the following paragraphs.
Parents: <process-type>, <process-set>
Attributes: timeout, retry

The restart parameters for managed processes.

timeout="timeout"

Required: false
Default: 90
Valid Values: An integer

The timeout value in seconds for the restart of a managed process.

retry="num"

Required: false
Default: 0
Valid Values: An integer

The number of consecutive attempts that will be made to restart the process for a single request.

<ping>

Required: false
Default: Refer to the values in the following paragraphs.
Parents: <process-type>, <process-set>
Attributes: timeout, retry, interval

The ping parameters for managed processes.

timeout="timeout"

Required: false
Default: 20
Valid Values: An integer

The timeout value in seconds for the ping of a managed process. Each module specifies a ping timeout.

retry="num"

Required: false
Default: `0`
Valid Values: An integer

The number of consecutive ping failures that will be tolerated before the module declares the process unreachable and will restart it. Each module specifies ping retries.

interval="interval"

Required: false
Default: `20`
Valid Values: An integer

The `interval`, in seconds, between each ping of a managed process.

<port>

Required: false
Default: none
Parents: `<process-type>`, `<process-set>`
Attributes: `id, range`

OPMN provides a port management mechanism for modules to use. Each module uses the ports configured with `id`.

id="id"

Required: true
Default: none
Valid Values: A string

The `id` attribute identifies the range of ports for the `process-type`. Each module has its own list of required or optional `port` ids.

range="range"

Required: true
Default: none
Valid Values: A port range

The `port range` specifies which ports to use for the `id`.

Upon request from a module for a port number from the `id`, OPMN checks if a port in the range has been bound on the local system, and if it has not, it returns that port number back to the module. Syntax of the `port range` is a comma separated list of individual port numbers or a low-high range specification.

Examples:

Specify ports 5555, 6666, 7777, 8888, and 9999:

```
range="5555,6666,7777,8888,9999"
```

Specify ports 4000 through 4250 (inclusive):

```
range="4000-4250"
```

Specify ports 7000 through 7049, 7775, 7785, and 8050 through 8099:

```
range="7000-7049,7775,7785,8050-8099"
```

<process-set>

Required: true
Default: none
Parents: `<process-type>`
Attributes: `id, restart-on-death, numprocs, status, working-dir`

A `process-set` is the abstraction of a process within OPMN. All `module-data`, environment variables, and other configuration parameters are resolved into their final values at the `process-set` level.

`id="process-set-id"`

Required: true
Default: none
Valid Values: A string

The `id` attribute uniquely identifies this `process-set` within the `process-type`.

restart-on-death="boolean"

Required: true
Default: false
Valid Values: `true` or `false`

If a managed process terminates unexpectedly, that is, not stopped by a request, then OPMN will not automatically restart it. To enable automatic restarting of terminated managed processes set the attribute to `true`.

numprocs="num"

Required: true
Default: none
Valid Values: An integer

Specifies the number of processes for OPMN to start for this `process-set`.

status="state"

Required: false.
Default: `enabled`
Valid Values: `enabled` or `disabled`

A `process-set` may be `enabled`, in which case OPMN parses all of its configured attributes and elements and allows requests to operate upon it, or `disabled`, in which case the `process-set` entry is complete ignored and treated as if it were not even listed in `opmn.xml`.

working-dir="path"

Required: false.
Default: None
Valid Values: A path

This path specifies the working directory set for the managed processes created that belong to this `process-set`. `$ORACLE_HOME` may be used.

OPMN will convert slashes in the `working-dir` value string to be those of the directory path separator character for the system on which OPMN is running (on UNIX each \ character is converted to / and on Windows each / is converted to \).

OPMN uses the ^ character as an escape character to disable slash conversion for the following character, and so ^/ on a Windows system will yield a / in the string. Specify two ^ characters if you need to specify the ^ character in the resultant string: ^^ yields ^.

5

Configuring Oracle HTTP Server

This chapter describes Oracle HTTP Server configuration in the OPMN `opmn.xml` file.

It features the following topics:

- Oracle HTTP Server Process Module Configuration
- Oracle HTTP Server Minimum Configuration
- Oracle HTTP Server Complete Configuration
- Oracle HTTP Server Attribute Descriptions

5.1 Oracle HTTP Server Process Module Configuration

The following lines load and identify the Oracle HTTP Server process module. Management of Oracle HTTP Server processes by the process module are identified by the `module id`.

```
<module path="ORACLE_HOME/opmn/lib/libopmnohs.so">
   <module-id="OHS" />
</module>
```

5.2 Oracle HTTP Server Minimum Configuration

The following lines represent the minimum configuration for Oracle HTTP Server. Default values are assigned to all other configuration elements and attributes for Oracle HTTP Server.

```
<ias-component id="HTTP_Server">
   <process-type id="HTTP_Server" module-id="OHS">
      <process-set id="HTTP_Server" numprocs="1"/>
   </process-type>
</ias-component>
```

5.3 Oracle HTTP Server Complete Configuration

The following lines show a complete configuration for Oracle HTTP Server. It contains all possible configuration elements and attributes for Oracle HTTP Server.

```
<ias-component id="HTTP_Server" status="enabled" id-matching="false">
   <process-type id="HTTP_Server" module-id="OHS">
      <process-set id="HTTP_Server" restart-on-death="true" numprocs=1>
         <module-data>
            <category id="start-parameters">
               <data id="config-file" value="/myconfs/httpd.conf"/>
               <data id="start-mode" value="ssl-disabled"/>
               <data id="command-line" value="-D MyDefine"/>
            </category>
            <category id="ping-parameters">
               <data id="ping-url" value="/"/>
            </category>
            <category id="restart-parameters">
               <data id="reverseping-timeout" value="345"/>
               <data id="no-reverseping-failed-ping-limit" value="3"/>
               <data id="reverseping-failed-ping-limit" value="6"/>
            </category>
         </module-data>
            <start timeout="300" retry="3"/>
            <stop timeout="300"/>
            <restart timeout="300"/>
            <ping timeout="30" interval="30"/>
      </process-set>
   </process-type>
</ias-component>
```

5.4 Oracle HTTP Server Attribute Descriptions

This section describes the attributes that are specific for Oracle HTTP Server.

The Oracle HTTP Server attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="HTTP_Server"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `HTTP_Server`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component/process-type/process-set`

id="HTTP_Server"

Required: true
Default: none
Valid values: `HTTP_Server`
Path: `ias-component`
Path: `ias-component/process-type`
Path: `ias-component/process-type/process-set`

The `id` attribute is required and cannot be changed. The `id` must match the `targets.xml` entry or Application Server Control will not work.

module-id="OHS"

Required: true
Default: none
Path: `ias-component/process-type`

The `module-id` attribute defines the type of process. It associates the configuration with a process module.

numprocs=1

Required: true
Default: none
Valid values: `1`
Path: `ias-component/process-type/process-set`

The Number of OHS Instances to start. Only valid value is 1.

The `numprocs` attribute gives the number of Oracle HTTP Server instances to start. The only valid value is 1.

id="start-parameters"

Required: false
Default: none
Path:
`ias-component/process-type/process-set/module-data/category`

The `start-parameters` category contains the parameters that are relevant for the startup of Oracle HTTP Server.

id="config-file"

Required: false
Default: `$ORACLE_HOME/Apache/Apache/conf/httpd.conf`
Valid values: any full path to an existing configuration file
Path:
`ias-component/process-type/process-set/module-data/category/data`

The `config-file id` is an start command option which specifies the `httpd.conf` for starting Oracle HTTP Server.

id="start-mode"

Required: false
Default: `ssl-enabled`
Valid values: `ssl-enabled/ssl-disabled`
Path: `ias-component/process-type/process-set/module-data/category/data`

This option specifies whether Oracle HTTP Server will be started with `ssl enabled`

id="command-line"

Required: false
Default: none
Valid values: any valid command line options to Oracle HTTP Server
Path: `ias-component/process-type/process-set/module-data/category/data`

This `id` option specifies extra command lines to append to the Oracle HTTP Server command line.

id="ping-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`
The `ping parameters` category contains the parameters that configure how OPMN pings Oracle HTTP Server.

id="ping-url"

Required: false
Default: `/`
Valid values: the path portion of an url; for example: `http://127.0.0.1/<path>`
Path: `ias-component/process-type/process-set/module-data/category/data`

The `ping-url id` specifies the URL at which OPMN pings Oracle HTTP Server.

id="restart-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

The `restart-parameters` category is used for defining parameters that will be used in death-detection.

id="reverseping-timeout"

Required: false
Default: 300 seconds
Valid values: Any reasonable timeout value
Path: `ias-component/process-type/process-set/module-data/category/data`

The `reverseping-timeout` value is the maximum allowable time between two notifications arriving from an Oracle HTTP Server process. As part of death-detection, the Oracle HTTP Server module performs forward pings on the Oracle HTTP Server process. In the event that forward pings start failing, the reverse pings are taken into account in death-detection and Oracle HTTP Server processes are restarted.

id="no-reverseping-failed-ping-limit"

Required: false
Default: 1
Valid values: Any reasonable value that reflects the tolerance that OPMN should have for failed forward pings when reverse pings are also failing. This tolerance is used by OPMN to determine when the process should be declared as unresponsive and replaced.
Path:
`ias-component/process-type/process-set/module-data/category/data`

This `id module data` element defines the tolerance for failed forward pings in the event that reverse pings are also not being received (within the timeout period specified by the `reverseping-timeout` data element). After the number of ping failures equals this limit, the process is deemed unresponsive and restarted by OPMN.

id="reverseping-failed-ping-limit"

Required: false
Default: `3`
Valid values: Any reasonable value that reflects the tolerance that OPMN should have for failed forward pings when reverse pings are being received. This tolerance is used by OPMN to determine when the process should be declared as unresponsive and replaced.
Path:
`ias-component/process-type/process-set/module-data/category/data`

This `module data` element defines the tolerance for failed forward pings when reverse pings are succeeding. After the number of ping failures equals this limit, the process is deemed unresponsive and restarted by OPMN.

6

Configuring OC4J

This chapter describes OC4J configuration in the OPMN `opmn.xml` file.

It features the following topics:

- OC4J Process Module Configuration
- OC4J Minimum Configuration
- OC4J Complete Configuration
- OC4J Attribute Descriptions

6.1 OC4J Process Module Configuration

The following lines load and identify the OC4J process module. Management of OC4J processes by the process module are identified by the `module id`.

```
<module path="ORACLE_HOME/opmn/lib/libopmnoc4j.so">
   <module-id id="OC4J" />
</module>
```

6.2 OC4J Minimum Configuration

The following lines represent the minimum configuration for OC4J. Default values are assigned to all other configuration elements and attributes for OC4J.

```
<ias-component id="OC4J">
   <process-type id="home" module-id="OC4J">
      <port id="ajp" range="3301-3400" />
      <port id="rmi" range="3101-3200" />
      <port id="jms" range="3201-3300" />
      <process-set id="default-island" numprocs="1"/>
   </process-type>
</ias-component>
```

6.3 OC4J Complete Configuration

The complete configuration example in this section showcases the attributes of OC4J configuration that you can control. It contains all possible configuration elements and attributes that can be used with this component.

```
<ias-component id="OC4J" status="enabled" id-matching="false">
   <environment>
      <variable id="LD_LIBRARY_PATH" value="$ORACLE_HOME/lib"
      append="true" />
   </environment>
      <process-type id="home" module-id="OC4J">
         <port id="ajp" range="3301-3400" />
         <port id="rmi" range="3101-3200" />
         <port id="jms" range="3201-3300" />
      <process-set id="default-island" restart-on-death="true" numprocs="1">
      <module-data>
         <category id="start-parameters">
            <data id="java-options" value="-DTestVar=TestVal"/>
            <data id="oc4j-options" value=" "/>
            <data id="config-file" value="/my/config/dir/server.xml"/>
            <data id="java-bin" value="/my/javalocation/jdk/bin/java"/>
         </category>
         <category id="stop-parameters">
            <data id="java-options" value="-DTestVar=TestVal"/>
         </category>
         <category id="restart-parameters">
            <data id="reverseping-timeout" value="345"/>
            <data id="no-reverseping-failed-ping-limit" value="3"/>
            <data id="reverseping-failed-ping-limit" value="6"/>
         </category>
         <category id="urlping-parameters">
            <data id="/j2ee/servlet/Spy" value="200"/>
         </category>
         <category id="security-parameters">
            <data id="wallet-file" value="file:/private/sanejane/ssl_cert/client_cert"/>
            <data id="wallet-password" value ="welcome1"/>
         </category>
      </module-data>
         <start timeout="300" retry="3"/>
         <stop timeout="300"/>
         <restart timeout="300"/>
         <ping timeout="30" interval="30"/>
      </process-set>
   </process-type>
```

```
</ias-component>
```

6.4 OC4J Attribute Descriptions

This section describes the attributes that are specific for OC4J. This section also provides attribute descriptions of the attributes.

The OC4J attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="OC4J"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `OC4J`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="OC4J"

Required: true
Default: none
Valid values: `OC4J`
Path: `ias-component`

The `id` name is required and cannot be changed. The `id` must match the entry in the `targets.xml` file or Application Server Control will not work.

module-id="OC4J"

Required: true
Default: none
Path: `ias-component/process-type`

The `module-id` associates the process with a module. For OC4J processes, this `id` has to match the `module-id` specified in the process module configuration for the OC4J module.

id="ajp"

Required: true
Default: none
Path: `ias-component/process-type/port`

A `port` element defining `ajp` `port` values is required.

id="rmi"

Required: true
Default: none
Path: `ias-component/process-type/port`

A `port` element defining `rmi` `port` values is required.

id="jms"

Required: true
Default: none
Path: `ias-component/process-type/port`

A `port` element defining `jms` `port` values is required.

range

Required: true
Default: none
Valid values: range of ports, individual port numbers or 0
Path: `ias-component/process-type/port`

This attribute is used to specify valid port ranges, comma separated list of ports or a mix of both. For port selection by the operating system to select ports, specify 0 and the OC4J process will use a port provided by the system.

