Oracle® Content Services

Administrator's Guide

10*g* Release 1 (10.1.1)

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Preface

Oracle Collaboration Suite 10*g* Content Services (Oracle Content Services) is a consolidated, database-centric content management application that provides a comprehensive, integrated solution for file and document lifecycle management. Oracle Content Services integrates with OracleAS Portal, E-Business applications, and other environments.

Oracle Content Services runs with Oracle Application Server and an Oracle Database, and provides a highly scalable content management repository. Oracle Content Services also leverages Oracle Content Management SDK, a proven toolkit with over 2000 customers. This guide describes system administration functions for Oracle Content Services.

Audience

This document intended for system administrators, or anyone involved in configuring, running, and maintaining an Oracle Content Services instance. Oracle Content Services application administrators, such as Quota or Content Administrators, should refer to *Oracle Content Services Application Administrator's Guide* for information about application administration tasks.

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Related Documents

For more information, see these Oracle resources:

Oracle Content Services and Oracle Records Management

- *Oracle Content Services Application Administrator's Guide*

- *Oracle Records Management Administrator's Guide*

- *Oracle Content Services Application Developer's Guide*

Oracle Collaboration Suite

- *Oracle Collaboration Suite Administrator's Guide*

- *Oracle Collaboration Suite Release Notes*

- *Oracle Collaboration Suite Installation Guide*

- *Oracle Collaboration Suite Upgrade Guide*

- *Oracle Collaboration Suite Concepts Guide*

- *Oracle Collaboration Suite Deployment Guide*

- *Oracle Collaboration Suite Security Guide*

- *Oracle Collaboration Suite Licensing Information*

- *Oracle Collaboration Suite Migration and Coexistence Guide*

Oracle Application Server

- *Oracle Application Server Concepts*

- *Oracle Application Server Installation Guide*

- *Oracle Application Server Administrator's Guide*

- *Oracle Internet Directory Administrator's Guide*

- *Oracle HTTP Server Administrator's Guide*

- *Oracle Application Server Single Sign-On Administrator's Guide*

- *Oracle BPEL Process Manager Developer's Guide*

Oracle Database

- *Oracle Database Administrator's Guide*

- *Oracle Database Backup and Recovery Basics*

- *Oracle Database Net Services Administrator's Guide*

- *Oracle Database Globalization Support Guide*

- *Oracle Database Oracle Clusterware and Oracle Real Application Clusters Administration and Deployment Guide*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

What's New in Oracle Content Services Administration

This preface describes changes to administrative features in Oracle Content Services 10*g* Release 1 (10.1.1). If you are upgrading to Oracle Content Services 10*g* from a previous release, read the following information carefully, since there are significant differences in Oracle Content Services administration features, tools, and procedures.

New administrative features in Oracle Content Services include:

- New Product Name

- Terminology Changes

- Integration with Oracle Records Management

- Multi-Site Support

- Site Management from the Oracle Collaboration Suite Control

- BPEL Workflow Support

- BFILE Archiving and Aging

- Partner Integration for Retention Hardware Support

- Changes to Protocol Support

- Changes to Print Services Support

- Antivirus Integration

- New Index to Speed Up Name Searches

- OPMN Integration and Elimination of Domain Controller

- Changes to Administrative Accounts

- Enhanced Logging

- Multiple Applications Tiers on a Single Host

- Easier Mechanism to Change the Oracle Content Services Schema Password

- Metric Configuration Management

- Additional Default Formats

- Simplified Installation and Configuration

- Option to Configure and Unconfigure Oracle Content Services from the Oracle Collaboration Suite Control

- Simplified RAC Configuration

- Changes to OC4J Instance Names for Oracle Content Services
- Oracle Collaboration Suite Control Access to Oracle Content Services Ports and Logs

New Product Name

Oracle Content Services is the new name for the product formerly known as Oracle Files. For information about new product features, see *Oracle Collaboration Suite Release Notes* for your platform.

Terminology Changes

Many key terms from past releases have changed. Read the following list carefully to avoid confusion:

- The organizational entity formerly known as a Subscriber is now called a **Site**. Sites are based on identity management **realms**.

- The role formerly known as Subscriber Administrator has been split into a variety of different administrative roles, such as User Administrator, Quota Administrator, and Content Administrator. Collectively, users who hold one or more of these roles are known as application administrators since they manage the Oracle Content Services application.

- Tasks performed by the Site Administrator in previous releases (creating, modifying, and deleting Sites, as well as registering custom workflows) are now performed by the system administrator using the **Oracle Collaboration Suite Control**.

- Workspaces are now known as **Libraries**.

- Two new terms have been introduced to describe the Oracle Collaboration Suite architecture: **Applications tier**, which replaces the previously used term middle tier, and **Infrastructure tier**, which includes both the **Oracle Collaboration Suite Database** and **Oracle Identity Management**.

- The administrative tool to manage each Applications tier is now called the Oracle Enterprise Manager 10*g* Application Server Control for Collaboration Suite (**Oracle Collaboration Suite Control**). This tool was formerly known as the Oracle Enterprise Manager 10*g* Application Server Control (Application Server Control).

- The tools formerly known as the Bulk Administration Tools are now known as the **Oracle Content Services command-line tools**.

Integration with Oracle Records Management

Oracle Records Management is a records management application that ships with Oracle Content Services. When you install Oracle Content Services, Oracle Records Management is installed automatically, but the application is disabled by default.

Multi-Site Support

You can now configure multiple Sites within one Oracle Content Services domain. In previous releases, this functionality was not supported by OracleAS Single Sign-On.

Site Management from the Oracle Collaboration Suite Control

In previous releases of Oracle Content Services, there was a separate administrative interface (and a separate administrative role) to manage Sites. Now, the system administrator can manage Sites from the Oracle Collaboration Suite Control.

BPEL Workflow Support

Oracle Content Services now supports integration with **BPEL** custom workflows. Because of this, custom workflows built using Oracle Workflow Builder are no longer supported.

In previous releases of Oracle Content Services, there was a separate administrative interface for registering custom workflows. Now, you can register custom workflows from the Oracle Collaboration Suite Control.

BFILE Archiving and Aging

As in previous releases of Oracle Content Services, an agent can move content in the Archive to **BFILE** storage. Rather than having two agents control BFILE archiving, however, a new agent called the Cleanup Agent performs this task, and this behavior is not activated by default.

In addition to BFILE archiving, you can now configure an agent called the Content Agent to periodically move content to BFILE after it has not been accessed for a specified period (BFILE aging). This agent is not activated by default.

Partner Integration for Retention Hardware Support

Oracle Content Services now integrates with **EMC Centera** and **Network Appliance SnapLock** in order to provide hardware storage for records retention and compliance. Use the Oracle Collaboration Suite Control to manage retention hardware integration.

Changes to Protocol Support

The following list summarizes the changes to Oracle Content Services protocol support for this release:

- The NTFS and SMB protocol servers are no longer included as native Oracle Content Services protocol servers.

- Due to performance and security issues, the NFS protocol is no longer supported. UNIX users are encouraged to use **FTP** as an alternative.

- The AFP protocol is no longer supported.

- Secure FTP (FTPS) is now supported, in addition to FTP.

- The FTP and FTPS servers are not configured by default after you install and configure Oracle Content Services; you must enable these protocols using the Oracle Collaboration Suite Control.

Changes to Print Services Support

Since the Oracle Content Services printing services relied on SMB, which is not supported in this release, you cannot add, modify, or delete printers from the Oracle Collaboration Suite Control. Instead, Oracle Content Services relies on partners for output management.

Antivirus Integration

Oracle Content Services integrates with a partner solution, the Symantec AntiVirus Scan Engine (**SAVSE**), to provide options to verify that content is virus-free and to clean files that are found to be infected. Once antivirus integration has been enabled and configured, files are scanned for viruses whenever they are opened for read access, using the latest available virus definitions.

New Index to Speed Up Name Searches

Oracle Content Services ships with a new index, called IFS_LYKE, that makes item name searches faster.