<process-set>

Required: true
Default: none
Path: `ias-component/process-type`

For OC4J processes, the `process-set` element is administratively equivalent to an OC4J island.

id="start-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

The `start-parameters id` is a category that collects all of the parameters that are relevant for the startup of an OC4J process.

id="java-options"

Required: false
Default: none
Valid values: any options acceptable to Java
Path: `ias-component/process-type/process-set/module-data/category/data`

OC4J requires that some `java-options` be passed to start and stop commands. These options are derived internally by OPMN, are not part of the opmn.xml configuration, and cannot be overridden. Additional `java-options` may be specified using this `module data` element.

id="oc4j-options"

Required: false
Default: none
Valid values: any options acceptable to the OC4J executable
Path: `ias-component/process-type/process-set/module-data/category/data`

OC4J processes require options to be passed in as part of the start or stop commands to function correctly. These options cannot be overridden. In addition to these options, other options can be passed in via this `module data` element. There is no default value for this data element.

id="config-file"

Required: false
Default: `$ORACLE_HOME/j2ee/<process-type id>/config/server.xml`
Valid values: any full path to an existing configuration file
Path: `ias-component/process-type/process-set/module-data/category/data`

The configuration file is an OC4J option in the start command. The default value for this data element is built from the `$ORACLE_HOME` variable and OC4J instance name (`process-type id`).

id="java-bin"

Required: false
Default: `$ORACLE_HOME/jdk/bin/java`
Valid values: Full path to `java.exe`
Path: `ias-component/process-type/process-set/module-data/category/data`

The default value is the complete path to Java that is available in the installation. You can specify alternate paths to the Java executable. However, a valid version of Java will have to be used for the process to start up and work correctly.

id="stop-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

The `stop-parameters id` is a category that includes all the parameters that are relevant for stopping an OC4J process.

id="restart-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

The `restart-parameters` category is used for defining parameters that will be used in death-detection.

id="reverseping-timeout"

Required: false
Default: `300 seconds`
Valid values: Any reasonable timeout value
Path: `ias-component/process-type/process-set/module-data/category/data`

The `reverseping-timeout` value is the maximum allowable time between two notifications arriving from an OC4J process. As part of death-detection, the OC4J module performs forward pings on the process also. In the event that forward pings start failing, the reverse pings are taken into account in death-detection and restart.

id="no-reverseping-failed-ping-limit"

Required: false
Default: `1`
Valid values: Any value that reflects the tolerance that OPMN should have for failed forward pings when reverse pings are also failing. This tolerance is used by OPMN to determine when the process should be declared as unresponsive and replaced.
Path: `ias-component/process-type/process-set/module-data/category/data`

This `module data` element defines the tolerance for failed forward pings in the event that reverse pings are also not being received (within the timeout period specified by reverseping-timeout data element). After the number of ping failures equals this limit, the process is deemed unresponsive and restarted by OPMN.

id="reverseping-failed-ping-limit"

Required: false
Default: `3`
Valid values: Any reasonable value that reflects the tolerance that OPMN should have for failed forward pings when reverse pings are being received. This tolerance is used by OPMN to determine when the process should be declared as unresponsive and replaced.
Path: `ias-component/process-type/process-set/module-data/category/data`

This `module data` element defines the tolerance for failed forward pings when reverse pings are succeeding. After the number of ping failures equals this limit, the process is deemed unresponsive and restarted by OPMN.

id="urlping-parameters"

Required: false
Default: Not Applicable
Valid values: Not Applicable
Path: `ias-component/process-type/process-set/module-data/category`

The `"urlping-parameters" id` enables users to specify URLs for ping operations as part of OC4J process ping operations. The data under this category consists of the URL and a valid HTTP return code. `AJP13` protocol is used to directly connect to the OC4J process and the HTTP return code is validated against the configured code. If there are multiple URLs configured, failure in pinging any one of them will be considered a ping failure and the process will be restarted after the ping failures limit is exceeded.

id="/j2ee/servlet/Spy"

Required: false
Default: Not Applicable
Valid values: Any valid URL on the OC4J process.
Path: `ias-component/process-type/process-set/module-data/category/data`

This is the URL in the OC4J process that will be pinged.

value="200"

Required: false
Default: Not Applicable
Valid values: Any valid HTTP return code.
Path: `ias-component/process-type/process-set/module-data/category/data`

The following is the HTTP code that results from ping operations to the configured URL.

```
<category id="security-parameters">
   <data id="wallet-file"value="file:/private/sanejane/ssl_cert/client_cert"/>
   <data id="wallet-password"value="welcome1"/>
</category>
```

id="security-parameters"

Required: false
Default: Not Applicable
Valid values: Not Applicable
Path: `ias-component/process-type/process-set/module-data/category/`

The OC4J process module can perform pings over SSL. The `"security-parameters" id` is a category that allows users to specify the wallet file and password for such communication.

id="wallet-file"

Required: false
Default: Not Applicable
Valid values: Not Applicable
Path: `ias-component/process-type/process-set/module-data/category/data`

The `data id` whose value is the path to the wallet file (not including the filename).

value="file:/private/sanejane/ssl_cert/client_cert"

Required: false
Default: Not applicable
Valid values: Path to a wallet file (not including the filename).
Path: `ias-component/process-type/process-set/module-data/category/data`

The path to the wallet file (not including the filename). The data in the wallet file is used in SSL authentication during pinging.

id="wallet-password"

Required: false
Default: Not applicable
Valid values: Not applicable
Path: `ias-component/process-type/process-set/module-data/category/data`

The `data id` that specifies the wallet password.

value ="welcome1"

Required: false
Default: Not applicable
Valid values: The valid wallet password.
Path: `ias-component/process-type/process-set/module-data/category/data`

This value specifies the password for the wallet.

7

Configuring OracleAS Web Cache

This chapter describes OracleAS Web Cache configuration in the OPMN `opmn.xml` file.

It features the following topics:

- OracleAS Web Cache Process Module Configuration
- OracleAS Web Cache Minimum Configuration
- OracleAS Web Cache Complete Configuration
- OracleAS Web Cache Attribute Descriptions

7.1 OracleAS Web Cache Process Module Configuration

The following lines load and identify the OracleAS Web Cache process module. Management of OracleAS Web Cache processes by the process module are identified by the `module id`.

```
<module path="ORACLE_HOME/opmn/lib/libopmnwc.so">
   <module-id id="WebCache" />
   <module-id id="WebCacheAdmin" />
</module>
```

7.2 OracleAS Web Cache Minimum Configuration

The following lines represent the minimum configuration for OracleAS Web Cache. Default values are assigned to all other configuration elements and attributes for OracleAS Web Cache.

```
<ias-component id="WebCache">
   <environment>
      <variable id="LD_LIBRARY_PATH" value="$ORACLE_HOME/lib:$ORACLE_HOME/opmn/lib"
      append="true"/>
   </environment>
   <process-type id="WebCache" module-id="WebCache">
      <process-set id="WebCache" numprocs="1"/>
   </process-type>
      <process-type id="WebCacheAdmin" module-id="WebCache-admin">
      <process-set id="WebCacheAdmin" restart-on-death="false" numprocs="1"/>
   </process-type>
</ias-component>
```

7.3 OracleAS Web Cache Complete Configuration

The following example represents the complete configuration for OracleAS Web Cache. It contains all possible configuration elements and attributes that can be used with OracleAS Web Cache.

```
<ias-component id="WebCache">
   module-id="WebCache"
      <variable id="LD_LIBRARY_PATH" value="$ORACLE_HOME/lib:$ORACLE_HOME/opmn/lib"
      append="true"/>
   </environment>
   <process-type id="WebCache" module-id="WebCache">
      <process-set id="WebCache" restart-on-death="true" numprocs="1"/>
   </process-type>
   <process-type id="WebCacheAdmin" module-id="WebCache"-admin">
      <process-set id="WebCacheAdmin" restart-on-death="false" numprocs="1"/>
   </process-type>
</ias-component>
```

7.4 OracleAS Web Cache Attribute Descriptions

This section describes the attributes that are specific for OracleAS Web Cache.

The OracleAS Web Cache attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="WebCache"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `WebCache`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="WebCache"

Required: true
Default: none
Valid values: `WebCache`
Path: `ias-component`
Path: `ias-component/process-type`
Path: `ias-component/process-type/process-set`

This `id` is required and cannot be changed. The `id` must match the `targets.xml` entry or Application Server Control will not work.

id="WebCacheAdmin"

Required: true
Default: none
Valid values: WebCacheAdmin
Path: `ias-component/process-type`
Path: `ias-component/process-type/process-set`

The `id` name is required and cannot be changed. The `id` must match the `targets.xml` entry or elements and attributes will not work.

module-id="WebCache"

Required: true
Default: none
Valid values: `WebCache`, `WebCache-admin`
Path: `ias-component/process-type`

The `module id` defines whether the child `process-set` element defines a `WebCache` server process or a `WebCache` administrative process. At least one `WebCache` server process must be defined in the `WebCache` component.

restart-on-death

Required: true
Default: true
Valid values: `true` or `false`
Path: `ias-component/process-type/process-set`

The `restart-on-death` attribute defines whether the process will be restarted if it exits unexpectedly. By default after Oracle Application Server installation, this attribute is set to `true` for the OracleAS Web Cache server, and `false` for the OracleAS Web Cache administrative process.

numprocs="1"

Required: true
Default: none
Valid values: 1
Path: `ias-component/process-type/process-set`

This attribute gives the number of OracleAS Web Cache processes started for the `process-set`. The value must be set to 1.

8

Configuring Oracle Internet Directory

This chapter describes Oracle Internet Directory configuration in the OPMN `opmn.xml` file.

It features the following topics:

- Oracle Internet Directory Process Module Configuration
- Oracle Internet Directory Minimum Configuration
- Oracle Internet Directory Complete Configuration
- Oracle Internet Directory Attribute Descriptions

8.1 Oracle Internet Directory Process Module Configuration

The following lines load and identify the Oracle Internet Directory process module. Management of Oracle Internet Directory processes by the process module are identified by the `module id`.

```
<module path="$ORACLE_HOME/opmn/lib/libopmnoid.so">
   <module-id id="OID" />
</module>
```

8.2 Oracle Internet Directory Minimum Configuration

The following lines represent the minimum configuration for Oracle Internet Directory. Default values are assigned to all other configuration elements and attributes for Oracle Internet Directory.

```
<ias-component id="OID">
   <process-type id="OID" module-id="OID">
      <process-set id="OID" numprocs="1">
         <dependencies>
            <database db-connect-info="IASDB.US.ORACLE.COM"/>
         </dependencies>
            <module-data>
               <category id="oidctl-parameters">
                  <data id="connect" value="IASDB.US.ORACLE.COM"/>
                  <data id="startoidldapd" value="true"/>
               </category>
               <category id="oidmon-parameters">
                  <data id="connect" value="IASDB.US.ORACLE.COM"/>
               </category>
            </module-data>
      </process-set>
   </process-type>
</ias-component>
```

8.3 Oracle Internet Directory Complete Configuration

The following example represents the complete configuration for Oracle Internet Directory. It contains all possible configuration elements and attributes that can be used with Oracle Internet Directory.

```
<ias-component id="OID">
   <process-type id="OID" module-id="OID" working-dir="my_working_dir">
      <environment>
         <variable id="TNS_ADMIN" value="/ade/liyu_oid/oracle/work" />
      </environment>
         <process-set id="OID" numprocs="1">
            <dependencies>
               <database db-connect-info="IASDB.US.ORACLE.COM"/>
            </dependencies>
            <module-data>
               <category id="oidmon-parameters">
                  <data id="connect" value="IASDB.US.ORACLE.COM"/>
                  <data id="host" value="virtual_host_name"/>
                  <data id="sleep" value="20"/>
                  <data id="run-oidctl" value="true"/>
               </category>
               <category id="oidctl-parameters">
                  <data id="connect" value="IASDB.US.ORACLE.COM"/>
                  <data id="instance" value="1"/>
                  <data id="configset" value="1"/>
                  <data id="host" value="12.12.12.12"/>
                  <data id="flags" value="-p 389"/>
                  <data id="startoidldapd" value="true"/>
                  <data id="startoidrepld" value="true"/>
                  <data id="startodisrv" value="true"/>
               </category>
            </module-data>
         </process-set>
   </process-type>
</ias-component>
```

8.4 Oracle Internet Directory Attribute Descriptions

This section describes the attributes that are specific for Oracle Internet Directory. This section also provides attribute descriptions of the attributes.

The Oracle Internet Directory attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="OID"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `OID`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="OID"

Required: true
Default: none
Valid values: `OID`
Path: `ias-component`
Path: `ias-component/process-type`
Path: `ias-component/process-type/process-set`

This `id` name is required and cannot be changed. The name must match the entry `targets.xml` or Application Server Control will not work.

module-id="OID"

Required: true
Default: none
Path: `ias-component/process-type`

The `module-id` name defines the type of process and associates this configuration with a process module.

working-dir="my_working_dir"

Required: false
Default: `$ORACLE_HOME`
Path: `ias-component/process-type`

The `working-dir` attribute specifies where the `oidmon` process will run.

id="TNS_ADMIN"

Required: false
Default: `$ORACLE_HOME/network/admin`
Path: `ias-component/process-type/environment`

Oracle Internet Directory requires the connection to the database by specifying a connect string. The string taken by Oracle Internet Directory is an alias. At runtime, the string is resolved using the `tnsnames.ora` file in the `$TNS_ADMIN` directory. By default, `$TNS_ADMIN` points to `$ORACLE_HOME/network/admin`. If `tnsnames.ora` exists under a different directory, the `environment` must be set to the different directory.

numprocs="1"

Required: true
Default: none
Valid values: `1`
Path: `ias-component/process-type/process-set`

This attribute gives the number of `oidmon` instances started for this `process-set`. There should be at most one instance running in one Oracle Application Server instance.

db-connect-info="IASDB.US.ORACLE.COM"

Required: true
Default: none
Valid values: The database connect string
Path: `ias-component/process-type/process-set`

Oracle Internet Directory depends on the backend database. If the backend database is not running, `oidmon` and other Oracle Internet Directory server processes cannot start.

id="oidmon-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

The `id` category specifies the startup parameters for `oidmon`.

id="connect"

Required: true
Default: none
Valid values: The database connect string alias
Path: `ias-component/process-type/process-set/module-data/category/data`

The `id` data must be configured to start `oidmon`. The following command starts `oidmon`:

```
$ORACLE_HOME/bin/oidmon connect=<value> -opmnuid <uid> start
```

id="host"

Required: false
Default: none
Valid values: The virtual host name
Path: `ias-component/process-type/process-set/module-data/category/data`

The `host` data is configured by default at installation time. The following command starts `oidmon`:

```
$ORACLE_HOME/bin/oidmon connect=<value> host=<value> -opmnuid <uid> start
```

id="sleep"

Required: false
Default: 10 seconds
Valid values: The time interval in seconds at which `oidmon` monitors Oracle Internet Directory servers
Path: `ias-component/process-type/process-set/module-data/category/data`

If the `sleep` data is configured, the following command starts `oidmon`:

```
$ORACLE_HOME/bin/oidmon connect=<connect_value> sleep=<sleep_value>
-opmnuid <uid> start
```

id="run-oidctl"

Required: false
Default: `true`
Valid values: `true` or `false`
Path: `ias-component/process-type/process-set/module-data/category/data`

OPMN manages `oidmon`. However, when starting and stopping `oidmon`, OPMN also attempts to start `oidldapd` through `oidctl` by default.

If you do not want to start any process associated with `oidctl`, set this value to `false`.

id="instance"

Required: false
Default: `1`
Valid values: The numerical value of the instance (>0 and <= 1000) to be started and stopped.
Path: `ias-component/process-type/process-set/module-data/category/data`

The `instance` value is required for using `oidctl`. If this `id` is not configured, the default value is `1`. You can overwrite this default option by specifying a value.

id="configset"

Required: false
Default: `0`
Valid values: The numerical value of the configuration set (>=0 and <= 1000)
Path: `ias-component/process-type/process-set/module-data/category/data`

The `configset id` is only needed to start `oidldapd`. If you want to start `oidrepld` or `oidsrv`, the assigned data is ignored. If `configset` is not configured, the default value is `0`.

id="flags"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category/data`

If `flags` is configured, it will overwrite the settings in the `configset` at runtime.

id="startoidldapd"

Required: false
Default: `true`
Valid values: `true` or `false`
Path: `ias-component/process-type/process-set/module-data/category/data`

If the `id` data is configured, the default start command for the server is:

```
$ORACLE_HOME/bin/oidctl connect=<connect_value> server=oidldapd instance=1
configset=0 start
```

id="startoidrepld"

Required: false
Default: false
Valid values: `true` or `false`
Path: `ias-component/process-type/process-set/module-data/category/data`

If the `id` data is configured, the default start command for the server is:

```
$ORACLE_HOME/bin/oidctl connect=<connect_value> server=oidrepld instance=1
configset=0 start
```

Note: This server must be configured before it can be brought up manually or by OPMN after installation.

id="startodisrv"

Required: false
Default: false
Valid values: `true` or `false`
Path: `ias-component/process-type/process-set/module-data/category/data`

If the `id` data is configured, the default start command for the server is:

```
$ORACLE_HOME/bin/oidctl connect=<connect_value> server=odisrv instance=1
configset=0 start
```

9

Configuring OracleAS Port Tunnel

This chapter describes OracleAS Port Tunnel configuration in the OPMN `opmn.xml` file.

It features the following topics:

- OracleAS Port Tunnel Process Module Configuration
- OracleAS Port Tunnel Minimum Configuration
- OracleAS Port Tunnel Complete Configuration
- OracleAS Port Tunnel Attribute Descriptions

See Also: *Oracle HTTP Server Administrator's Guide*

9.1 OracleAS Port Tunnel Process Module Configuration

The following lines load and identify the OracleAS Port Tunnel process module. Management of OracleAS Port Tunnel processes by the process module are identified by the `module id`.

```
<module path="%ORACLE_HOME%/opmn/lib/libopmniaspt.so">
   <module-id id="IASPT" />
</module>
```

9.2 OracleAS Port Tunnel Minimum Configuration

The following lines represent the minimum configuration for OracleAS Port Tunnel. Default values are assigned to all other configuration elements and attributes for OracleAS Port Tunnel.

```
<ias-component id="IASPT">
   <process-type id="IASPT" module-id="IASPT">
      <process-set id="IASPT" numprocs="1"/>
   </process-type>
</ias-component>
```

9.3 OracleAS Port Tunnel Complete Configuration

The following example represents the complete configuration for OracleAS Port Tunnel. It contains all possible configuration elements and attributes that can be used with OracleAS Port Tunnel.

```
<module path="%ORACLE_HOME%/opmn/lib/libopmniaspt.so">
   <module-id id="IASPT" />
</module>
<ias-component id="IASPT" status="enabled" id-matching="false">
   <process-type id="IASPT" module-id="IASPT">
      <port id="ajp" range="6701-6703"/>
   <process-set id="IASPT" restart-on-death="true" id="ajp"/>
   </process-type>
</ias-component>
```

9.4 OracleAS Port Tunnel Attribute Descriptions

This section describes the attributes that are specific for OracleAS Port Tunnel.

The OracleAS Port Tunnel attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="IASPT"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `IASPT`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="IASPT"

Required: true
Default: none
Valid values: `IASPT`
Path: `ias-component`
Path: `ias-component/process-type`
Path: `ias-component/process-set`

The `id` name is required and cannot be changed. The `id` name must match the entry in the `targets.xml` file.

module-id="IASPT"

Required: true
Default: none
Path: `ias-component/process-type`

The `module-id` name defines the type of process and associates the configuration with a process module.

id="ajp"

Required: false
Default: none
Valid values: `ajp`
Path: `ias-component/process-type/port`

The `id` value should be used together with `range` in `port` property to specify the `ajp` ports to be used by the OracleAS Port Tunnel server. If the `id` is specified, the `port` number configured in the `iaspt.conf` file is overwritten.

range="6701-6703"

Required: false
Default: none
Valid values: Any single port or a range of ports
Path: `ias-component/process-type/port`

The `range` value should be used together with `ajp` in `port` property to specify the `ajp` ports to be used by OracleAS Port Tunnel servers.

numprocs="3"

Required: true
Default: none
Valid values: Any number
Path: `ias-component/process-type/process-set`

This attribute tells how many OracleAS Port Tunnel server processes to be started. The `ajp` range should be configured in the `port` property if the value is 1. If the value is greater than 1, `ajp` range has to be configured to specify enough ports for each OracleAS Port Tunnel server process. Typically, the value is 1 port per process.

10

Configuring OracleAS Wireless

This chapter describes OracleAS Wireless configuration in the OPMN `opmn.xml` file.

It features the following topics:

- OracleAS Wireless Process Module Configuration
- OracleAS Wireless Minimum Configuration
- OracleAS Wireless Complete Configuration
- OracleAS Wireless Attribute Descriptions

10.1 OracleAS Wireless Process Module Configuration

The following lines load and identify the OracleAS Wireless process module. Management of OracleAS Wireless processes by the process module are identified by the `module id`.

```
<module path="%ORACLE_HOME%/opmn/lib/libopmnoc4j.so">
   <module-id id="OC4J"/>
</module>
<module path="ORACLE_HOME/opmn/lib/libopmnwireless.so">
   <module-id id="alert"/>
   <module-id id="datafeeder"/>
   <module-id id="performance"/>
   <module-id id="messaging"/>
   <module-id id="notification"/>
</module>
```

10.2 OracleAS Wireless Minimum Configuration

The following lines represent the minimum configuration for OracleAS Wireless. Default values are assigned to all other configuration elements and attributes for OracleAS Wireless.

```
<ias-component id="wireless" status="enabled">
   <environment>
      <variable id="WIRELESS_HOME" value="$ORACLE_HOME/wireless" append="false"/>
      <variable id="WIRELESS_LIB" value="$WIRELESS_HOME/lib" append="false"/>
      <variable id="JAVA13_HOME" value="$ORACLE_HOME/jdk" append="false"/>
      <variable id="JAVA_HOME" value="$JAVA13_HOME" append="false"/>
      <variable id="IAS_LIB" value="$ORACLE_HOME/lib" append="false"/>
      <variable id="CLASSPATH" value="." append="true"/>
      <variable id="CLASSPATH" value="$JAVA13_HOME/jre/lib/rt.jar" append="true"/>
      <variable id="CLASSPATH" value="$WIRELESS_HOME/server/classes" append="true"/>
      <variable id="CLASSPATH" value="$WIRELESS_LIB/wireless.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jdbc/lib/classes12.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jdbc/lib/nls_charset12.jar" append="true"/>
      <variable id="CLASSPATH" value="$IAS_LIB/xmlparserv2.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/jndi.jar" append="true"/>
      <variable id="CLASSPATH" value="$IAS_LIB/servlet.jar" append="true"/>
      <variable id="CLASSPATH" value="$IAS_LIB/activation.jar" append="true"/>
      <variable id="CLASSPATH" value="$IAS_LIB/mail.jar" append="true"/>
      <variable id="CLASSPATH" value="$WIRELESS_LIB/ssosdk902.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/ldapjclnt9.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/ldap.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/providerutil.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/repository.jar" append="true"/>
      <variable id="CLASSPATH" value="$IAS_LIB/xschema.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/sysman/webapps/emd/WEB-INF/lib/emd.jar"
      append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/dcm/lib/dcm.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/emPid.jar" append="true"/>
      <variable id="CLASSPATH" value="$WIRELESS_LIB/mwa.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/netcfg.jar"append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/lib/http_client.jar"
      append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/lib/javax-ssl-1_2.jar"
      append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/lib/jssl-1_2.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/ldapjclnt9.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/ojmisc.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/jazn.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/jaas.jar" append="true"/>
```

```
      <variable id="CLASSPATH" value="$ORACLE_HOME/soap/lib/soap.jar" append="true"/>
   </environment>
   <process-type id="wireless_oc4j" module-id="OC4J">
      <port id="ajp" range="3301-3400" />
      <port id="rmi" range="3101-3200" />
      <port id="jms" range="3201-3300" />
      <process-set id="wireless-island" numprocs="1"/>
   </process-type>
   <process-type id="alert_server" module-id="alert">
      <stop timeout="300"/>
      <restart timeout="480"/>
      <process-set id="alert_instance_1" numprocs="1"/>
   </process-type>
   <process-type id="datafeeder_server" module-id="datafeeder">
      <stop timeout="300"/>
      <restart timeout="480"/>
      <process-set id="datafeeder_instance_1" numprocs="1"/>
   </process-type>
   <process-type id="performance_server" module-id="performance">
      <stop timeout="300"/>
      <restart timeout="480"/>
      <process-set id="performance_instance_1" numprocs="1"/>
   </process-type>
   <process-type id="messaging_server" module-id="messaging">
      <stop timeout="300"/>
      <restart timeout="480"/>
      <process-set id="messaging_instance_1" numprocs="1"/>
   </process-type>
   <process-type id="notification_server" module-id="notification">
      <stop timeout="300"/>
      <restart timeout="480"/>
      <process-set id="notification_instance_1" numprocs="1"/>
   </process-type>
</ias-component>
```

10.3 OracleAS Wireless Complete Configuration

The following lines show a complete configuration for OracleAS Wireless. It contains all possible configuration elements and attributes for OracleAS Wireless.

```
<ias-component id="wireless" status="enabled">
   <environment>
      <variable id="WIRELESS_HOME" value="$ORACLE_HOME/wireless" append="false"/>
      <variable id="WIRELESS_LIB" value="$WIRELESS_HOME/lib" append="false"/>
      <variable id="JAVA13_HOME" value="$ORACLE_HOME/jdk" append="false"/>
      <variable id="JAVA_HOME" value="$JAVA13_HOME" append="false"/>
      <variable id="IAS_LIB" value="$ORACLE_HOME/lib" append="false"/>
      <variable id="CLASSPATH" value="." append="true"/>
      <variable id="CLASSPATH" value="$JAVA13_HOME/jre/lib/rt.jar" append="true"/>
      <variable id="CLASSPATH" value="$WIRELESS_HOME/server/classes" append="true"/>
      <variable id="CLASSPATH" value="$WIRELESS_LIB/wireless.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jdbc/lib/classes12.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jdbc/lib/nls_charset12.jar" append="true"/>
      <variable id="CLASSPATH" value="$IAS_LIB/xmlparserv2.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/jndi.jar" append="true"/>
      <variable id="CLASSPATH" value="$IAS_LIB/servlet.jar" append="true"/>
      <variable id="CLASSPATH" value="$IAS_LIB/activation.jar" append="true"/>
      <variable id="CLASSPATH" value="$IAS_LIB/mail.jar" append="true"/>
      <variable id="CLASSPATH" value="$WIRELESS_LIB/ssosdk902.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/ldapjclnt9.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/ldap.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/providerutil.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/repository.jar" append="true"/>
      <variable id="CLASSPATH" value="$IAS_LIB/xschema.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/sysman/webapps/emd/WEB-INF/lib/emd.jar"
      append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/dcm/lib/dcm.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/emPid.jar" append="true"/>
      <variable id="CLASSPATH" value="$WIRELESS_LIB/mwa.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/netcfg.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/lib/http_client.jar"
      append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/lib/javax-ssl-1_2.jar"
      append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/lib/jssl-1_2.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/ldapjclnt9.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/ojmisc.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/jazn.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/jaas.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/soap/lib/soap.jar" append="true"/>
```

```
</environment>
<process-type id="wireless_oc4j" module-id="OC4J">
   <port id="ajp" range="3301-3400" />
   <port id="rmi" range="3101-3200" />
   <port id="jms" range="3201-3300" />
   <process-set id="wireless-island" numprocs="1"/>
   </process-type>
<process-type id="alert_server" module-id="alert" working-dir="%ORACLE_HOME%/wireless">
   <module-data>
      <category id="start-parameters">
         <data id="java-bin" value="/my/path/to/java/exec"/>
         <data id="java-parameters" value="-Doracle.wireless.instance=my_alert_instance_name
         -Dyet_another_definition=yet_another_value"/>
         <data id="class-name" value="MyJavaStartClass"/>
         <data id="application-parameters" value="my_application_parameters"/>
      </category>
      <category id="stop-parameters">
         <data id="java-bin" value="/my/path/to/java/exec"/>
         <data id="java-parameters" value="-Doracle.wireless.instance=my_alert_instance_name
         -Dyet_another_definition=yet_another_value"/>
         <data id="class-name" value="MyJavaStopClass"/>
         <data id="application-parameters" value="my_application_parameters"/>
      </category>
   </module-data>
   <stop timeout="300"/>
   <restart timeout="480"/>
   <process-set id="alert_instance_1" numprocs="1"/>
</process-type>
<process-type id="datafeeder_server" module-id="datafeeder" working-dir="ORACLE_HOME/
wireless">
   <module-data>
      <category id="start-parameters">
         <data id="java-bin" value="/my/path/to/java/exec"/>
         <data id="java-parameters" value="-Doracle.wireless. instance=my_ datafeeder
        _instance_name
         -Dyet_another_definition=yet_another_value"/>
         <data id="class-name" value="MyJavaStartClass"/>
         <data id="application-parameters" value="my_application_parameters"/>
      </category>
      <category id="stop-parameters">
         <data id="java-bin"  value="/my/path/to/java/exec"/>
         <data id="java-parameters" value="-Doracle.wireless.instance=
         my_datafeeder_instance_name -Dyet_another_definition=yet_another_value"/>
         <data id="class-name" value="MyJavaStopClass"/>
         <data id="application-parameters" value="my_application_parameters"/>
```

```
      </category>
   </module-data>
   <stop timeout="300"/>
   <restart timeout="480"/>
   <process-set id="datafeeder_instance_1" numprocs="1"/>
</process-type>
<process-type id="performance_server" module-id="performance"
working-dir="ORACLE_HOME/wireless">
   <module-data>
      <category id="start-parameters">
         <data id="java-bin" value="/my/path/to/java/exec"/>
         <data id="java-parameters"
          value="-Doracle.wireless.instance=my_performance_instance_name
         -Dyet_another_definition=yet_another_value"/>
         <data id="class-name"  value="MyJavaStartClass"/>
         <data id="application-parameters" value="my_application_parameters"/>
      </category>
      <category id="stop-parameters">
         <data id="java-bin" value="/my/path/to/java/exec"/>
         <data id="java-parameters"
          value="-Doracle.wireless.instance=
          my_performance_instance_name-Dyet_another_definition=yet_another_value"/>
         <data id="class-name"  value="MyJavaStopClass"/>
         <data id="application-parameters" value="my_application_parameters"/>
      </category>
   </module-data>
   <stop timeout="300"/>
   <restart timeout="480"/>
   <process-set id="performance_instance_1" numprocs="1"/>
</process-type>
<process-type id="messaging_server" module-id="messaging" working-dir=
"ORACLE_HOME/wireless">
   <module-data>
      <category id="start-parameters">
         <data id="java-bin" value="/my/path/to/java/exec"/>
         <data id="java-parameters"
          value="-Doracle.wireless.instance=my_messaging_instance_name
         -Dyet_another_definition=yet_another_value"/>
         <data id="class-name"  value="MyJavaStartClass"/>
         <data id="application-parameters" value="my_application_parameters"/>
      </category>
      <category id="stop-parameters">
         <data id="java-bin" value="/my/path/to/java/exec"/>
         <data id="java-parameters" value="-Doracle.wireless.instance=
         my_messaging_instance_name -Dyet_another_definition=yet_another_value"/>
```

```
            <data id="class-name" value="MyJavaStopClass"/>
            <data id="application-parameters" value="my_application_parameters"/>
         </category>
      </module-data>
      <stop timeout="300"/>
      <restart timeout="480"/>
      <process-set id="messaging_instance_1" numprocs="1"/>
   </process-type>
   <process-type id="notification_server" module-id="notification" working-dir=
   "ORACLE_HOME/wireless">
      <module-data>
         <category id="id="start-parameters"">
            <data id="java-bin" value="/my/path/to/java/exec"/>
            <data id="java-parameters" value="-Doracle.wireless.instance=
            my_notification_instance_name -Dyet_another_definition=yet_another_value"/>
            <data id="class-name" value="MyJavaStartClass"/>
            <data id="application-parameters" value="my_application_parameters"/>
         </category>
         <category id="stop-parameters">
            <data id="java-bin" value="/my/path/to/java/exec"/>
            <data id="java-parameters" value="-Doracle.wireless.instance=
            my_notification_instance_name -Dyet_another_definition=yet_another_value"/>
            <data id="class-name" value="MyJavaStopClass"/>
            <data id="application-parameters" value="my_application_parameters"/>
         </category>
      </module-data>
      <stop timeout="300"/>
      <restart timeout="480"/>
      <process-set id="notification_instance_1" numprocs="1"/>
   </process-type>
</ias-component>
```