OPMN Integration and Elimination of Domain Controller

Because Oracle Content Services is now fully integrated with OPMN, you can use opmnctl to manage the Oracle Content Services **domain** and **nodes**. As a result, the ifsctl tool is no longer available, and there is no longer an Oracle Content Services domain controller.

Changes to Administrative Accounts

Be aware of the following changes to administrative accounts used with Oracle Content Services:

- There is no longer a site_admin account. Administrative tasks formerly performed using the site_admin account are now performed using the ias_admin account in the Oracle Collaboration Suite Control.

- There is no longer a Subscriber Administrator. Tasks performed by the Subscriber Administrator are now performed by a variety of administrators, such as the Content Administrator and the Quota Administrator, in Oracle Content Services **Administration Mode**.

- The orcladmin account for each realm has all of the Oracle Content Services access roles by default. Use the orcladmin account to sign in to Oracle Content Services for the first time and delegate access roles to additional users.

- Although the Oracle Content Services system account is still used internally, it is no longer needed to perform any administrative tasks.

Enhanced Logging

Using the Oracle Collaboration Suite Control, you can customize the level of information you would like logged by selecting and configuring **loggers**.

Multiple Applications Tiers on a Single Host

You can now have more than one Oracle Content Services Applications tier on a single host. Each Oracle Content Services Applications tier must be in its own Oracle home. The Applications tiers can be part of the same Oracle Content Services domain, or they can belong to different domains.

Easier Mechanism to Change the Oracle Content Services Schema Password

You can now change the Oracle Content Services schema password using the Oracle Collaboration Suite Control.

Metric Configuration Management

You can configure Oracle Content Services metrics, including SQL metrics, Java metrics, and URL Timing metrics, for particular Applications tiers using the Oracle Collaboration Suite Control.

Additional Default Formats

The number of default **formats** shipped with Oracle Content Services has been greatly increased. Default support for common formats such as .jar is now provided.

Simplified Installation and Configuration

The process of installing and configuring Oracle Content Services has been greatly simplified. The configuration process is now integrated with Oracle Universal Installer, and you no longer need to manually run the Oracle Content Services Configuration Assistant (formerly known as the Oracle Files Configuration Assistant, or `ifsca`).

Option to Configure and Unconfigure Oracle Content Services from the Oracle Collaboration Suite Control

If you choose not to configure Oracle Content Services through Oracle Universal Installer during Oracle Collaboration Suite installation, you can configure Oracle Content Services at a later time using the Oracle Collaboration Suite Control. You can also use the Oracle Collaboration Suite Control to:

- Unconfigure Oracle Content Services on a particular Applications tier

- Reconfigure Oracle Content Services on a particular Applications tier, once it has been unconfigured

Simplified RAC Configuration

When you add or remove RAC nodes for Oracle Collaboration Suite, the RAC databases are automatically registered in Oracle Internet Directory. Oracle Content Services uses the information stored in Oracle Internet Directory in order to connect. You no longer need to specify database connect information on Applications tiers, although you do need to restart the Oracle Content Services domain after you add or remove a RAC node.

Changes to OC4J Instance Names for Oracle Content Services

The OC4J instance that supports the HTTP node for the Oracle Content Services application, called `OC4J_iFS_files` in previous releases, is now called `OC4J_Content`. This release also introduces a new OC4J instance to support the HTTP node for the Oracle Records Management application, called `OC4J_RM`, but this OC4J instance is disable by default after Oracle Content Services is installed and configured.

Oracle Collaboration Suite Control Access to Oracle Content Services Ports and Logs

You can now view Oracle Content Services log files directly from the Oracle Collaboration Suite Control. You can also use the Oracle Collaboration Suite Control to view Oracle Content Services ports.

1

Oracle Content Services Administration Concepts

This chapter is designed to help Oracle Content Services system administrators become familiar with key architectural and administration concepts.

Topics in this chapter include:

- About the Oracle Content Services System Administrator
- Oracle Content Services Architecture
- Oracle Content Services Deployment Configurations
- Integration with Key Oracle Technologies

About the Oracle Content Services System Administrator

Oracle Content Services **system administrators** are typically responsible for the following tasks:

- Installing and configuring Oracle Content Services
- Optionally customizing their Oracle Content Services deployment by enabling an antivirus solution, the **FTP** and FTPS servers, the **OmniPortlet**, retention hardware, **BFILE** archiving or aging, or other scenarios
- Managing the Oracle Content Services **domain**, **nodes**, **services**, and **servers**
- Performing system tuning and troubleshooting
- Adding, deleting, and managing **Sites**
- Managing custom **BPEL** workflows

> **Note:** Oracle Content Services **application administrators** are responsible for tasks related to a particular Site, such as managing users, quotas, categories, and content. There are a variety of application administration roles, such as the Category Administrator, Configuration Administrator, and Security Administrator. Users with one or more application administration roles should refer to *Oracle Content Services Application Administrator's Guide* for information about application administration tasks.

Skills Required to Administer Oracle Content Services

System administrators should have the following skills:

- **Basic Oracle database administration experience.** Since the file system is stored in an Oracle database, you need to understand the basics of how to administer the database, including knowledge of **Oracle Text**.

- **Knowledge of Internet and Intranet protocols.** You need to understand how **HTTP**, **WebDAV**, and the other networking protocols work.

- **Oracle Application Server administration experience.** You need to understand how to administer the various components of Oracle Application Server, such as **Oracle HTTP Server**, OracleAS **Web Cache**, and Oracle Application Server Containers for J2EE (**OC4J**).

Administrative Accounts

Table 1–1 summarizes the administrative accounts used by system administrators.

Table 1–1 Administrative Accounts

Account Name	Purpose	Notes
ias_admin	Used to access the **Oracle Collaboration Suite Control** and the Oracle Enterprise Manager 10*g* Database Control.	The password is set during Oracle Collaboration Suite **Infrastructure tier** and Oracle Collaboration Suite **Applications tier** installation.
orcladmin	Used to administer a single **Oracle Identity Management** realm.	This user is the superuser for a single Oracle Identity Management **realm** and is the 'bootstrap' user for a particular Oracle Content Services Site. For the superuser of the default realm, the password is set during Oracle Collaboration Suite Infrastructure tier installation. For the superuser of any additional realm, the password is set when the realm is created.
cn=orcladmin	Used to administer Oracle Identity Management.	This user is the superuser for Oracle Identity Management and can manage multiple realms. The password is set during Oracle Collaboration Suite Infrastructure tier installation.

Oracle Content Services Administration Tools

A full range of administration tools are provided with Oracle Content Services, including configuration wizards, management tools, and command-line tools. Using these administration tools, you can:

- Configure and unconfigure Oracle Content Services

- Start and stop domains and nodes

- Manage service and server objects

- Work from the command line

- Migrate data and users to Oracle Content Services

- Monitor domain, service, and node performance

The following sections describe the administration tools available to Oracle Content Services administrators.

Oracle Collaboration Suite Control

The Oracle Enterprise Manager 10*g* Application Server Control for Collaboration Suite (Oracle Collaboration Suite Control) provides access to basic Oracle Content Services process management and monitoring functions, such as starting, stopping, monitoring, and dynamically tuning the domain, nodes, services, and servers.

This tool also allows administrators to configure, unconfigure, and reconfigure Oracle Content Services Applications tiers. These options are only available for Applications tiers that are not running Oracle Workflow.

Oracle Content Services Administration Mode

Oracle Content Services **Administration Mode** provides access to application administration functions such as allocating quota and assigning roles. See *Oracle Content Services Application Administrator's Guide* for more information.

Oracle Identity Management Tools

There are several Oracle Identity Management tools you can use to manage users in Oracle Collaboration Suite:

- The Oracle Internet Directory Self-Service Console is an application that enables administrators to manage users, groups, and realms.

- Oracle Directory Manager is a Java-based tool for managing most functions in Oracle Internet Directory. Use it to configure password policies.

- You can use command-line tools like `ldapmodify` in place of the Oracle Internet Directory Self-Service Console and Oracle Directory Manager.

Oracle Content Services Command-Line Tools

You can use the **Oracle Content Services command-line tools** to create groups, update groups, create Libraries, and update Libraries. The Oracle Content Services command-line tools were formerly known as the Bulk Tools. See "Oracle Content Services Command-line Tools" in Chapter 9 of *Oracle Collaboration Suite Migration and Coexistence Guide* for more information.

Oracle Application Server Tools

You can also use these Oracle Application Server tools:

- `opmnctl` - Manages Oracle Process Manager and Notification Server (**OPMN**). Used to start and stop Oracle Content Services, OC4J processes, the Oracle HTTP Server, and OracleAS Web Cache. Can be accessed from *ORACLE_HOME*/opmn/bin/.

- `emctl` - Manages the Oracle Collaboration Suite Control. Can be accessed from *ORACLE_HOME*/bin/.

Oracle Content Services Administrative Tasks Not Covered in This Guide

Some Oracle Content Services system administration tasks are covered in other guides. The following table explains what these tasks are, and where to go for more information.

Table 1–2   System Administration Tasks Not Covered in This Guide

Task	Where to Go for More Information
Getting started after installing Oracle Content Services	*Oracle Collaboration Suite Administrator's Guide*
Setting up Oracle Content Services for use with SSL, and other security considerations	*Oracle Collaboration Suite Security Guide*
Changing the Oracle Content Services schema password	*Oracle Collaboration Suite Administrator's Guide*
Accessing shared administrative tools, such as the Oracle Collaboration Suite Control	*Oracle Collaboration Suite Administrator's Guide*
Oracle Content Services deployment information	*Oracle Collaboration Suite Deployment Guide*
Using the Oracle Content Services command-line tools for bulk creation/ update of groups and Libraries	*Oracle Collaboration Suite Migration and Coexistence Guide*

Oracle Content Services Architecture

The following sections describe the technology underlying Oracle Content Services, and explain how the Oracle Content Services nodes and other processes interact. They also provide information about Oracle Internet Directory and Oracle Content Services Sites.

Built with Oracle Content Management SDK

Oracle Content Services was built using Oracle Content Management SDK (Oracle CM SDK), a robust development platform for content management applications.

Oracle CM SDK provides a set of Java APIs that expose file system functionality such as file storage and searching, as well as document delete, move, and rename operations. The APIs also provide content management features unique to Oracle CM SDK, such as document versioning, controlling access to documents, and advanced queuing to facilitate communication between applications

You can find more information about Oracle Content Management SDK at:

http://www.oracle.com/technology/products/ifs/

The Oracle Content Services Domain

An Oracle Content Services **domain** is a logical grouping of Oracle Content Services nodes, along with an Oracle Database instance (called the **Oracle Collaboration Suite Database**) that contains the Oracle Content Services data. The nodes run on Oracle Application Server. The Oracle Content Services node processes and the database itself can be physically configured on a single computer, or across several, separate computers.

Only one Oracle Content Services domain is allowed for each Applications tier; in other words, you cannot configure two domains in the same Oracle home.

The Oracle Content Services **schema** is created in the Oracle Collaboration Suite Database during the configuration process. The schema owns all database objects, including metadata about Oracle Content Services and configuration information.

Figure 1–1 shows the Oracle Content Services domain.

Figure 1–1   The Oracle Content Services Domain
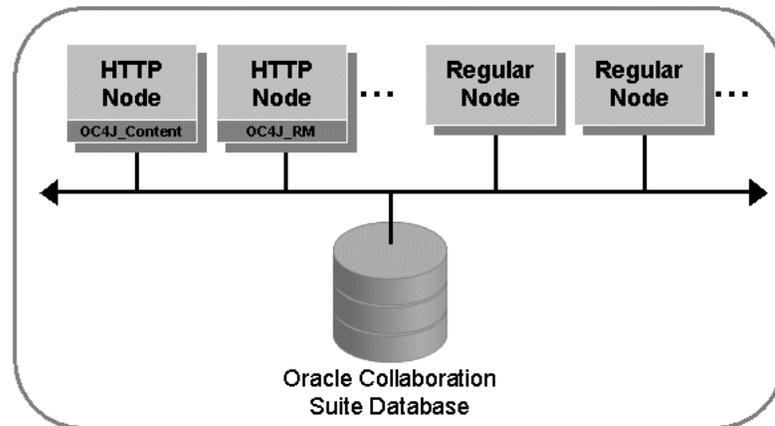
Oracle Content Services Nodes

An Oracle Content Services **node** is the application software that comprises the product, along with the underlying Java Virtual Machine (JVM) required to support the software at runtime.

Important concepts to understand about nodes include:

- After installation, each Oracle Content Services Applications tier includes two nodes by default: one regular node and one HTTP node (see Figure 1–2). An additional HTTP node to support the Oracle Records Management application is also included on each Applications tier, but this HTTP node and its OC4J instance are disabled by default after installation.

- The regular node supports protocol servers, such as FTP, as well as agents, such as the Garbage Collection Agent.

- Each regular node is monitored by OPMN, which automatically restarts the node when it is stopped unexpectedly.

- The HTTP nodes support the Oracle Content Services and Oracle Records Management applications, the Oracle Content Services portlet, WebDAV, and the Web services by means of servlets that are configured to work with OC4J.

- Each HTTP node's OC4J process is guarded by OPMN, which will restart the OC4J process if it is stopped unexpectedly.

- The node manager is the actual process that gets started when the node is started. It is responsible for starting the default services and servers for the node. It also provides an administrative API for the node that lets you find out information about node log levels, locale information, available free memory, and the node's Oracle home.

Figure 1–2   Oracle Content Services Nodes
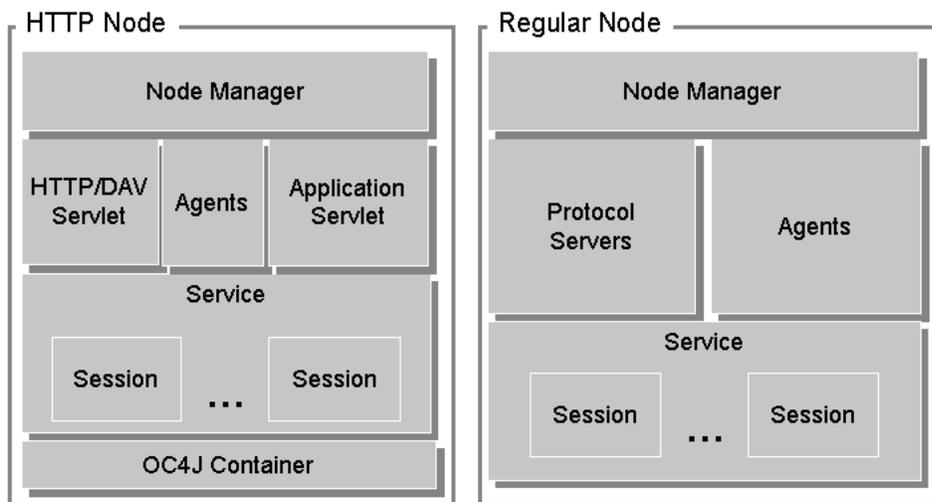
Services, Servers, and Agents

Each node supports a **service** that has specific configuration parameters, such as language, default character set, credential managers, connections to the database, and cache sizes. By default, a single service starts on each node, and that service supports all protocol servers and agents for that node.

The **servers** supported by the service can be either protocol servers or agents. The protocol servers listen for requests from clients on a specific port and respond to requests according to the rules of the protocol specification. By default, each protocol server listens on the industry-standard well known port (for example, FTP listens on port 21) and adheres to the specification of the protocol server.

Agents perform operations periodically (time-based) or in response to events generated by other Oracle Content Services servers or processes (event-based). For example, the Content Garbage Collection Agent deletes content no longer associated with any document in Oracle Content Services. It does so based on an activation period parameter specified in the server configuration object. See Appendix E, "Server Configuration Properties" for more information.

Although different agents can run in different nodes, each agent must run only on a single node, except the Service Warmup Agent and the Statistics Agent. These two agents must be running in all nodes, both regular and HTTP. Typically, most of the shipped agents must be run to ensure a stable system.