10.4 OracleAS Wireless Attribute Descriptions

This section describes the attributes that are specific for OracleAS Wireless.

The OracleAS Wireless attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="wireless"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `wireless`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="wireless"

Required: true
Default: none
Valid values: `wireless`
Path: `ias-component`

This `id` is required and cannot be changed. The name must match the `targets.xml` entry or elements and attributes will not work.

module-id="alert"

Required: true
Default: none
Path: `ias-component/process-type`

This `module-id` defines the type of process and associates this configuration with a process module. In Section 10.1, the five OracleAS Wireless server types are associated with OracleAS Wireless process module.

module-id="datafeeder"

Required: true
Default: none
Path: `ias-component/process-type`

This `module-id` defines the type of process and associates this configuration with a process module.

module-id="performance"

Required: true
Default: none
Path: `ias-component/process-type`

This `module-id` defines the type of process and associates this configuration with a process module.

module-id="messaging"

Required: true
Default: none
Path: `ias-component/process-type`

This `module-id` defines the type of process and associates this configuration with a process module.

module-id="notification"

Required: true
Default: none
Path: `ias-component/process-type`

This `module-id` defines the type of process and associates this configuration with a process module.

numprocs="1"

Required: true
Default: none
Valid values: `1`
Path: `ias-component/process-type/process-set`

This attribute gives the number of OracleAS Wireless instances started for this `process-set`. The OracleAS Wireless module does not permit more than one instance with the same `process-set`. To start more than one processes for the same server type, put one `process-set` entry with one unique `process-set id` for each process.

For example:

```
<process-type id="datafeeder_server" module-id="datafeeder">
   <process-set id="datafeeder_instance_1" numprocs="1"/>
   <process-set id="datafeeder_instance_2" numprocs="1"/>
</process-type>
```

Do not create the following:

```
<process-type id="datafeeder_server" module-id="datafeeder">
   <process-set id="datafeeder_instance_1" numprocs="2"/>
</process-type>
```

id="start-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This `id` indicates the configuration block for `start-parameters` category. This category contains data related to starting the module.

id="java-bin"

Required: false
Defualt: `$ORACLE_HOME/jdk/bin/java`
Valid values: Full path to `java.exe`
Path: `ias-component/process-type/process-set/module-data/category/data`

You can specify alternate paths to the Java executable. However, a valid version of Java will have to be used for the process to start up and work correctly.

id="java-parameters"

Required: false
Default: None
Valid values: Any valid Java parameters
Path: `ias-component/process-type/process-set/module-data/category/data`

This `id` allows you to specify any valid Java parameters. All specified Java parameters will be appended to the default values. OPMN derives some java parameters internally and additional parameters can be added with this attribute.

id="class-name"

Required: false
Default: `oracle.panama.sysmgmt.server.PanamaServer` for start and `oracle.panama.sysmgmt.client.manager` for stop
Valid values: Any valid Java class names
Path: `ias-component/process-type/process-set/module-data/category/data`

This `id` allows you to specify a Java class name other than the default ones to start or stop a OracleAS Wireless process. Oracle recommends not changing this parameter; it is for internal use only.

id="application-parameters"

Required: false
Default: none
Valid values: any valid Java application parameters
Path: `ias-component/process-type/process-set/module-data/category/data`

This `id` allows you to put more application parameters in addition to the default one. The default one tells which OracleAS Wireless `process-type` to be started.

id="stop-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This `id` indicates the configuration block for `stop-parameters` category. In this category, some stop related `module data` can be specified.

See Also: id="start-parameters"

stop timeout="300"

Required: false
Default: `180`
Valid values: A timeout value in seconds
Path: `ias-component/process-type/`

This parameter notifies OPMN how long it should wait for the process to terminate. The default value is 180 seconds. However, when stopping OracleAS Wireless processes, database access is required and it may take up to 5 minutes to signal a process to terminate.

restart timeout="480"

Required: false
Default: 180
Valid values: A timeout value in seconds
Path: `ias-component/process-type/`

This parameter notifies OPMN the waiting period for a OracleAS Wireless process to be restarted. The default value is 180 seconds. However, a restart action is actually a stop and start, so the total value should be 180 (for start)+300 (for stop)=480 seconds.

11

Configuring OracleAS ProcessConnect

This chapter describes OracleAS ProcessConnect configuration in the OPMN `opmn.xml` file.

It features the following topics:

- OracleAS ProcessConnect Module Configuration
- OracleAS ProcessConnect Minimum Configuration
- OracleAS ProcessConnect Complete Configuration
- OracleAS ProcessConnect Attribute Descriptions

11.1 OracleAS ProcessConnect Module Configuration

The following lines load and identify the OracleAS ProcessConnect process module. Management of OracleAS ProcessConnect processes by the process module are identified by the `module id`.

```
<module path="%ORACLE_HOME%/opmn/lib/libopmnip.so">
   <module-id id="integration-manager"/>
   <module-id id="adapter-framework"/>
</module>
```

11.2 OracleAS ProcessConnect Minimum Configuration

The following lines represent the minimum configuration for OracleAS ProcessConnect. Default values are assigned to all other configuration elements and attributes for OracleAS ProcessConnect.

```
<ias-component id="ProcessConnect">
   <environment>
      <variable id="LANG" value="en_US" append="false"/>
      <variable id="THREADS_FLAG" value="native" append="false"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/rdbms/jlib/xdb_g.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/rts2.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/oc4j.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/lib/http_client.jar"
      append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/lib/aqapi.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/ip/admin" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/ip/work" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/ip/config" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/ip/lib/ip.jar" append="true"/>
   </environment>
   <process-type id="IntegrationManager" module-id="integration-manager">
      <port id="dms" range="8301-8401"/>
      <process-set id="im_instance1" numprocs="1"/>
   </process-type>
   <process-type id="AdapterFramework" module-id="adapter-framework">
      <port id="dms" range="8301-8401"/>
      <process-set id="af_instance1" numprocs="1"/>
   </process-type>
</ias-component>
```

11.3 OracleAS ProcessConnect Complete Configuration

The following lines show a complete configuration for OracleAS ProcessConnect. It contains all possible configuration elements and attributes for OracleAS ProcessConnect.

```
<ias-component id="ProcessConnect" status="enabled">
   <module-data>
      <category id="start-parameters">
         <data id="java-bin" value="/my/path/to/java/exec"/>
         <data id="java-parameters" value="-ms8m -mx512m"/>
         <data id="class-name" value="MyJavaStartClass"/>
      </category>
      <category id="stop-parameters">
         <data id="java-bin" value="/my/path/to/java/exec"/>
         <data id="java-parameters" value="-ms8m -mx512m"/>
         <data id="class-name" value="MyJavaStopClass"/>
      </category>
      <category id="ip-parameters">
         <data id="dms-port-property-name" value="my.dms.port.property"/>
         <data id="log-dir" value="/my/path/to/ip/log/dir"/>
         <data id="start-command" value="-mystartstring"/>
         <data id="shutdown-command" value="-myshutdownstring"/>
         <data id="im-string" value="MyIntegrationManagerString"/>
         <data id="af-string" value="My Adapter Framework String"/>
         <data id="im-class-name" value="MyIMClass"/>
         <data id="af-class-name" value="MyAFClass"/>
      </category>
   </module-data>
   <environment>
      <variable id="LANG" value="en_US" append="false"/>
      <variable id="THREADS_FLAG" value="native" append="false"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/rdbms/jlib/xdb_g.jar"
      append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/jlib/rts2.jar" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/oc4j.jar"       append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/lib/http_client.jar"
      append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/j2ee/home/lib/aqapi.jar"
      append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/ip/admin" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/ip/work" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/ip/config" append="true"/>
      <variable id="CLASSPATH" value="$ORACLE_HOME/ip/lib/ip.jar" append="true"/>
   </environment>
```

```
   <process-type id="IntegrationManager" module-id="integration-manager">
      <port id="dms"range="8301-8401"/>
      <id="im_instance1"numprocs="1"/>
   </process-type>
   <process-type id="AdapterFramework" module-id="adapter-framework">
      <port id="dms" range="8301-8401"/>
      <process-set id="af_instance1"numprocs="1"/>
   </process-type>
</ias-component>
```

11.4 OracleAS ProcessConnect Attribute Descriptions

This section describes the attributes that are specific for OracleAS ProcessConnect. This section also provides attribute descriptions of the attributes.

The OracleAS ProcessConnect attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="ProcessConnect"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `ProcessConnect`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="ProcessConnect"

Required: true
Default: none
Valid values: `ProcessConnect`
Path: `ias-component`

This `id` is required and cannot be changed. The name must match the `targets.xml` entry or elements and attributes will not work.

id="start-parameters"

Required: false
Default: none
Path: `ias-component/module-data/category`

This `id` indicates the configuration block for the `start-parameters` category. In this category, some start-related `module data` can be specified.

id="stop-parameters"

Required: false
Default: none
Path: `ias-component/module-data/category`

This `id` indicates the configuration block for `stop-parameters` category. In this category, some stop-related `module data` can be specified.

id="ip-parameters"

Required: false
Default: none
Path: `ias-component/module-data/category`

This `id` indicates the configuration block for the `ip-parameters` category. In this category, some ProcessConnect-related `module data` can be specified.

id="java-bin"

Required: false
Default: `$ORACLE_HOME/jdk/bin/java`
Valid values: Full path to `java.exe`
Path: `ias-component/module-data/category`

You can specify alternate paths to the Java executable. However, a valid version of Java will have to be used for the process to start up and work correctly.

id="java-parameters"

Required: false
Default: `-ms8m -mx512m -D<IM|AF>`
`-Doracle.dms.httpd.port.start=<dms_port>`
`-Doracle.opmn.uid=<opmn_uid>`
`-Doracle.ons.oraclehome=<`*ORACLE_HOME*`>`
Valid values: Any valid Java parameters
Path: `ias-component/module-data/category/data`

You can specify any valid Java parameters for the Java command line. If a parameter matches one in the default parameter list, it will override the default.

id="class-name"

Required: false
Default: `oracle.tip.runtime.admin.ProcessManager`
Valid values: A valid Java class name
Path: `ias-component/module-data/category/data`

You can specify any valid Java class name that will be used for starting or stopping OracleAS ProcessConnect processes. This attribute is for internal use only and must not be changed by the user.

id="dms-port-property-name"

Required: false
Default: `oracle.dms.httpd.port.start`
Valid values: A valid Java property name
Path: `ias-component/module-data/category/data`

You can specify a Java property name that will be used to pass an OPMN assigned `DMS port` value to OracleAS ProcessConnect processes. In turn, OracleAS ProcessConnect processes will read this property to get the DMS port. This name should match the property name used by OracleAS ProcessConnect processes for retrieving the DMS port.

id="log-dir"

Required: false
Default: `$ORACLE_HOME/ip/log`
Valid values: The file path where OracleAS ProcessConnect processes store log files
Path: `ias-component/module-data/category/data`

You can specify a directory where OracleAS ProcessConnect processes will store their log files.

id="start-command"

Required: false
Default: `-start`
Valid values: A valid OracleAS ProcessConnect command for starting OracleAS ProcessConnect processes
Path: `ias-component/module-data/category/data`

This is an OracleAS ProcessConnect process management specific command to be passed into OracleAS ProcessConnect process management class. It should not be changed.

id="shutdown-command"

Required: false
Default: `-shutdown`
Valid values: A valid OracleAS ProcessConnect specific command for stopping OracleAS ProcessConnect processes
Path: `ias-component/module-data/category/data`

This is an OracleAS ProcessConnect process management specific command to be passed into OracleAS ProcessConnect process management class. It should not be changed.

id="im-string"

Required: false
Default: `IntegrationManager`
Valid values: A valid OracleAS ProcessConnect specific process management parameter
Path: `ias-component/module-data/category/data`

This is an OracleAS ProcessConnect process management specific parameter to be passed into OracleAS ProcessConnect process management class for Integration Manager process. It should not be changed.

id="af-string"

Required: false
Default: "`Adapter Framework`"
Valid values: A valid OracleAS ProcessConnect specific process management parameter
Path: `ias-component/module-data/category/data`

This is an OracleAS ProcessConnect process management specific parameter to be passed into OracleAS ProcessConnect process management class for Adapter Framework process. It should not be changed.

id="im-class-name"

Required: false
Default: `oracle.tip.runtime.im.IntegrationManager`
Valid values: A valid Java class name
Path: `ias-component/module-data/category/data`

This parameter tells OracleAS ProcessConnect process management class which class name will be used to instantiate Integration Manager class. It should not be changed.

id="af-class-name"

Required: false
Default: `oracle.tip.adapter.fw.bootstrap.AFInstantiator`
Valid values: A valid Java class name
Path: `ias-component/module-data/category/data`

This parameter tells OracleAS ProcessConnect process management class which class name will be used to instantiate Adapter Framework class. It should not be changed.

module-id="integration-manager"

Required: true
Default: none
Valid values: `integration-manager`
Path: `ias-component/process-type`

This `id` defines the type of process and associates the configuration with a process module.

module-id="adapter-framework"

Required: true
Default: none
Valid values: `adapter-framework`
Path: `ias-component/process-type`

This `id` defines the type of process and associates the configuration with a process module.

id="dms"

Required: true
Default: none
Valid values: `dms`
Path: `ias-component/process-type/port`

This `id` specifies the range of ports for DMS inside each OracleAS ProcessConnect process.

range="8301-8401"

Required: true
Default:
Valid values: A valid port number or a range of ports
Path: `ias-component/process-type/port`

You should use this parameter to specify a port or a range of ports to be used by DMS inside each OracleAS ProcessConnect process.

id="im_instance1"

Required: true
Default: none
Valid values: An OracleAS ProcessConnect process instance name
Path: `ias-component/process-type/process-set`

This parameter lists the process instance name for the `process-set`. This instance name will be passed into the OracleAS ProcessConnect process management class for starting or stopping OracleAS ProcessConnect processes.

numprocs="1"

Required: true
Default: none
Valid values: `1`
Path: `ias-component/process-type/process-set`

This attribute gives the number of OracleAS ProcessConnect instances started for the `process-set`. The OracleAS ProcessConnect module does not permit more than one instance with the same `process-set`. To start more than one processes for the same server type, put one `process-set` entry with one unique `process-set instance id` for each process.