The Oracle Content Services architecture is flexible: services and servers are de-coupled so that you can configure services, protocol servers, and agents across a wide array of hardware to best meet your business needs. For example, you can run all protocol servers on one node, and run all agents on another node, or they can all run on the same node.

An initial domain and node configuration is set up for you during Oracle Content Services configuration, but you can change this later. You can configure the protocol servers and other processes at any point using the Oracle Collaboration Suite Control.

See Appendix D, "Service Configuration Properties" for information about service configuration parameters. See Appendix E, "Server Configuration Properties" for information about server configuration parameters.

Oracle Internet Directory

Oracle Content Services, like all Oracle Collaboration Suite components, uses Oracle Internet Directory to store and manage users.

To administer the Oracle Internet Directory associated with Oracle Content Services, use Oracle Directory Manager and other associated Oracle Internet Directory tools. See *Oracle Internet Directory Administrator's Guide* for more information.

Provisioning Users in Oracle Content Services

After users have been created in Oracle Internet Directory, they are automatically provisioned in Oracle Content Services every 15 minutes by the Oracle Internet Directory Credential Manager Agent.

You can change the default provisioning time period by changing the `IFS.SERVER.TIMER.ActivationPeriod` parameter of the Oracle Internet Directory Credential Manager Agent. You can choose a time period anywhere from 5 minutes to 24 hours. See "Modifying Server Configurations" on page 6-20 for information about changing agent parameters.

Additionally, once a user has been created in Oracle Internet Directory, logging in to Oracle Content Services as that user will immediately provision the user in Oracle Content Services, regardless of the time interval specified for the Agent. This feature, known as "on-demand provisioning," can be enabled or disabled through the `IFS.DOMAIN.CREDENTIALMANAGER.AutoUserProvisioning Enabled` domain property; see "Changing Domain Properties" on page 6-1 for more information.

Oracle Records Management Provisioning

Oracle Content Services and Oracle Records Management share the same provisioning model. Once a user has been provisioned in Oracle Content Services, that user will be provisioned in Oracle Records Management, and vice versa. Oracle Records Management also supports on-demand provisioning.

The Site Model

In Oracle Content Services, a Site is a discrete organizational entity whose users can collaborate on files and folders. Users in one Site do not have access to the content of users in another Site. Oracle Content Services Sites are based on identity management realms.

During Oracle Content Services installation and configuration, a default Site is created, based on the default realm in Oracle Identity Management. You can create and manage additional Sites using the Oracle Collaboration Suite Control; see Chapter 9, "Managing Oracle Content Services Sites" for more information.

If you create more than one Site, users who are not members of the default Site must specify the realm name when they sign on to Oracle Content Services.

Each Oracle Content Services Site has a designated set of application administrators to manage quota, specify Site settings, and perform other tasks. See *Oracle Content Services Application Administrator's Guide* for more information.

Oracle Records Management shares the Oracle Content Services Site model. Each Records Administrator role is specific to a particular Site, and users of non-default Sites must specify the realm on which their Site is based when they access Oracle Records Management.

Oracle Content Services Deployment Configurations

This section describes the two types of Oracle Content Services deployment.

- Single-Computer Deployment
- Multiple-Computer Deployment

Single-Computer Deployment

Oracle Content Services can be installed on a single computer if the computer meets the recommended hardware and software requirements. If your computer does not meet the recommended requirements, performance in this configuration can be less than satisfactory. See *Oracle Collaboration Suite Installation Guide* for more information about hardware and software requirements.

In a single-computer deployment, Oracle Content Services and all required components are installed on a single computer. These components include Oracle Identity Management and the Oracle Collaboration Suite Database. Single-computer deployment does not allow for the use of load balancing or failover options.

The hardware requirements for single-computer deployment can support only two Oracle Content Services users accessing two protocols concurrently. Because Oracle Collaboration Suite uses Oracle Internet Directory for credential management, the computer requires at least two Oracle home instances. Oracle recommends that you use single-computer deployment for development or evaluation purposes only.

Figure 1–3   A Single-Computer Oracle Content Services Deployment
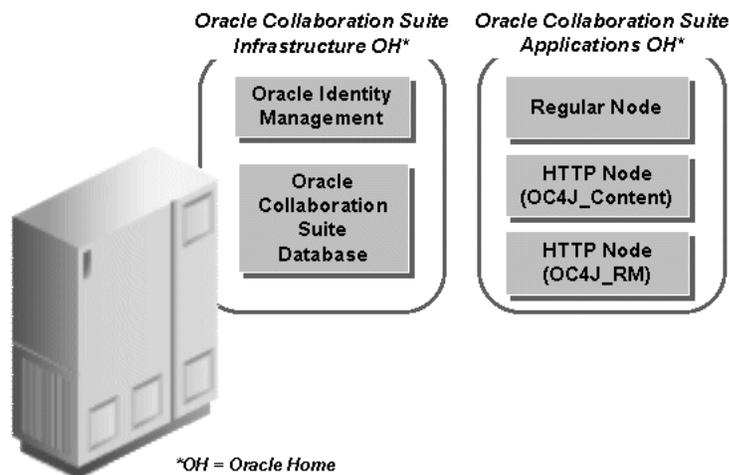
Figure 1–3 shows an Oracle Content Services domain running on a single computer. Two separate Oracle homes are shown:

- An Oracle Collaboration Suite Infrastructure Oracle home that contains Oracle Internet Directory and the Oracle Collaboration Suite database
- An Oracle Collaboration Suite Applications Oracle home that contains two Oracle Content Services HTTP nodes

Multiple-Computer Deployment

Oracle Content Services can be deployed on multiple computers. This allows you to separate the components, and configure failover, load balancers, and high availability

options. Multiple-computer deployment also allows you to use computers with lower hardware requirements than required for single-computer deployment. See *Oracle Collaboration Suite Installation Guide* for more information about hardware requirements.

With appropriate network load balancers and computer configuration, users may not be aware of whether the Oracle Content Services instance is running on one host or across several hosts. Users access content, such as folders and files, using the appropriate client application for a particular Oracle Content Services protocol server.

Figure 1–4   A Multiple-Computer Oracle Content Services Deployment
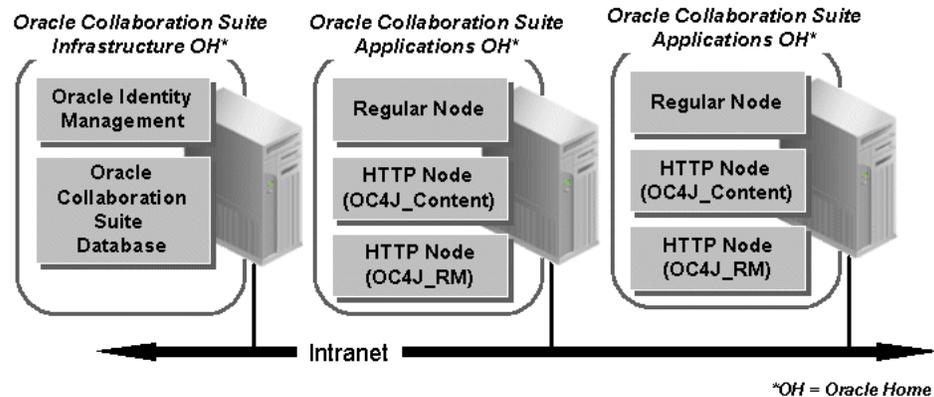
Figure 1–4 is an example of multiple-computer deployment, with Oracle Collaboration Suite components distributed across three computers. From left to right, these computers run:

- Oracle Internet Directory and the Oracle Collaboration Suite Database, in an Oracle Collaboration Suite Infrastructure Oracle home

- Two computers running an Oracle Content Services regular node and two HTTP nodes, in an Oracle Collaboration Suite Applications Oracle home

Each Oracle Content Services Applications tier can include HTTP nodes, regular nodes, or both. Oracle Content Services agents can only run on one Applications tier at a time. However, agents can be deployed on multiple Applications tiers in an inactive state, and activated if the Applications tier on which they were running fails.

Integration with Key Oracle Technologies

Oracle Content Services, a part of the Oracle Collaboration Suite, leverages the capabilities of both the Oracle Database and Oracle Application Server.