12

Configuring OracleAS Reports Services

This chapter describes OracleAS Reports Services configuration in the OPMN `opmn.xml` file.

It features the following topics:

- Introduction
- OracleAS Reports Services Process Module Configuration
- OracleAS Reports Services Minimum Configuration
- OracleAS Reports Services Complete Configuration
- OracleAS Reports Services Attribute Descriptions

12.1 Introduction

The OracleAS Reports Services server can run in two modes:

- in-process
- standalone

The in-process OracleAS Reports Services server runs inside an OC4J instance and is managed by the OC4J module. In this mode, the OracleAS Reports Services module does not have to be configured. The OracleAS Reports Services server configuration is part of the OC4J instance configuration and is handled by the OC4J module.

The standalone OracleAS Reports Services server is managed by the OracleAS Reports Services module. The OracleAS Reports Services process module must be configured as shown in the Section 12.2, "OracleAS Reports Services Process Module Configuration". There is also an Oracle Application Server component configured to represent the standalone OracleAS Reports Services server.

12.2 OracleAS Reports Services Process Module Configuration

The following lines load and identify the OracleAS Reports Services process module. Management of OracleAS Reports Services processes by the process module are identified by the `module id`.

```
<module path="/private/oraclehome/opmn/lib/libopmnreports.so">
   <module-id id="ReportsModule" />
</module>
```

12.3 OracleAS Reports Services Minimum Configuration

This section describes the minimum configuration for OracleAS Reports Services. It features the following topics:

- In-process OracleAS Reports Services Server
- Standalone OracleAS Reports Services Server

12.3.1 In-process OracleAS Reports Services Server

The following example shows the configuration required for the in-process OracleAS Reports Services server. The lines should be placed within the configuration for the appropriate OC4J instance. The configuration directives are handled by the OC4J module.

```
<ias-component ....>
   <process-type ....>
      <module-data>
         <category id="urlping-parameters">
            <data id="/reports/rwservlet/pingserver?start=auto" value="200"/>
         </category>
      </module-data>
      <process-set .../>
   </process-type>
</ias-component>
```

12.3.2 Standalone OracleAS Reports Services Server

The following example represents the minimum configuration for a standalone OracleAS Reports Services server component. Reasonable default values are assigned to all other configuration elements and attributes that can be used with this component.

```
<ias-component id="ReportsServer1">
   <process-type id="ReportsServer1" module-id="ReportsModule">
      <process-set id="ReportsServer1" numprocs="1">
         <environment>
            <variable id="PATH" value="Put Path_value from env here" append="true"/>
         </environment>
      </process-set>
   </process-type>
</ias-component>
```

12.4 OracleAS Reports Services Complete Configuration

The following example represents the complete configuration for OracleAS Reports Services. It contains all possible configuration elements and attributes that can be used with this component. This section features the following topics:

- In-process OracleAS Reports Services Server
- Standalone OracleAS Reports Services Server

12.4.1 In-process OracleAS Reports Services Server

The following example shows the configuration required for the in-process OracleAS Reports Services server. The lines should be placed within the configuration for the appropriate OC4J instance. The configuration directives are handled by the OC4J module.

```
<ias-component ....>
   <process-type ....>
      <module-data>
         <category id="urlping-parameters">
            <data id="/reports/rwservlet/pingserver?start=auto" value="200"/>
         </category>
      </module-data>
      <process-set .../>
   </process-type>
</ias-component>
```

12.4.2 Standalone OracleAS Reports Services Server

The following example shows the configuration required for the standalone OracleAS Reports Services server.

```
<ias-component id="ReportsServer1" status="enabled" id-matching="false">
   <process-type id="ReportsServer1" module-id="ReportsModule">
      <process-set id="ReportsServer1" restart-on-death="true" numprocs="1">
      <environment>
         <variable id ='PATH' value="Put Path_value here" append="true"/>
      </environment>
      <module-data>
         <category id="general-parameters">
            <data id="batch" value="yes"/>
         </category>
         <category id="restart-parameters">
            <data id="reverseping-timeout"value="300"/>
         </category>
      </module-data>
      <start timeout="300" retry="3"/>
      <stop timeout="300"/>
      <restart timeout="300"/>
      <ping timeout="30" interval="30"/>
      </process-set>
   </process-type>
</ias-component>
```

12.5 OracleAS Reports Services Attribute Descriptions

This section describes the attributes that are specific for OracleAS Reports Services.

The OracleAS Reports Services attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="ReportsServer1"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `ReportsServer1`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="ReportsServer1"

Required: true
Default: none
Valid values: `ReportsServer1`
Path: `ias-component`
Path: `ias-component/process-type`
Path: `ias-component/process-type/process-set`

This `id` is required and cannot be changed. The name must match the `targets.xml` entry or elements and attributes will not work.

module-id="ReportsModule"

Required: true
Default: `ReportsModule`
Valid values: `ReportsModule`
Path: `ias-component/process-type`

This `id` defines the type of process and associates the configuration with the OracleAS Reports Services process module.

numprocs="1"

Required: true
Default: none
Valid values: `1`
Path: `ias-component/process-type/process-set`

This attribute gives the number of OracleAS Reports Services servers started for the `process-set`. Its value has to be 1 because the `process-set id` identifies the OracleAS Reports Services server.

value="Put Path_value here"

Required: true
Default: none
Valid values: The path value has to include the directory containing the `uname` command.
Path: `ias-component/process-type/process-set/environment/variable`

This is the value of the PATH environment variable set for the OracleAS Reports Services process. This variable has to be set for the start script to find "`uname`".

id="general-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This category collects all the data that is common to the various process management tasks.

id="batch"

Required: false
Default: none
Valid values: `yes`, `no`
Path: `ias-component/process-type/process-set/module-data/category/data`

This `id` is used to construct the command line for starting and stopping of the OracleAS Reports Services server. The information is passed through to OracleAS Reports Services, without interpretation or use by OPMN. If it is not configured, this argument is not passed in.

> **See Also:** *Oracle Application Server Reports Services Publishing Reports to the Web*

id="restart-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

The `restart-parameters` category for defines parameters used in death detection.

id="reverseping-timeout"

Required: false
Default: `300`
Valid values: Any reasonable timeout value specified in seconds.
Path: `ias-component/process-type/process-set/module-data/category/data`

If OPMN does not receive a notification within the last `reverseping-timeout` period, it restarts the process.

id="urlping-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This `id` is a category that collects all the URLs that will be pinged by the OC4J module. The protocol used for pinging is AJPv1.3.

id="/reports/rwservlet/pingserver?start=auto"

Required: false
Default: none
Valid values: `/reports/rwservlet/pingserver?start=auto`
Path: `ias-component/process-type/process-set/module-data/category/data`

This data `id` specifies the URL that will be pinged by the OC4J module. In the context of the in-process OracleAS Reports Services server, pinging this URL allows OPMN to determine if the OracleAS Reports Services server application is responsive or not. If the application is unresponsive, OPMN restarts the corresponding OC4J process.

value="200"

Required: false
Default: none
Valid values: `200`
Path: `ias-component/process-type/process-set/module-data/category/data`

The value specifies a valid HTTP code that is expected in response to the ping request. If the response HTTP code matches the value configured here, OPMN considers the application to be valid. Otherwise, OPMN restarts the OC4J process.

13

Configuring OracleAS Discoverer

This chapter describes OracleAS Discoverer configuration in the OPMN `opmn.xml` file.

It features the following topics:

- OracleAS Discoverer Process Module Configuration
- OracleAS Discoverer Minimum Configuration
- OracleAS Discoverer Complete Configuration
- OracleAS Discoverer Attribute Descriptions

13.1 OracleAS Discoverer Process Module Configuration

The following lines load and identify the OracleAS Discoverer process module. Management of OracleAS Discoverer processes by the process module are identified by the `module id`.

```
<module path="$ORACLE_HOME/opmn/lib/libopmndisco.so" cron="900">
   <module-id id="Disco_OSAgent"/>
   <module-id id="Disco_OAD"/>
   <module-id id="Disco_PreferenceServer"/>
</module>
```

13.2 OracleAS Discoverer Minimum Configuration

The following lines represent the minimum configuration for OracleAS Discoverer. Default values are assigned to all other configuration elements and attributes for OracleAS Discoverer.

```
<ias-component id="Discoverer">
   <environment>
      <variable id="VBROKER_HOME" value="$ORACLE_HOME/vbroker4"/>
      <variable id="VBROKER_DIR" value="$ORACLE_HOME/vbroker4/bin"/>
      <variable id="OSAGENT_PORT" value="16001"/>
      <variable id="DISCO_DIR" value="$ORACLE_HOME/discoverer904"/>
      <variable id="DISCO_JRE" value="$ORACLE_HOME/jdk/jre"/>
      <variable id="DISCO_PREFERENCE" value="pdsun-dev12OracleDiscovererPreferences902"/>
      <variable id="LD_LIBRARY_PATH" value="$DISCO_DIR/lib:$VBROKER_DIR/lib: $ORACLE_HOME/lib"
      append="true"/>
   </environment>
   <process-type id="OSAgent" module-id="Disco_OSAgent" working-dir= "$DISCO_DIR/util">
      <process-set id="OSAgent" numprocs="1"/>
   </process-type>
   <process-type id="OAD" module-id="Disco_OAD" working-dir="$DISCO_DIR/util">
      <process-set id="OAD" numprocs="1"/>
   </process-type>
   <process-type id="PreferenceServer" module-id="Disco_PreferenceServer" working-dir=
   "$DISCO_DIR/util">
      <process-set id="PreferenceServer" numprocs="1"/>
   </process-type>
</ias-component>
```

13.3 OracleAS Discoverer Complete Configuration

The following lines show a complete configuration for OracleAS Discoverer. It contains all possible configuration elements and attributes for OracleAS Discoverer.

```
<ias-component id="Discoverer">
   <environment>
      <variable id="VBROKER_HOME" value="$ORACLE_HOME/vbroker4"/>
      <variable id="VBROKER_DIR" value="$ORACLE_HOME/vbroker4/bin"/>
      <variable id="OSAGENT_PORT" value="16001"/>
      <variable id="DISCO_DIR" value="$ORACLE_HOME/discoverer904"/>
      <variable id="DISCO_JRE" value="$ORACLE_HOME/jdk/jre"/>
      <variable id="DISCO_PREFERENCE" value="pdsun-dev12OracleDiscoverer Preferences902"/>
      <variable id="LD_LIBRARY_PATH" value="$DISCO_DIR/lib:$VBROKER_DIR/lib:$ORACLE_HOME/lib"
      append="true"/>
   </environment>
   <process-type id="OSAgent" module-id="Disco_OSAgent" working-dir="$DISCO_DIR/util">
      <ping interval="300"/>
   <process-set id="OSAgent" numprocs="1"/>
      <module-data>
         <category id="start-parameters">
            <data id="osagent-options" value="osagent-options_value"/>
            <data id="osagent-extra-options" value="osagent-extra-options"/>
         </category>
         <category id="ping-parameters">
            <data id="osfind-options" value="osfind-options_value"/>
            <data id="osfind-java-options" value="osfind-java-options_value"/>
            <data id="osfind-extra-options" value="osfind-extra-options_value"/>
         </category>
      </module-data>
   </process-type>
   <process-type id="OAD" module-id="Disco_OAD" working-dir="$DISCO_DIR/util">
      <start timeout="180"/>
   <process-set id="OAD" numprocs="1"/>
      <module-data>
         <category id="start-parameters">
            <data id="oad-options" value="oad-options_value"/>
            <data id="oad-java-options" value="oad-java-options_value"/>
            <data id="oad-extra-options" value="oad-extra-options_value"/>
         </category>
         <category id="ping-parameters">
            <data id="oadutil-options" value="oadutil-options_value"/>
            <data id="oadutil-java-options" value="oadutil-java-options_value"/>
            <data id="oadutil-extra-options" value="oadutil-extra-options_value"/>
         </category>
```

```
        <category id="sessionserver-parameters"">
           <data id="shutdown-event-name" value="shutdown-event-name_value"/>
           <data id="reverse-ping-interval" value="interval-value"/>
        </category>
        <category id="bounce-parameters">
           <data id="bounce-process" value="true"/>
           <data id="bounce-time" value="01:00"/>
        </category>
      </module-data>
   </process-type>
   <process-type id="PreferenceServer" module-id="Disco_PreferenceServer"
   working-dir="$DISCO_DIR/util">
   <process-set id="PreferenceServer" numprocs="1"/>
      <module-data>
        <category id="start-parameters">
           <data id="dis51pr-options" value="dis51pr-options_value"/>
           <data id="dis51pr-extra-options" value="dis51pr-extra-options_value"/>
        </category>
      </module-data>
   </process-type>
</ias-component>
```

13.4 OracleAS Discoverer Attribute Descriptions

This section describes the attributes that are specific for OracleAS Discoverer.