This section contains the following topics:

- Integration with Other Oracle Collaboration Suite Applications

- Integration with the Oracle Database

- Integration with Oracle Application Server

Integration with Other Oracle Collaboration Suite Applications

Oracle Collaboration Suite is an integrated suite of enterprise information management products. It provides a number of shared, "cross-product" features such as an integrated portal home page and federated search for content across all products.

Oracle Mail

If you configure Oracle Mail, Oracle Mail is used as the SMTP server for Oracle Content Services e-mail notifications, such as error messages sent to application administrators and Site quota notifications. You can also choose to use Oracle Mail for the Oracle Workflow notification mailer.

Oracle Mobile Collaboration

Oracle Mobile Collaboration (formerly known as Oracle Application Server Wireless) provides telephone and PDA access to Oracle Content Services. You can browse files, view documents (depending on file type), send links to documents, and fax documents from a wireless device. Oracle Mobile Collaboration integrates to Oracle Content Services through the WebDAV protocol.

Oracle Workspaces

Oracle Workspaces uses Oracle Content Services for its repository and uses the Oracle Content Services Web services in order to integrate. Oracle Workspaces also provides access to Oracle Content Services Libraries from its Web interface.

Integration with the Oracle Database

Oracle Content Services uses the Oracle Database to store all content and metadata.

The Oracle Database and the Oracle Content Services Schema

All content and metadata about the Oracle Content Services instance is stored in an Oracle Database. These objects, including tablespaces, tables, indexes, views, sequences, and procedures owned by the schema, provide the underpinnings of the fully functioning system.

There are additional schemas created to ensure secure connectivity to other systems. These additional schema names are derived from the Oracle Content Services schema name. For example, if the Oracle Content Services schema name is CONTENT, the additional schemas are CONTENT$CM and CONTENT$ID.

User content, such as word processing files, spreadsheets, sound files, and presentations, is stored by Oracle Content Services in the database as Large Objects (LOBs).

LOBs enable fast access and optimized storage for large bits of content, often binary, stored in the database. Otherwise, all content in the Oracle Content Services schema is stored as standard data types in various tables.

Oracle Text

Oracle Text is full-text retrieval technology built into the Oracle Database for indexing and searching text and documents. Oracle Text supports mixed languages and character sets in the same index. Oracle Content Services uses the text indexing and retrieval features of Oracle Text.

Oracle Streams Advanced Queueing

Oracle Streams Advanced Queueing provides an infrastructure for distributed applications to communicate asynchronously using messages. Oracle Advanced Queueing is built into the Oracle Database.

Oracle Content Services uses Oracle Streams Advanced Queueing to integrate with Oracle Workflow and Oracle BPEL Process Manager.

Oracle Real Application Clusters (RAC)

A cluster is a group of computers acting together that behave like a single system. Clustering requires both hardware (interconnect) and software (clusterware) support. Traditionally, clusters were used in high availability read-only applications, such as data warehouses. These days, clusters are increasingly becoming a lower-cost approach to computing applications that require very high availability and scalability.

An Oracle Real Application Cluster consists of two or more computers configured to interact to provide the appearance of a single Oracle database. These two or more RAC *nodes* are linked by an *interconnect*. The interconnect serves as the communication path between each node in the cluster database. Each Oracle instance uses the interconnect for the messaging that synchronizes each instance's use of shared resources. Oracle also uses the interconnect to transmit data blocks that are shared by the multiple instances. The datafiles accessed by all the nodes are the primary type of shared resource.

RAC requires that all nodes have simultaneous access to the shared disks to give the instances concurrent access to the database. The implementation of the shared disk subsystem is based on your operating system: you can use either a cluster file system, or place the files on raw devices. Cluster file systems greatly simplify the installation and administration of Oracle Real Application Clusters.

When you add or remove RAC nodes for Oracle Collaboration Suite, the RAC databases are automatically registered in Oracle Internet Directory. Oracle Content Services uses the information stored in Oracle Internet Directory in order to connect. Although you do not need to specify database connect information on Applications tiers, you must restart the Oracle Content Services domain after you add or remove a RAC node.

For more information about RAC, see *Oracle Database Oracle Clusterware and Oracle Real Application Clusters Administration and Deployment Guide*.

Integration with Oracle Application Server

Oracle Content Services is designed to integrate with several important components from the Oracle Application Server product family, including Oracle Internet Directory, the Oracle Collaboration Suite Control, and OC4J.

Oracle Application Server Containers for J2EE (OC4J)

OC4J is a J2EE-compliant application server that supports Java Server Pages (JSP), Java servlets, and many other APIs from the Java 2 Platform, Enterprise Edition (J2EE). Services are deployed to an OC4J instance using XML-based configuration files as standard .WAR (Web Application Archive), .EAR (Enterprise Application Archive), .RAR (Resource Adapter Archive), and .JAR (Java Archive) files. Oracle Content Services uses the Java Servlet and the runtime environment of OC4J to support the HTTP/DAV servlet, application servlet, portlet servlet, and Web Services.

OC4J is automatically configured for the Oracle Content Services HTTP node, as well as the Oracle Records Management HTTP node, as part of the Oracle Content Services configuration process. You can manage OC4J through the Oracle Collaboration Suite Control.

Oracle Process Manager and Notification Server (OPMN)

OPMN manages all the components within an application server instance, including Oracle HTTP Server, OC4J processes, and OracleAS Web Cache. It channels all events

from different components to all components interested in receiving them. OPMN consists of two components:

- Oracle Process Manager (PM) is the centralized process management mechanism in Oracle Application Server and manages all Oracle Application Server and Oracle Collaboration Suite component processes. It starts, stops, restarts, and detects the termination of these processes.

- Oracle Notification System (ONS) is the transport mechanism for failure, recovery, startup, and other related notifications between components in Oracle Application Server.

You can use the OPMN command-line tool, `opmnctl`, to manage application server components, including Oracle Content Services. For complete information about `opmnctl` syntax and usage, see *Oracle Application Server Administrator's Guide*.

Oracle Enterprise Manager

Oracle Enterprise Manager is a systems management software application that enables you to manage and monitor Oracle Application Server instances and other Oracle server products. You can use the following Oracle Enterprise Manager Web-based interfaces:

- Use the Oracle Enterprise Manager 10*g* Application Server Control for Collaboration Suite (Oracle Collaboration Suite Control) to manage your Oracle Content Services Applications tier hosts.

- Use the Oracle Enterprise Manager 10*g* Application Server Control (Application Server Control) to manage your Oracle Identity Management host.

Use the Oracle Collaboration Suite Control to operate and monitor system processes associated with the Oracle Content Services domain and nodes. You can also configure any components that were not configured during the Oracle Collaboration Suite installation process.

You can access the Oracle Collaboration Suite Control using a Web browser from anywhere on the network. The first page you see is the Oracle Application Server Farm Home page, which lets you view the application server instances in your Oracle Collaboration Suite deployment. From this page, you can access the Collaboration Suite Home page, which shows the currently installed Oracle Collaboration Suite components.

Oracle Internet Directory

Oracle Internet Directory is Oracle's LDAP (Lightweight Directory Access Protocol) v.3-compliant directory service implementation. Oracle Internet Directory provides user authentication and other directory service features, like user provisioning, to Oracle Collaboration Suite components. See *Oracle Internet Directory Administrator's Guide* for more information.

Oracle BPEL Process Manager

Oracle BPEL Process Manager provides a framework for easily designing, deploying, monitoring, and administering processes based on BPEL standards. You can define custom BPEL workflows in Oracle BPEL Process Manager, then register them for use in Oracle Content Services. Custom workflows are only available to the default Site in Oracle Content Services; additional Sites cannot use the custom workflows. See Chapter 3, "Managing Workflows in Oracle Content Services" for detailed information.

About BPEL The Business Process Execution Language (BPEL) is an XML-based language for enabling task-sharing across multiple enterprises using a combination of Web services. BPEL is based on the XML Schema, simple object access protocol (SOAP), and web services description language (WSDL). Using BPEL, you design a business process that integrates a series of discrete services into an end-to-end process flow. For more information about BPEL and Oracle BPEL Process Manager, see *Oracle BPEL Process Manager Developer's Guide*.

Oracle Workflow

Oracle Workflow is business-process automation software. Oracle Workflow lets you automate the process of routing and approving information, according to business rules you specify. Oracle Content Services integrates with Oracle Workflow in order to support the default workflow processes shipped with Oracle Content Services.

Users can view workflow notifications by accessing the Oracle Content Services Reports feature, or you can configure Oracle Workflow to send e-mail notifications. See Chapter 3, "Managing Workflows in Oracle Content Services" for more information.

2

Oracle Content Services Deployment Options

After you install and configure Oracle Content Services, you may want to customize your setup for a particular deployment scenario. For example, you may want to integrate Oracle Content Services with an antivirus solution, or run the Oracle Content Services application on a different port number. This chapter provides information about these deployment options.

Some additional deployment options are covered elsewhere in this book. See the following references for more information:

- "Enabling FTP" on page 4-3
- "Enabling FTPS" on page 4-4
- "Creating Sites" on page 9-2

This chapter provides information about the following topics:

- Setting Up Antivirus Integration
- Managing Storage Options
- Integrating with Solutions for Records Management Retention
- Changing the Oracle Content Services Port Number
- Allowing Access to Oracle Content Services from Outside the Firewall
- Setting Up the OmniPortlet

Setting Up Antivirus Integration

Oracle Content Services integrates with a partner solution, the Symantec AntiVirus Scan Engine (SAVSE), to provide options to verify that content is virus-free and to clean files that are found to be infected.

Once antivirus integration has been set up, files will be scanned for viruses whenever they are opened for read access, using the latest available virus definitions. The following files will be excluded from the scanning process:

- Files that have been quarantined
- Files whose format (such as .doc) has been excluded by the administrator from virus scans
- Files that have already been scanned using the current virus definitions

If a file is found to be infected with a virus, it will be marked as quarantined, and users will not be able to open the file until it has been repaired. Contents of the file will remain unreadable even if virus checking is disabled by the administrator.

The Virus Repair Agent is responsible for repair attempts, as well as retrieving the latest virus definitions. Whenever the agent becomes active, it will poll the SAVSE server for updated virus definitions, then attempt to repair the quarantined files. The agent will not attempt to repair the following files:

- Files that have exceeded the maximum number of repair attempts

- Files that have already experienced repair attempts using the current virus definitions

The following sections describe how to set up virus checking in Oracle Content Services:

- Setting Up SAVSE

- Enabling Antivirus Functionality in Oracle Content Services

- Excluding Certain Formats from Being Scanned

- Performance Implications of Scanning for Viruses

Setting Up SAVSE

SAVSE must be installed and configured properly in order to function with Oracle Content Services. The following options must be set:

- You must choose ICAP as the communication protocol. No other protocols are supported.

- You must set the scan policy to "Scan and Repair" or "Scan Only." If you choose "Scan Only," no repair attempts will be made. The "Scan and Delete" and "Scan, Repair or Delete" options are not supported.

- You must enable ICAP 403 response. This parameter cannot be set using the SAVSE administration tool; instead, it must be manually set in the SAVSE configuration file.

Enabling Antivirus Functionality in Oracle Content Services

Once the SAVSE server has been installed and configured, you can enable antivirus functionality in Oracle Content Services. You can also change the maximum number of repair attempts for quarantined documents, and configure how often the Virus Repair Agent is activated. Use the Oracle Collaboration Suite Control to perform these tasks.

To enable antivirus functionality and set the maximum number of repair attempts:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Domain Properties**.

3. Click the **IFS.DOMAIN.ANTIVIRUS.Enabled** property, set the **Value** to True, and click **OK**.

4. Click the **IFS.DOMAIN.ANTIVIRUS.Host** property, supply the host name or IP address of the computer where the SAVSE server is running, and click **OK**.

5. Click the **IFS.DOMAIN.ANTIVIRUS.MaxRepairAttempts** property, specify the number of times you would like the Virus Scan Agent to attempt to repair a file, and click **OK**.

6. Click the **IFS.DOMAIN.ANTIVIRUS.Port** property, supply the value for the SAVSE listener port, and click **OK**.

7. Return to the Content Services Home page and click **Restart Domain**.

To configure how often the Virus Repair Agent becomes active:

1. From the Content Services Home page, click **Server Configurations**.

2. Click **VirusRepairAgentConfiguration**.

3. Click **IFS.SERVER.TIMER.ActivationPeriod** in the Properties section.

4. Change the **Value** as desired.

5. Click **OK** on the Edit Property page.

6. Click **OK** on the Edit Server Configuration page.

7. Return to the Content Services Home page and restart the node that runs this agent.

Excluding Certain Formats from Being Scanned

You can exclude formats from being scanned for viruses to improve system performance. For example, you may choose to only scan formats with a higher probability of being infected, like .zip files. Use the Oracle Collaboration Suite Control to exclude formats from virus checking.

To exclude formats from being scanned:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Formats**.

3. Click the name of the format you want to exclude from virus scanning.

4. Select **Omitted From Anti-Virus Scan**.

5. Click **OK**.

Performance Implications of Scanning for Viruses

The performance of Oracle Content Services may be affected by enabling the virus checking option. The performance impact depends on the following factors:

- The frequency of virus definition updates made to the SAVSE service. Each time virus definitions are updated, *all* files that are opened (except for quarantined or excluded files) are scanned - none are excluded based on having already been scanned with these definitions, since the definitions are new.

  After a virus definition update, overall system performance will degrade initially, but will gradually return to normal as more files are scanned with the current virus definitions and are therefore excluded from subsequent scans.

- The size and frequency of use of the Oracle Content Services repository.

- The type and size of the data in the repository.

- The probability of the number of attempted reads on unique files. Since files will only be scanned the first time they are opened against the current definitions, the frequency of unique files will affect performance.

- The performance of the SAVSE service. This is the most significant performance factor.

■ The number of files whose format has been excluded from scanning by the administrator. Excluding certain formats will reduce the number of scans and improve system performance.

Managing Storage Options

Oracle Content Services data is comprised of content and metadata. The majority of data stored in Oracle Content Services is content and is stored in LOBs (Large Objects) in database tablespaces. All documents are stored as Binary Large Objects (BLOBs), which is one type of LOB provided by the database. See "Providing Adequate Storage to Improve Performance" on page 10-4 for more information.

The Oracle Content Services storage management options provide support for both off-line and near-line storage. In off-line and near-line storage, content that is infrequently accessed is moved from expensive online media, such as a disk array, to a cheaper off-line medium, such as tape. The metadata and search indexes are kept online and are readily available.

Oracle Content Services uses BFILEs to support off-line and near-line storage. A BFILE is a read-only Oracle data type consisting of a directory object and a filename. Updating a document whose content is stored as a BFILE results in the content being reloaded from the external storage as a new BLOB, where the modifications are made. The new content will be indexed, depending on its format. End users will be unaware of where their content is stored.

This section provides information about the following topics:

■ About Data Aging and Archiving

■ About Near-Line Storage for Records

■ Setting Up Data Aging

■ Setting Up Data Archiving

■ Specifying Storage Management Options

About Data Aging and Archiving

Oracle Content Services provides both data aging and data archiving through BFILEs. Through data aging, content that has not been accessed for a specified interval can be automatically moved from BLOB to BFILE. This content is still accessible, and is visible as any normal content would be when users are browsing or searching. Through data archiving, content in the **Archive** is automatically moved to BFILE.

BFILE aging and archiving are not enabled by default. In order to enable BFILE archiving, you must set BFILE-related domain properties and specify storage management options. In order to enable BFILE aging, you must set BFILE-related domain properties, specify storage management options, and activate the Content Agent and configure its frequency value.

About Near-Line Storage for Records

If you are using Oracle Records Management, you have the option of storing certain types of records using BFILEs. Near-line storage for records is not enabled by default; in order to enable this option, you must set a BFILE-related domain property and specify storage management options.