The OracleAS Discoverer attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="Discoverer"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `Discoverer`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="Discoverer"

Required: true
Default: none
Valid values: `Discover`
Path: `ias-component`

This `id` is required and cannot be changed. The name must match the `targets.xml` entry or elements and attributes will not work.

id="VBROKER_HOME"

Required: true
Default: `$ORACLE_HOME/vbroker4`
Path: `ias-component/environment/variable`

OPMN depends on this environment variable to locate the binaries and libraries of `vbroker`. This element gives you the flexibility to point to the `vbroker` directory that is different from `$ORACLE_HOME/vbroker4`.

id="VBROKER_DIR"

Required: true
Default: `$ORACLE_HOME/vbroker4/bin`
Path: `ias-component/environment/variable`

Visibroker depends on this environment variable to locate the binaries of `vbroker`.

id="OSAGENT_PORT"

Required: true
Default: none
Path: `ias-component/environment/variable`

This environment variable is required for all the OracleAS Discoverer components to talk to each other.

id="DISCO_DIR"

Required: true
Default: none
Path: `ias-component/environment/variable`

This environment variable is required for OPMN to locate the binaries and libraries of OracleAS Discoverer components, such as `dis51pr`.

id="DISCO_JRE"

Required: true
Default: none
Path: `ias-component/environment/variable`

This environment variable is used by OPMN to locate the JRE location used to start the Object Activation Daemon (OAD). This element gives you the flexibility to point to the JRE directory other than the one under `$ORACLE_HOME`.

id="DISCO_PREFERENCE"

Required: true
Default: none
Path: `ias-component/environment/variable`

This environment variable defines the preference instance name for the preference server.

id="LD_LIBRARY_PATH"

Required: true
Default: none
Path: `ias-component/environment/variable`

This environment variable is required for OracleAS Discoverer binaries to find the libraries.

Three directories are required:

- `$DISCO_DIR/lib`
- `$VBROKER_DIR/lib`
- `$ORACLE_HOME/lib`

id="OSAgent"

Required: true
Default: none
Valid values: `OSAgent`
Path: `ias-component/process-type`

This `id` is required and cannot be changed. The `id` must match the `targets.xml` entry or elements and attributes will not work.

module-id="Disco_OSAgent"

Required: true
Default: none
Path: `ias-component/process-type`

This `id` defines the type of process and associates this configuration with a process module.

working-dir="$DISCO_DIR/util"

Required: true
Default: none
Valid values: `$DISCO_DIR/util`
Path: `ias-component/process-type`

This attribute specifies where the log file associated with the osagent process will exist.

interval="300"

Required: false
Default: 20 seconds
Valid values: `>= 0`
Path: `ias-component/process-type/ping`

Please refer to the common configuration for a full list of attributes for the `ping` element. The above example shows how to specify a ping interval to ping your process every 5 minutes.

numprocs="1"

Required: true
Default: none
Valid values: 1
Path: `ias-component/process-type/process-set`

This attribute gives the number of `osagent` instances started for this `process-set`. There should be at most one instance running in one Oracle Application Server instance.

id="start-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This is the category to specify the startup parameters for `osagent`.

id="osagent-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

The default option for `$ORACLE_HOME/vbroker4/bin/osagent` is:

```
"-p $OSAGENT_PORT"
```

You can overwrite this default option by specifying a valid value for this element.

id="osagent-extra-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

You can specify extra options for the default option for `"-p $OSAGENT_PORT"` for the `osagent-options` parameter. If the `osagent-options` parameter is specified then this `id` is ignored.

id="ping-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This is the category to specify the `ping parameters` for `osagent`.

id="osfind-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

`osfind` is a Java program. The base class is `com.inpriese.vbroker.ds.OSFind`. The default option is none and the default Java option is:

```
-Xbootclasspath/p:$VBROKER_HOME/lib/vbjorb.jar
-Dvbroker.agemt.port=$OSAGENT_PORT"
```

You can overwrite this default option by specifying a valid value for this element.

id="osfind-java-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

You can specify extra Java options to the default Java option of:

```
-Xbootclasspath/p:$VBROKER_HOME/lib/vbjorb.jar
-Dvbroker.agemt.port=$OSAGENT_PORT"
```

If osagent-options is specified, this element is ignored.

id="osfind-extra-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

You can specify extra options to the default option of:

```
-Xbootclasspath/p:$VBROKER_HOME/lib/vbjorb.jar
-Dvbroker.agemt.port=$OSAGENT_PORT"
```

If osagent-options is specified, this element is ignored.

id="OAD"

Required: true
Default: none
Valid values: `OAD`
Path: `ias-component/process-type`

This name is required and cannot be changed. The name must match the `targets.xml` entry or elements and attributes will not work.

module-id="Disco_OAD"

Required: true
Default: none
Path: `ias-component/process-type`

This name defines the type of process and associates this configuration with a process module.

working-dir="$DISCO_DIR/util"

Required: true
Default: none
Valid values: `$DISCO_DIR/util`
Path: `ias-component/process-type`
Path: `ias-component/process-type/process-set`

This attribute specifies where the log file associated with the OAD process will exist.

timeout="180"

Required: false
Default: `120 seconds`
Valid values: `>= 0`
Path: `ias-component/process-type/start`

Please refer to the Chapter 4, "opmn.xml Common Configuration" for a full list of attributes for the `<start>` element. OAD is a Java process which may take additional time to just start. Use this attribute to adjust it.

numprocs="1"

Required: true
Default: none
Valid values: 1
Path: `ias-component/process-type/process-set`

This attribute gives the number of OAD instances started for this `process-set`. There should be at most one OAD instance running in one Oracle Application Server instance.

id="start-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This is the category to specify the startup parameters for OAD.

id="oad-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

`oad` is a Java program. The base class is `com.inprise.vbroker.activationImpl.OADserv`. The default option for `$ORACLE_HOME/vbroker4/bin/oad` is:

```
-Xbootclasspath:$VBROKER_DIR/lib/vbjorb.jar
-Dvbroker.agent.port=$OSAGENT_PORT
-Dvbroker.se.iiop_tp.scm.iiop_tp.listener.port=0 -DJDKrenameBug=true
-Dvbroker.oad.path=\"\" -Dvbroker.orb.admDir=$VBROKER_ADM
(For Windows NT only(-Dvbroker.oad.systemRoot=$SystemRoot ))
-Dorg.omg.CORBA.ORBClass=com.inprise.vbroker.orb.ORB
-Dorg.omg.CORBA.ORBSingletonClass=com.inprise.vbroker.orb.ORBSingleton
-cp $VBROKER_DIR/lib/vbjorb.jar
```

The default option is:

```
"-path $VBROKER_ADM"
```

You can overwrite this default option by specify a valid value for this element.

id="oad-java-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

The default option is:

```
"-path $VBROKER_ADM"
```

You can specify extra Java options to the default option. If `oad-options` is specified, this element is ignored.

id="oad-extra-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

The default option is:

```
"-path $VBROKER_ADM"
```

You can specify extra options to the default option. If `oad-options` is specified, this element is ignored.

id="ping-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This is the category to specify the ping parameters for OAD.

id="oadutil-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

`oadutil` is a Java program. The base class is `com.inprise.vbroker.activationImpl.OADutil`. The default Java option is:

```
-xbootclasspath/p:$VBROKER_HOME/lib/vbjorb.jar
-Dvbroker.agent.port=$OSAGENT_PORT"
```

The default option is:

```
"list"
```

You can overwrite this default option by specify a valid value for this element.

id="oadutil-java-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

The default Java option for is:

```
-xbootclasspath/p:$VBROKER_HOME/lib/vbjorb.jar
-Dvbroker.agent.port=$OSAGENT_PORT"
```

The default option is:

```
"list"
```

You can specify extra Java options to the default option. If `oadutil-options` is specified, this element is ignored.

id="oadutil-extra-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

The default Java option for is:

```
-xbootclasspath/p:$VBROKER_HOME/lib/vbjorb.jar
-Dvbroker.agent.port=$OSAGENT_PORT"
```

The default option is:

```
"list"
```

You can specify extra options to the default option. If `oadutil-options` is specified, this element is ignored.

id="sessionserver-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This is the category to specify the parameters for the session servers started by OAD.

The session server is a OracleAS Discoverer process that is launched during a user session. The OracleAS Discoverer session server performs such operations as connecting to a database or opening a workbook. The session server provides the link between the OracleAS Discoverer servlet or applet to the database.

id="shutdown-event-name"

Required: false
Default: `$ORACLE_HOME/opmn/bin/opmn`
Valid values: Any existing file
Path: `ias-component/process-type/process-set/module-data/category/data`

`Shutdown-event-name` is used to create either a semaphore on Unix, or an event on Windows in order to coordinate the shutdown of OAD and the session servers. On Unix, it must point to an existing file. If the file does not exist, OPMN will throw an error and disable the whole module.

Oracle does not recommend changing this value.

id="reverse-ping-interval"

Required: false
Default: `300 (in seconds)`
Valid values: any value > 0
Path: `ias-component/process-type/process-set/module-data/category/data`

Session servers will send reverse ping notifications to OPMN periodically. This `id` sets the interval of the pinging. The default interval is five minutes. If session server crashes, no more notifications are sent to OPMN. OPMN will remove the entry for this server from the DMS tree if two consecutive notifications are missing from a server. If you modify this value, you should also modify the argument to start the session server accordingly.

id="bounce-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This is the category to specify the bounce parameters for OAD. OAD can be scheduled for restart every day for a specific time period. It must run for 24 hours prior to schedule set-up.

id="bounce-process"

Required: false
Default: false
Valid values: `true` or `false`
Path: `ias-component/process-type/process-set/module-data/category/data`

Set this data to `true` and OAD will be restarted as scheduled.

id="bounce-time"

Required: false
Default: none
Valid values: any value in the format of 00:00 (hour:minute) on a 24-hour base.
Path: `ias-component/process-type/process-set/module-data/category/data`

id="PreferenceServer"

Required: true
Default: none
Valid values: `PreferenceServer`
Path: `ias-component/process-type`

This name is required and cannot be changed. The name must match the entry in the `targets.xml` file or elements and attributes will not work.

module-id="Disco_PreferenceServer"

Required: true
Default: none
Path: `ias-component/process-type`

This name defines the type of process and associates the configuration with a process module.

working-dir="$DISCO_DIR/util"

Required: true
Default: none
Valid values: `$DISCO_DIR/util`
Path: `ias-component/process-type`

This attribute specifies the location of the log file associated with the dis51pr process.

numprocs="1"

Required: true
Default: none
Valid values: `1`
Path: `ias-component/process-type/process-set`

This attribute gives the number of preference server instances started for the `process-set`. There should be at most one instance running in one Oracle Application Server instance.

id="start-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This is the category to specify the startup parameters for `dis51pr`.

id="dis51pr-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

The default option for `$DISCO_DIR/bin/dis51pr` is:

```
"-ORBagentPort $OSAGENT_PORT -preference $DISCO_PREFERENCE -U"
```

You can overwrite this default option by specifying a valid value for this element.

id="dis51pr-extra-options"

Required: false
Default: *Refer to the following paragraph.*
Path: `ias-component/process-type/process-set/module-data/category/data`

The default option for `$DISCO_DIR/bin/dis51pr` is:

```
"-ORBagentPort $OSAGENT_PORT -preference $DISCO_PREFERENCE -U"
```

You can specify extra options to the listed default option. If `dis51pr-options` is specified, this element is ignored.

14

Configuring Log Loader

This chapter describes Log Loader configuration in the OPMN `opmn.xml` file.

It features the following topics:

- Log Loader Process Module Configuration
- Log Loader Minimum Configuration
- Log Loader Complete Configuration
- Log Loader Attribute Descriptions

14.1 Log Loader Process Module Configuration

The following lines load and identify the Log Loader process module. Management of Log Loader processes by the process module are identified by the `module id`.

```
<module path="%ORACLE_HOME%/opmn/lib/liblogloader.so">
   <module-id id="LOGLDR"/>
</module>
```

14.2 Log Loader Minimum Configuration

The following lines represent the minimum configuration for Log Loader. Default values are assigned to all other configuration elements and attributes for Log Loader.

```
<ias-component id="LogLoader" status="enabled" id-matching="true">
   <process-type id="logloaderd" module-id="LOGLDR" working-dir="$ORACLE_HOME">
      <environment>
         <variable id="CLASSPATH" value="$ORACLE_HOME/diagnostics/lib/ojdl.jar" append="true"/>
         <variable id="CLASSPATH" value="$ORACLE_HOME/lib/xmlparserv2.jar" append="true"/>
         <variable id="CLASSPATH" value="$ORACLE_HOME/jdbc/lib/classes12.jar" append="true"/>
         <variable id="CLASSPATH" value="$ORACLE_HOME/opmn/lib/ons.jar" append="true"/>
         <variable id="CLASSPATH" value="$ORACLE_HOME/opmn/lib/optic.jar" append="true"/>
      </environment>
   <process-set id="logloaderd" restart-on-death="true" numprocs="1">
      <module-data>
         <category id="start-parameters">
            <data id="java-parameters" value="-server -Doracle.home=$ORACLE_HOME
           -Djava.security.policy=ORACLE_HOME/diagnostics/bin/java.policy"/>
         </category>
         <category id="stop-parameters">
            <data id="java-parameters" value=" -Doracle.home=$ORACLE_HOME -Djava.security.policy
            =ORACLE_HOME/diagnostics/bin/java.policy"/>
         </category>
      </module-data>
   </process-set>
   </process-type>
</ias-component>
```

14.3 Log Loader Complete Configuration

The following lines show the complete configuration for Log Loader. It contains all possible configuration elements and attributes for Log Loader.

```
<ias-component id="LogLoader" status="enabled" id-matching="true">
   <process-type id="logloaderd" module-id="LOGLDR" working-dir="$ORACLE_HOME">
      <environment>
         <variable id="CLASSPATH" value="$ORACLE_HOME/lib/xmlparserv2.jar"
         append="true"/>
         <variable id="CLASSPATH" value="$ORACLE_HOME/jdbc/lib/classes12dms.jar"
         append="true"/>
         <variable id="CLASSPATH" value="$ORACLE_HOME/opmn/lib/ons.jar" append="true"/>
         <variable id="CLASSPATH" value="$ORACLE_HOME/opmn/lib/optic.jar" append="true"/>
         <variable id="CLASSPATH" value="$ORACLE_HOME/dcm/lib/dcm.jar" append="true"/>
         <variable id="CLASSPATH" value="$ORACLE_HOME/diagnostics/lib/ojdl.jar"
         append="true"/>
      </environment>
   <process-set id="logloaderd" restart-on-death="true" numprocs="1">
      <module-data>
         <category id="start-parameters">
            <data id="java-bin" value="$ORACLE_HOME/jdk/bin/java"/>
            <data id="java-parameters" value="-server-Doracle.home= $ORACLE_HOME
            -Djava.security.policy=ORACLE_HOME/diagnostics/bin/java.policy"/>
            <data id="class-name" value="oracle.core.ojdl.loader.LogLoaderDaemon"/>
            <data id="application-parameters" value="-start -config ORACLE_HOME/diagnostics/
            config/logloader.xml"/>
         </category>
         <category id="stop-parameters">
            <data id="java-bin" value="$ORACLE_HOME/jdk/bin/java"/>
            <data id="java-parameters" value="-Doracle.home=$ORACLE_HOME
            -Djava.security.policy=ORACLE_HOME/diagnostics/ bin/java.policy"/>
            <data id="class-name"value="oracle.core.ojdl.loader.LogLoaderDaemon"/>
            <data id="application-parameters" value="-stop"/>
         </category>
      </module-data>
   </process-set>
   </process-type>
</ias-component>
```

14.4 Log Loader Attribute Descriptions

This section describes the attributes that are specific for Log Loader. This section also provides attribute descriptions of the attributes.