Setting Up Data Aging

Through data aging, content that has not been accessed for a specified interval can be automatically moved to BFILE. This content is still accessible, and is visible as any normal content would be when users are browsing or searching.

Oracle Content Services is not set up for BFILE aging by default. To configure BFILE aging, you must first set domain properties that enable BFILE aging, then you must configure and activate the Content Agent. You can also specify storage management options.

Enabling BFILE Aging

To set domain properties that enable BFILE aging:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Domain Properties**.

3. Click **IFS.DOMAIN.BFILE.Enabled**, set the value to **True**, and click **OK**.

4. Click **IFS.DOMAIN.BFILE.AgingEnabled**, set the value to **True**, and click **OK**.

5. Return to the Content Services Home page and click **Restart Domain**.

Configuring and Activating the Content Agent

To configure and activate the Content Agent:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Server Configurations**.

3. Click **ContentAgentConfiguration**.

4. Edit the server configuration properties as desired; see the Content Agent properties in Appendix E, "Server Configuration Properties" for more information about specific properties. In particular, you may want to edit **IFS.SERVER.AGENT.CONTENTAGENT.RetentionPeriod**; this property specifies the inactivity interval for files before they are moved to BFILE.

5. Click **OK**.

6. Return to the Content Services Home page and click **Node Configurations**, in the Administration section.

7. Click the name of the node where you want to run the Content Agent.

8. On the Edit Node Configuration page, in the Servers section, click **ContentAgent**.

9. Select **Initially Started** and click **OK**.

10. Click **OK** on the Edit Node Configuration page.

11. Return to the Content Services Home page, select the node based on the node configuration you edited, and click **Restart**.

After you have set the domain properties for BFILE aging and configured the Content Agent, you can set storage management options as described in "Specifying Storage Management Options" on page 2-6.

Setting Up Data Archiving

Through data archiving, content in the **Archive** is automatically moved to BFILE and is deleted after a specified period. This deletion period, set by the Content Administrator for each Site, controls when content should be deleted from each Archive regardless of whether BFILE archiving has been enabled. See *Oracle Content Services Application Administrator's Guide* for more information.

Oracle Content Services is not set up for BFILE archiving by default. To configure BFILE archiving, you must set domain properties that enable BFILE archiving. You can also specify storage management options.

To set domain properties that enable BFILE archiving:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Domain Properties**.

3. Click **IFS.DOMAIN.BFILE.Enabled**, set the value to **True**, and click **OK**.

4. Click **IFS.DOMAIN.BFILE.ArchivingEnabled**, set the value to **True**, and click **OK**.

5. Return to the Content Services Home page and click **Restart Domain**.

After you have set the domain properties for BFILE archiving, you can set storage management options as described in "Specifying Storage Management Options" on page 2-6.

Setting Up Near-Line Storage for Records

If you are using Oracle Records Management, you have the option of storing certain types of records using BFILEs. Near-line storage for records is not enabled by default; in order to enable this option, you must set a BFILE-related domain property. You can also specify storage management options.

To set the domain property that enables near-line records storage:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Domain Properties**.

3. Click **IFS.DOMAIN.BFILE.Enabled**, set the value to **True**, and click **OK**.

4. Return to the Content Services Home page and click **Restart Domain**.

After you have set the domain properties for BFILE archiving, you can set storage management options as described in the following section.

Specifying Storage Management Options

You can change the default base path and policy for BFILE storage using the Oracle Collaboration Suite Control. These settings apply to all types of BFILE storage, including BFILE aging, BFILE archiving, and near-line storage for records.

To specify storage management options:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Storage Management**.

You will not be able to access the Storage Management page unless you have already set the **IFS.DOMAIN.BFILE.Enabled** property to **True**.

Figure 2–1   Storage Management Page

3. Change the **BFILE Base Path**. The default base path is:

   ORACLE_HOME/ifsbfiles/*content_services_schema*

   ORACLE_HOME refers to the database Oracle home on the database computer.

   Each BFILE has a relative path in addition to the base path. The relative path is:

   /*yyyy*/*dd*/*mm*/*hh*/*mm*/*ss*/ifsbfile_id

   ifsbfile_id is the file naming pattern that associates a unique ID to each piece of content.

4. Change the **BFILE Policy**. This policy determines whether the operating system files should be deleted when the BFILE references are deleted from the database. If you are storing BFILEs on an optical device that does not permit deletion, you should specify that the operating system files should be retained.

5. Click **OK**.

Integrating with Solutions for Records Management Retention

You can use the Oracle Collaboration Suite Control to integrate Oracle Content Services with a records management retention solution, such as EMC Centera or Network Appliance SnapLock.

To integrate Oracle Content Services with a records management retention device, you must first install the hardware (either EMC Centera or Network Appliance SnapLock). Then, you must specify credential information for the hardware and set retention-related domain properties using the Oracle Collaboration Suite Control.

Once you have created a file plan and defined retention policies in Oracle Records Management, Oracle Content Services will designate appropriate content as records to be stored in a records management retention device.

Specifying Credential Information for Retention Hardware

To specify credential information for the retention device:

1. From the Content Services Home page, click **Retention Hardware**.

Figure 2–2 Retention Hardware Page

2. Choose **EMC Centera** or **Network Appliance SnapLock** for **Retention Device Type**.

3. Provide a **Username** for the retention device. You must provide a user name created in EMC Centera or Network Appliance SnapLock; do not provide an Oracle Content Services user name.

4. Provide a corresponding **Password** for the retention device, and confirm it in the **Confirm Password** field.

5. Click **OK**.

Specifying Domain Properties for Retention Hardware

To specify retention-related domain properties for EMC Centera:

1. On the Content Services Home page, click **Domain Properties**.

2. Click **IFS.DOMAIN.RETENTION.Enabled**, set the value to **True**, and click **OK**.

3. Click **IFS.DOMAIN.RETENTION.StorageDevice**. You may need to move to the next page to find this property, or you can use the **Search** field.

4. In the **Value** field, select **CENTERA** and click **OK**.

5. Click **IFS.DOMAIN.RETENTION.CENTERA.Configuration**.

6. Click **ADDRESSLIST** and replace the given value with the hostname or IP address of a Centera access node.

7. Click **OK**, then click **OK** again.

8. Return to the Content Services Home page and click **Restart Domain**.

To specify domain properties for Network Appliance SnapLock:

1. On the Content Services Home page, click **Domain Properties**.

2. Click **IFS.DOMAIN.RETENTION.Enabled**, set the value to **True**, and click **OK**.

3. Click **IFS.DOMAIN.RETENTION.StorageDevice**. You may need to move to the next page to find this property.

4. In the **Value** field, select **SNAPLOCK** and click **OK**.

5. Click **IFS.DOMAIN.RETENTION.SNAPLOCK.Configuration**.

6. Click **HOST**.

7. Specify the hostname or IP address of the Network Appliance device in the **Value** field and click **OK**.

8. Click **MOUNTPOINT**.

9. In the **Value** field, specify the absolute path where the Network Appliance is NFS-mounted on the database server and click **OK**.

10. Click **PORT**.

11. In the **Value** field, provide the port used to communicate with the Network Appliance device through HTTP and click **OK**. The default port is 80.

12. Click **RELATIVEPATH**.

13. In the **Value** field, provide a path relative to the NFS mount point where content should be stored and click **OK**.

14. Click **SNAPLOCKEXPORTPATH**.

15. In the **Value** field, specify the absolute path of the NFS-exported volume and click **OK**.

16. Return to the Content Services Home page and click **Restart Domain**.

Changing the Oracle Content Services Port Number

If you want to change the Oracle Content Services application port to a different port number, perform the tasks listed in the following sections:

- Changing the Port Number in Oracle HTTP Server
- Changing the Port Number in OracleAS Web Cache
- Registering the New Port with OracleAS Single Sign-On
- Updating the Oracle Internet Directory Service Registry
- Changing the Port Number in Oracle Content Services
- Updating Metric Configuration URLs

For additional information about changing port numbers, see Chapter 14, "Changing Oracle Collaboration Suite Network Configurations" in *Oracle Collaboration Suite Administrator's Guide*.