The Log Loader attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="LogLoader"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `LogLoader`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="LogLoader"

Required: true
Default: none
Valid values: `LogLoader`
Path: `ias-component`

This `id` is required and cannot be changed.

id="logloaderd"

Required: true
Default: none
Valid values: `logloaderd`
Path: `ias-component/process-type`
Path: `ias-component/process-type/process-set`

This `id` is required and cannot be changed.

module-id="LOGLDR"

Required: true
Default: none
Path: `ias-component/process-type`

This name defines the type of process and associates this configuration with a process module.

numprocs="1"

Required: true
Default: none
Valid values: `1`
Path: `ias-component/process-type/process-set`

This attribute gives the number of LogLoader server instances started for this `process-set`. The value should always be `1`.

id="start-parameters"

Required: true
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This indicates the configuration block for `start-parameters` category. This category specfies the Java-parameters data must be specified.

id="java-bin"

Required: false
Default: `$ORACLE_HOME/jdk/bin/java`
Valid values: Any full file path to a Java executable file
Path: `ias-component/process-type/process-set/module-data/category/data`

You can specify alternate paths to the Java executable.

id="java-parameters"

Required: true
Default: None
Valid values: Any valid Java parameters
Path: `ias-component/process-type/process-set/module-data/category/data`

The parameters `-Doracle.home` and `-Djava.security.policy` are required and must be defined in this section.

id="class-name"

Required: false
Default: `oracle.core.ojdl.loader.LogLoaderDaemon`
Valid values: a Java class name
Path: `ias-component/process-type/process-set/module-data/category/data`

This field allows you to specify a Java class name other than the default to start or stop the LogLoader server process. This `id` is for internal use and must not be changed by the user.

id="application-parameters"

Required: false
Default: To start: `-start -config $ORACLE_HOME/diagnostics/config/logloader.xml`.
To stop: `-stop -config $ORACLE_HOME/diagnostics/config/logloader.xml`
Valid values: any valid Java application parameters that are recognized by the class specified in "`class-name`".
Path: `ias-component/process-type/process-set/module-data/category/data`

This field allows you to set application parameters. Any parameters defined here will replace the default values.

id="stop-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This indicates the configuration block for `stop-parameters` category. In this category, some stop related `module data` can be specified.

15

Configuring DCM Daemon

This chapter describes DCM Daemon configuration in the OPMN `opmn.xml` file.

It features the following topics:

- DCM Daemon Process Module Configuration
- DCM Daemon Minimum Configuration
- DCM Daemon Complete Configuration
- DCM Daemon Attribute Descriptions

15.1 DCM Daemon Process Module Configuration

The following lines load and identify the DCM Daemon process module. Management of DCM Daemon processes by the process module are identified by the `module id`.

```
<module path="$ORACLE_HOME/opmn/lib/libopmndcmdaemon">
   <module-id id="DCMDaemon"/>
</module>
```

15.2 DCM Daemon Minimum Configuration

The following lines represent the minimum configuration for the DCM Daemon. Default values are assigned to all other configuration elements and attributes for DCM Daemon.

```
<ias-component id="dcm-daemon" status="enabled" id-matching="true">
   <process-type id="dcm-daemon" module-id="DCMDaemon">
   <process-set id="dcm" numprocs="1">
      <module-data>
         <category id="start-parameters">
            <data id="jar-file" value="$ORACLE_HOME/dcm/lib/dcm.jar"/>
            <data id="application-parameters" value="daemon -logdir $ORACLE_HOME/dcm/logs/
            daemon_logs -o $ORACLE_HOME"/>
         </category>
      </module-data>
   </process-set>
   </process-type>
</ias-component>
```

15.3 DCM Daemon Complete Configuration

The following lines show a complete configuration for the DCM Daemon. It contains all possible configuration elements and attributes for the DCM Daemon.

```
<ias-component id="dcm-daemon" status="enabled" id-matching="true">
   <process-type id="dcm-daemon"module-id="DCMDaemon">
   <process-set id="dcm" numprocs="1">
      <module-data>
         <category id="start-parameters">
           <data id="java-bin" value="$ORACLE_HOME/jdk/bin/java"/>
           <data id="java-parameters" value="-Doracle.ias.sysmgmt.logging.loglevel=ERROR"/>
           <data id="jar-file" value="$ORACLE_HOME/dcm/lib/dcm.jar"/>
           <data id="application-parameters" value="daemon -logdir $ORACLE_HOME/dcm/logs
           /daemon_logs -o $ORACLE_HOME"/>
         </category>
      </module-data>
   </process-set>
   </process-type>
</ias-component>
```

15.4 DCM Daemon Attribute Descriptions

This section describes the attributes that are specific for the DCM Daemon. This section also provides attribute descriptions of the attributes.

The DCM Daemon attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="dcm-daemon"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `dcm-daemon`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="dcm-daemon"

Required: true
Default: none
Valid values: `dcm-daemon`
Path: `ias-component`
Path: `ias-component/process-type`

This `id` is required and cannot be changed.

module-id="DCMDaemon"

Required: true
Default: none
Path: `ias-component/process-type`

This `id` defines the type of process and associates this configuration with a process module. This name is required and cannot be changed.

numprocs="1"

Required: true
Default: none
Valid values: `1`
Path: `ias-component/process-type/process-set`

This attribute gives the number of DCM Daemon instances started for the `process-set`. The value should always be 1.

id="start-parameters"

Required: true
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

This indicates the configuration block for the `start-parameters` category. In this category, at a minimum, the Java-parameters data must be specified.

id="java-bin"

Required: false
Default: `$ORACLE_HOME/jdk/bin/java`
Valid values: Full path to `java.exe`
Path: `ias-component/process-type/process-set/module-data/category/data`

You can specify alternate paths to the Java Interpreter (executable).

id="java-parameters"

Required: false
Default: `-Doracle.ias.sysmgmt.logging.loglevel=ERROR`
Valid values: Any valid Java parameters
Path: `ias-component/process-type/process-set/module-data/category/data`

This field allows you to specify any valid Java parameters. All specified Java parameters overwrite the default values. If the loglevel is not specified, the loglevel for the DCM daemon is set at the `ERROR` level.

id="jar-file"

Required: true
Default: `$ORACLE_HOME/dcm/lib/dcm.jar`
Valid values: full path to valid `dcm.jar`
Path: `ias-component/process-type/process-set/module-data/category`

This field specifies a JAR file for starting and stopping the DCM daemon. This `id` is required and cannot be changed.

id="application-parameters"

Required: true
Default: `daemon -logdir $ORACLE_HOME/dcm/logs/daemon_logs -o $ORACLE_HOME`
Valid values: any valid Java application parameters that are recognized by the main-class specified in `dcm.jars manifest.mf`
Path: `ias-component/process-type/process-set/module-data/category/data`

This field allows you to set application parameters. Parameters defined here replace the default values. In order to start the DCM Daemon, it is mandatory to supply `daemon`, `-logdir`, and `-o` parameters.

16

Configuring Custom Process

This chapter describes custom process configuration in the OPMN `opmn.xml` file.

It features the following topics:

- Custom Process Module Configuration
- Custom Process Minimum Configuration
- Custom Process Complete Configuration
- Custom Process Attribute Descriptions

16.1 Custom Process Module Configuration

The following lines load and identify the custom process module. Management of custom processes by the process module are identified by the `module id`.

```
<module path="%ORACLE_HOME%/opmn/lib/libopmncustom.so">
   <module-id id="CUSTOM" />
</module>
```

16.2 Custom Process Minimum Configuration

The following lines represent the minimum configuration for a custom process. Default values are assigned to all other configuration elements and attributes for the custom process.

```
<ias-component id="Custom">
   <process-type id="Custom" module-id="CUSTOM">
   <process-set id="Custom" numprocs="1">
      <module-data>
         <category id="start-parameters">
            <data id="start-executable" value="Your start executable here" />
         </category>
      </module-data>
   </process-set>
   </process-type>
</ias-component>
```

16.3 Custom Process Complete Configuration

Example 16–1 show a complete configuration for a custom process. It contains all possible configuration elements and attributes for a custom process.

A custom process can be part of any other Oracle Application Server component. In such cases, the `process-type` element in Example 16–1 must be part of the component configuration.

16.3.1 Ping

The custom module provides the framework for pinging a custom process in one of two ways:

- HTTP ping
- script ping

The type of ping can be configured by specifying the appropriate data in the `ping-parameters` category. The sample Oracle Application Server configuration example Example 16–1 shows a custom process using HTTP ping. Example 16–2 is an example of script ping that you can substitute into the component configuration.

Example 16–1 Custom Process Complete Configuration

```
<ias-component id="Custom" status="enabled" id-matching="false">
   <environment>
      <variable id="TEST_ENV_VARIABLE" value="/your/test/value"
      append="false"/>
   </environment>
   <process-type id="Custom" module-id="CUSTOM">
   <process-set id="Custom" restart-on-death="true" numprocs="1">
      <module-data>
         <category id="start-parameters">
            <data id="start-executable" value="Your start executable here" />
            <data id="start-args" value="Your start args here" />
         </category>
         <category id="stop-parameters">
            <data id="stop-executable" value="Your stop executable here" />
            <data id="stop-args" value="Your stop args here" />
         </category>
         <category id="restart-parameters">
            <data id="restart-executable" value="Your restart executable here"/>
            <data id="restart-args" value="Your restart args here" />
         </category>
```

```
         <category id="ping-parameters">
            <data id="ping-type" value="http" />
            <data id="ping-url" value="/your/ping/url" />
            <data id="ping-host" value="abc.company.com" />
            <data id="ping-port" value="7777" />
            <data id="ping-limit" value="3" />
            <data id="ping-timeout" value="300" />
         </category>
         <category id="ready-parameters">
            <data id="use-ping-for-ready" value="false" />
         </category>
      </module-data>
   </process-set>
   </process-type>
</ias-component>
```

Pinging with a script can be configured as shown in Example 16–2

Example 16–2 Ping Type Script

```
<category id="ping-parameters">
   <data id="ping-type" value="script" />
   <data id="script-executable" value="Ping executable here" />
   <data id="script-args" value="Ping arguments here " />
</category>
```

You can use pinging (when available) for determining the readiness of a process. This indicates that OPMN needs confirmation that a managed process has started successfully after creation. Processes can inform OPMN of their ready status in various ways. The custom module allows these processes to communicate readiness via pinging. If you configure pinging for a custom process, you can also use this mechanism to determine if the process is ready. You can choose not to configure any mechanism for determining readiness in which case the custom module just assumes that the process started successfully.

Warning: The ready ping, if configured, is created soon after the process is created. If the process takes a while to initialize and respond to pings, then using pinging for determining readiness is not appropriate. This is because if the process does not respond to the "ready ping", OPMN will determine that the process did not start correctly and stop it.

16.4 Custom Process Attribute Descriptions

This section describes the attributes that are specific for a custom process. This section also provides attribute descriptions of the attributes.

The custom process attributes are described with the following format:

- **Title**: This is the attribute name and value being defined. For example, **id="Custom"**.
- **Required**: This field defines whether or not the attribute is required in the component definition.
- **Default**: This defines the default value assigned to the attribute. The default value appears in the installed version of the `opmn.xml` file or is assigned internally if the attribute is not present.
- **Valid values:** This field defines the valid values for the attribute. For example, `custom`.
- **Path**: This field defines in which elements the attribute can appear. For example, `ias-component`.

id="Custom"

Required: true
Default: none
Valid values: Any `id` of your choice
Path: `ias-component`
Path: `ias-component/process-type`
Path: `ias-component/process-type/process-set`

This `id` is required and can be any name you choose. The `id` cannot be a duplicate of existing names.

module-id="CUSTOM"

Required: true
Default: none
Valid values: The same as the `module-id` specified in Section 16.1, "Custom Process Module Configuration".
Path: `ias-component/process-type`

The `module-id` associates the process with a module. For Custom processes, this `id` has to match the `module-id` specified in Process Module Configuration for the Custom module.

id="start-parameters"

Required: true
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

The `start-parameters` category contains child elements specifying the start executable and start arguments.

id="start-executable"

Required: true
Default: none
Valid values: a valid executable to run
Path:
`ias-component/process-type/process-set/module-data/category/data`

This data element specifies the name of the executable to be started.

id="start-args"

Required: false
Default: none
Valid values: Valid arguments to the executable specified by start-executable data element.
Path:
`ias-component/process-type/process-set/module-data/category/data`

The value of this data element should be a string containing all the arguments for the start executable. Multiple data elements with this `id` should not be specified.

id="stop-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

The `stop-parameters` category contains child elements specifying the stop executable and stop arguments. If this category is not configured, OPMN stops the process with the kill command.

id="stop-executable"

Required: false
Default: none
Path:
`ias-component/process-type/process-set/module-data/category/data`

This data element specifies the name of the executable to be used for stopping the process.

id="stop-args"

Required: false
Default: none
Path:
`ias-component/process-type/process-set/module-data/category/data`

The value of this data element should be a string containing all the arguments to the stop executable. Multiple data elements with this `id` should not be specified.

id="restart-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

The `restart-parameters` category contains child elements specifying the restart executable and restart arguments. This category needs to be configured if the process has an explicit restart command. In the absence of a restart command, a stop followed by the start command will be executed whenever the process needs to be restarted.

When restart data is specified, OPMN assumes that the process ID of the process remains the same after a restart. If there is no explicit restart command available for the process, a stop followed by a start is issued. In this scenario, a process ID change is acceptable.

id="restart-executable"

Required: false
Default: none
Valid values: A valid restart executable name
Path:
`ias-component/process-type/process-set/module-data/category/data`

This data element specifies the name of the executable to be used for restarting the process.

id="restart-args"

Required: false
Default: none
Valid values: valid arguments to the restart executable
Path:
`ias-component/process-type/process-set/module-data/category/data`

The value of this data element should be a string containing all the arguments to the restart executable. Multiple data elements with this `id` should not be specified.

id="ping-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

Custom processes that are pinged via the HTTP protocol must specify this category. This `module data` category consists of all the data required to perform such a ping.

id="ping-type"

Required: false
Default: none
Valid values: `http`, `script`
Path:
`ias-component/process-type/process-set/module-data/category/data`

Custom processes that wish to be pinged have to specify this `module data`.

Note Also:

- Example 16–1, "Custom Process Complete Configuration"
- Example 16–2, "Ping Type Script"

id="ping-url"

Required: false
Default: /
Valid values: Any valid URL
Path:
`ias-component/process-type/process-set/module-data/category/data`

This data element is used to specify the URL at which the process will be pinged. The listed parameters are used for HTTP pings.

id="ping-host"

Required: false
Default: none
Valid values: A valid hostname to which a custom process is bound.
Path:
`ias-component/process-type/process-set/module-data/category/data`

This data element is used to specify the host name to which a custom process is bound. If this data is not specified, pinging will not be performed. If an invalid hostname is specified, the `process-set` will be `disabled`.

id="ping-port"

Required: false
Default: none
Valid values: A valid port at which a custom process is listening for HTTP requests
Path:
`ias-component/process-type/process-set/module-data/category/data`

The port at which a custom process is listening. If this data is not specified, pinging will not be performed. If an invalid port is specified, the `process-set` will be `disabled`.

id="ping-limit"

Required: false
Default: `3`
Valid values: Any reasonable value that reflects the tolerance that OPMN should have for failed pings. This tolerance is used by OPMN to determine when the process should be declared unresponsive and restarted.
Path: `ias-component/process-type/process-set/module-data/category/data`

This `module data` element defines the tolerance for failed pings. After the number of ping failures reaches this limit, the process is deemed unresponsive and restarted by OPMN.

id="ping-timeout"

Required: false
Default: `300 seconds`
Valid values: Any reasonable timeout value
Path:
`ias-component/process-type/process-set/module-data/category/data`

The timeout value specified with this data element is used as the maximum time OPMN will wait for a ping response. If a response is not obtained within the timeout period, the ping attempt will be considered a failure.

id="script-executable"

Required: false
Default: none
Valid values: A valid script executable
Path: `ias-component/process-type/process-set/module-data/category/data`

This data element specifies the name of the executable to be used for pinging the process. An exit value of 0 from this executable is considered success. All other values indicate a ping failure.

id="script-args"

Required: false
Default: none
Valid values: valid arguments to the ping executable
Path: `ias-component/process-type/process-set/module-data/category/data`

The value of this data element should be a string containing all the arguments to the ping executable. Multiple data elements with this id should not be specified.

id="ready-parameters"

Required: false
Default: none
Path: `ias-component/process-type/process-set/module-data/category`

The `module data` category to indicate if pinging should be used to determine that a custom process started successfully.

id="use-ping-for-ready"

Required: false
Default: false
Valid values: `true` or `false`
Path: `ias-component/process-type/process-set/module-data/category/data`

The value of this data element determines if pinging should be used to determine if a process is available.

17

OPMN Troubleshooting

This chapter describes some troubleshooting tips for OPMN. It features the following topics:

- Diagnosing OPMN Problems
- Common Problems

17.1 Diagnosing OPMN Problems

There are several methods for troubleshooting any problems you may have using OPMN:

- OPMN log Files
- opmnctl debug
- iHAT
- Oracle Enterprise Manager Application Server Control
- Troubleshooting with Event Scripts

17.1.1 OPMN log Files

The OPMN log files enable you to troubleshoot difficulties you might have in execution and use of OPMN and OPMN-managed processes. OPMN and OPMN-managed processes generate log files during processing. You can review the following generated log files to verify successful or unsuccessful execution of an OPMN command:

- *ORACLE_HOME*/opmn/logs: The standard output and standard error of OPMN managed processes. OPMN creates a log file for each component and assigns a unique concatenation of the Oracle Application Server component with a number. For example, the standard output log for OracleAS Web Cache may be WebCache~WebCacheAdmin~1. The process specific console logs are the first and best resource for investigating problems related to starting and stopping components.
- *ORACLE_HOME*/opmn/logs/ipm.log: Review the error codes and messages that are shown in the ipm.log file. OPMN generates and outputs the error messages in this file. The ipm.log file tracks command execution and operation progress. The level of detail that gets logged in the ipm.log can be modified by configuration in the opmn.xml file. Refer to Chapter 4, "opmn.xml Common Configuration" for examples of debug levels.
- *ORACLE_HOME*/opmn/logs/ons.log: Use the ons.log file to debug the ONS portion of OPMN or for early OPMN errors. The ONS portion of OPMN is initialized before PM, and so errors that occur early in OPMN initialization will show up in the ons.log file.

17.1.2 opmnctl debug

Use the `opmnctl debug` command to verify the status of an Oracle Application Server process and whether any actions are pending. This command generates output that can be used in conjunction with contact to your local Oracle support to diagnose your OPMN problem.

The syntax for the `opmnctl debug` command is:

```
opmnctl [<scope>] debug [comp=pm|ons] [interval=<secs> count=<num>]
```

where `@scope` is the optional scope for the request.

Output is generated following execution of the `opmnctl debug` command. Oracle recommends that you contact Oracle support to use the generated output to assist in diagnosis of your problem.

The attributes (`<attr>`) name for this command are either `comp`, `interval`, or `count`. The value for comp can be either `ons` or `pm`, representing ONS and PM, respectively. If `comp` is not specified, then both `ons` and `pm` debug information is reported. For example, the following command outputs debug information for ONS.

```
prompt > opmnctl debug comp=ons
```

You can specify the interval in seconds and number of requests sent to OPMN to assist in the debugging process. The values of <interval> and <count> must always be specified together. Values for them should be integers greater than 0. For example, the following command, outputs debug information at an interval of 5 seconds 3 times.

```
prompt > opmnctl debug comp=pm interval=5 count=3
```

Contact your local Oracle support to assist you in using the `opmnctl debug` command to diagnose your OPMN problem.

17.1.3 iHAT

Use the iHAT tool to provide a real time, graphical interface view of your enterprise. iHAT displays all Oracle Application Server processes managed by one or more OPMN servers including useful performance metrics about each process as obtained from DMS. The snapshot of the system is updated continuously at a configurable interval.

To download iHAT, visit the Oracle Technology Network (OTN):

```
http://otn.oracle.com/membership
```

17.1.4 Oracle Enterprise Manager Application Server Control

Application Server Control provides a graphical interface that enables diagnosis of Oracle Application Server components in your network and enterprise. Application Server Control features a log page. The log page enables you to view all of the Oracle Application Server log files in one place and trace problems across multiple log files. Application Server Control uses an API that contact OPMN.

You can use Application Server Control to enable or disable Oracle Application Server components: You can disable components so they do not start when you start an Oracle Application Server instance.

See Also: *Oracle Application Server 10g Administrator's Guide*

17.1.5 Troubleshooting with Event Scripts

You can create your own event scripts that record Oracle Application Server process event activities. You can create a script that records events prior to the start or stop of Oracle Application Server processes, as well as an unscheduled system crash.

The following Example 17–1 shows a pre-start event script:

Example 17–1 Pre-start Event Script

```
#!/bin/sh
echo
echo =---------========---=----=-----------------=---------=---=
echo =----------===== PRE-START EVENT SCRIPT =====---------=---=
echo =---------========---=----=-----------------=---------=---=

timeStamp="N/A"
instanceName="N/A"
componentId="N/A"
processType="N/A"
processSet="N/A"
processIndex="N/A"
stderrPath="N/A"  # not available w/pre-start unless part of restart
stdoutPath="N/A"  # not available w/pre-start unless part of restart
reason="N/A"
pid="N/A"         # only available with pre-stop, post-crash
startTime="N/A"   # only available with pre-stop, post-crash

while [ $# -gt 0 ]; do
     case $1 in
        -timeStamp)    timeStamp=$2; shift;;
        -instanceName) instanceName=$2; shift;;
        -componentId)  componentId=$2; shift;;
        -processType)  processType=$2; shift;;
        -processSet)   processSet=$2; shift;;
        -processIndex) processIndex=$2; shift;;
        -stderr)       stderrPath=$2; shift;;
        -stdout)       stdoutPath=$2; shift;;
        -reason)       reason=$2; shift;;
        -pid)          pid=$2; shift;;
        -startTime)    startTime=$2; shift;;
        *) echo "Option Not Recognized: [$1]"; shift;;
        esac
        shift
done
```

```
echo timeStamp=$timeStamp
echo instanceName=$instanceName
echo componentId=$componentId
echo processType=$processType
echo processSet=$processSet
echo processIndex=$processIndex
echo stderr=$stderrPath
echo stdout=$stdoutPath
echo reason=$reason
echo pid=$pid
echo startTime=$startTime
```

17.2 Common Problems

This section describes some of the common problems encountered when using OPMN. It features the following topics:

- Oracle Application Server Process Does Not Start
- Determining if Oracle Application Server Processes are Dying or Unresponsive
- opmnctl Command Execution Times Out
- Oracle Application Server Component Automatically Restarted by OPMN
- opmn.xml Environment Variables
- Unexpected opmnctl start Behavior
- Disabled Element in the opmn.xml File
- Management of Oracle9iAS Release 2 (9.0.2 and 9.0.3) Instances

17.2.1 Oracle Application Server Process Does Not Start

If you are unable to start an Oracle Application Server process using OPMN:

- Verify and if necessary, correct, the command input. Confirm the spelling and choice of option for the command you are entering.

> **Warning: Do not use command line scripts or utilities from previous versions of Oracle9*i*AS for starting** OPMN **or Oracle Application Server components**.

- Review the standard out output log for the Oracle Application Server process. Output from the process console is located in the *ORACLE_HOME*/opmn/logs directory. For example, the standard output log for OracleAS Web Cache may be WebCache~WebCacheAdmin~1.
- Verify the dependency requirements for the Oracle Application Server process you are attempting to start. For example, the Oracle Application Server process you want to start may require that the Oracle Application Server Metadata Repository be up and running.
- Verify the element values for the Oracle Application Server component in the opmn.xml file. Use the opmnctl validate command to verify configuration of opmn.xml file. You may have misconfigured the opmn.xml for the Oracle Application Server component you are attempting to start.

17.2.2 Determining if Oracle Application Server Processes are Dying or Unresponsive

If your Oracle Application Server processes are dying or unreachable:

- Look at the *ORACLE_HOME*/opmn/logs/ipm.log for Oracle Application Server processes at level of 4 or higher. Look for process crashed or process unreachable messages. OPMN automatically restarts Oracle Application Server processes that die or become unresponsive.
- Create event scripts for any pre-stop or post-crash events. The event scripts could be used to create a specific log file or send you an email about a failure.

  See Also: Section 17.1.5, "Troubleshooting with Event Scripts"

- Review the Oracle Application Server component specific output in the *ORACLE_HOME*/opmn/logs.
- Review the Oracle Application Server component specific log file located in Oracle Application Server component directory.

  See Also: Section 17.1.1, "OPMN log Files"

- Use iHAT to view the actions of Oracle Application Server

  See Also: Section 17.1.3, "iHAT"

17.2.3 opmnctl Command Execution Times Out

The time it takes to execute an `opmnctl` command is dependent on the type of Oracle Application Server process and available computer hardware. Because of this the time it takes to execute an `opmnctl` command may not be readily apparent.

The default start time out for OC4J is approximately five minutes. If an OC4J process is does not start-up after an `opmnctl` command, OPMN will wait approximately an hour before timing out and aborting the request.

To verify successful execution of the `opmnctl` command, try the following:

1. Increase the `start` element `timeout` attribute for the component that is not starting. Set the timeout in the `opmn.xml` file at a level that will allow OPMN to wait for process to come up. This functionality is available with the `startproc` command which will start all the relevant processes configured in `opmn.xml`.
2. Check the `start` element in the `opmn.xml` file and change the retry attribute to a higher increment of time.
3. Look at the *`ORACLE_HOME`*`/opmn/logs/` for the Oracle Application Server process that is not starting.
4. Review the component-specific log file for the Oracle Application Server component that is not starting. For example, *`ORACLE_HOME`*`/discoverer/logs`.
5. Examine the *`ORACLE_HOME`*`/opmn/logs/ipm.log` for any indication of problems. Increase the log level in the file to obtain additional information.

   See Also: Chapter 4, "opmn.xml Common Configuration"

6. Contact Oracle Technical Support.

If you are having difficulty with an Oracle Application Server instance that is part of a farm, review the `ons.log` file for the Oracle Application Server instance. The `"attempting active connection init"` message in the `ons.log` file indicates that there is another OPMN configured in the farm that is currently shut-down. OPMN tries to consistently connect to the shut-down OPMN. Use the listed steps to determine why the down OPMN is not running.

17.2.4 Oracle Application Server Component Automatically Restarted by OPMN

If an Oracle Application Server component is automatically restarted by OPMN, try the following:

- Review the message for the Oracle Application Server component in the `ipm.log` file.
- Verify that the ping timeout for the Oracle Application Server component is sufficient. An Oracle Application Server component that receives a lot of activity may require an increase in the length of time for the timeout. Increase the ping timeout element in the Oracle Application Server component `opmn.xml` file.

17.2.5 opmn.xml Environment Variables

The environment variable used to launch OPMN server is not inherited by the Oracle Application Server process started by OPMN server. OPMN sets the environment variables at the `ias-instance` level, with the values extracted either from the `ias-instance` configuration or from the OPMN run time environment.

See Also: Chapter 4, "opmn.xml Common Configuration"

17.2.6 Unexpected opmnctl start Behavior

Occasionally, there is unexpected behavior when you use the `opmnctl start` command to start OPMN; either only OPMN is started or OPMN makes a best effort to start Oracle Application Server OPMN-managed processes. Typically, this unexpected behavior is due to turning-off or rebooting your computer without first shutting down OPMN. When you restart your computer, all OPMN-managed processes are started.

Oracle recommends that you shutdown OPMN before shutting down your computer. Use the `opmnctl stopall` command to stop OPMN and OPMN-managed processes.

17.2.7 Disabled Element in the opmn.xml File

If you are unable to start an Oracle Application Server process, check if an element in the Oracle Application Server `opmn.xml` file is `disabled`. If an element in the `opmn.xml` file is `disabled` OPMN will generate an output message of `"Missing"` or `"Disabled"`.

17.2.8 Management of Oracle9*i*AS Release 2 (9.0.2 and 9.0.3) Instances

By default, the SSL element in the 10*g* (9.0.4) `opmn.xml` file is `enabled`; however, the SSL element is not `enabled` in the `opmn.xml` file for Oracle9*i*AS Release 2 (9.0.2 and 9.0.3).

If you have an Oracle Application Server farm containing Oracle9*i*AS Release 2 (9.0.2 and 9.0.3) instances you must enable the SSL element in the Release 2 `opmn.xml` file.

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