Changing the Port Number in Oracle HTTP Server

Use the Oracle Collaboration Suite Control to change the port number in Oracle HTTP Server.

1. From the Collaboration Suite Home page, click **HTTP_Server**.

2. Click **Administration**.

3. Click **Server Properties**.

4. In the Listening Addresses and Ports section, change the **Default Port** to the desired port number.

5. Click **Apply**.

6. Click **Yes** on the Confirmation page to restart Oracle HTTP Server.

Changing the Port Number in OracleAS Web Cache

If OracleAS Web Cache is enabled, you must change the port number in OracleAS Web Cache using the Oracle Collaboration Suite Control. To do this, follow these steps:

1. From the Collaboration Suite Home page, choose **Web Cache**.

2. Click the **Administration** tab, then click **Ports** in the Properties - Web Cache section.

3. Change the appropriate port number in the Listen Ports section, then click **OK**.

4. Return to the Web Cache Home page and click **Restart**.

Registering the New Port with OracleAS Single Sign-On

After you change the port number in Oracle HTTP Server, you must register the new port with OracleAS Single Sign-On. To do this, use the SSO Server Administration tool, then restart the Oracle HTTP Server.

Using the SSO Server Administration Tool

To use the SSO Server Administration tool to register the port with OracleAS Single Sign-On, follow these steps:

1. Enter the following URL in a Web browser:

   ```
   http://infra_host_name:port/pls/orasso
   ```

   where *port* is the Oracle HTTP Server port on the infrastructure host (typically 7777).

2. Click **Login** and enter `orcladmin` as the user name.

3. Supply the `orcladmin` password and click **Login**.

4. Click **SSO Server Administration**.

5. Click **Administer Partner Applications**.

6. Click the pencil icon that corresponds to the Oracle Content Services Applications tier.

7. Ensure that the **Home URL** appears as follows:

   ```
   https://applications_tier_host:port_number
   ```

8. Ensure that the **Success URL** appears as follows:

   ```
   https://applications_tier_host:port_number/osso_login_success
   ```

9. Ensure that the **Logout URL** appears as follows:

   ```
   https://applications_tier_host:port_number/osso_logout_success
   ```

10. Click **Apply** and confirm to save the changes.

Restarting Oracle HTTP Server

Use the Oracle Collaboration Suite Control to restart Oracle HTTP Server, or use the following `opmnctl` command:

```
ORACLE_HOME/opmn/bin/opmnctl restartproc process-type=HTTP_Server
```

Updating the Oracle Internet Directory Service Registry

Universal Resource Identifiers (URIs) for Oracle Content Services that are registered in the Oracle Internet Directory Service Registry may need to be updated with the new

port number. See "Managing the Oracle Internet Directory Service Registry" in Chapter 7 of *Oracle Collaboration Suite Administrator's Guide* for more information.

Changing the Port Number in Oracle Content Services

Use the Oracle Collaboration Suite Control to update the Oracle Content Services Application Port domain property and restart the Oracle Content Services OC4J instance:

1. From the Content Services Home page, under the Administration heading, click **Domain Properties**.

2. On the Domain Properties page, click **IFS.DOMAIN.APPLICATION. ApplicationPort**. You may need to move to the second or third page to find this domain property, or you can use the **Search** field.

3. On the Edit page, set the **Value** to the desired port number and click **OK**. If you are using a load balancer with multiple Oracle Content Services Applications tiers, provide the load balancer port.

4. Return to the Content Services Home page.

5. Select **OC4J_Content** and click **Restart**.

Updating Metric Configuration URLs

You also need to update the port number for any affected Web application response time metrics. To do this, update the affected URLs on the Metric Configuration page in the Oracle Collaboration Suite Control. See "Configuring Performance Metrics" on page 7-4 for more information.

Allowing Access to Oracle Content Services from Outside the Firewall

You can set up Oracle Content Services so that users outside the firewall can have access. To do this, follow these steps:

1. **Open ports.** Tell the firewall to ignore the following ports:

   - Oracle Content Services domain ports (node manager, node controller)

   - Database listener port (typically 1521)

   - Apache port (Oracle HTTP Server port)

   - Oracle Internet Directory ports (if Oracle Internet Directory is running inside the firewall)

   - Load balancer port (if you use a load balancer)

2. **Set firewall timeout periods.** You must set the operating system parameter `TCP_ keepalive` to 120 minutes.

Figure 2–3 shows a possible firewall scenario with the database and Applications tiers inside the firewall, and with OracleAS Infrastructure outside the firewall.

Figure 2–3   Sample Firewall Configuration
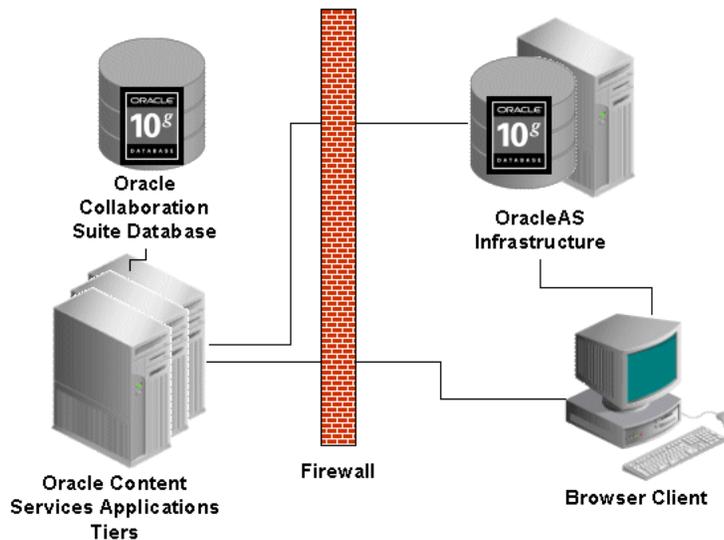
Setting Up the OmniPortlet

Oracle Content Services provides support for and integration with the OmniPortlet, a feature of Oracle Application Server Portal (OracleAS Portal). You can set up a preconfigured instance of the OmniPortlet, called the Content Services portlet, in your OracleAS Portal page. The Content Services portlet uses the Content Services searchlet, a user-definable query tool, and a tabular layout to display user-specific Oracle Content Services data. Users can search for and display content from Oracle Content Services in the Content Services portlet.

The following sections provide instructions on how to set up the OmniPortlet for Oracle Content Services:

- Deploying the Content Services Searchlet

- Registering the OmniPortlet with Oracle Internet Directory

- Configuring the Content Services Searchlet

- Adding an Oracle Content Services Datasource to the OmniPortlet Framework

- Defining the OmniPortlet in OracleAS Portal

All steps are performed on the Applications tier running OracleAS Portal.

Deploying the Content Services Searchlet

To deploy the Content Services Searchlet, you must provide the `content_searchlet.rar` file and add connection information to the `oc4J-connectors.xml` file.

To deploy the Content Services Searchlet:

1. Create a directory called `ContentSearchlet` under the following directory:

   `ORACLE_HOME/j2ee/OC4J_Portal/connectors`

2. Copy the file `content_searchlet.rar` into the `ContentSearchlet` directory you just created. The `content_searchlet.rar` file is located on the Oracle Content Services Applications tier computer in the following directory:

ORACLE_HOME/content/lib

3. Navigate to the *ORACLE_HOME*/j2ee/OC4J_Portal/config directory and open the file oc4j-connectors.xml for editing.

4. Add a <connector> tag for the Content Services Searchlet by adding the following lines to the <OC4J-connectors> section:

```
<connector name="ContentSearchlet" path="content_searchlet.rar">
</connector>
```

The relevant portion of the edited file should look like the following:

```
<oc4j-connectors>
<connector name="ContentSearchlet" path="content_searchlet.rar">
</connector>
</oc4j-connectors>
```

5. Save the file.

6. Restart the OC4J instance for OracleAS Portal (OC4J_Portal) using the Oracle Collaboration Suite Control, or you can use the following opmnctl command:

```
opmnctl startproc process-type=OC4J_Portal
```

The content_searchlet.rar file is expanded under the directory *ORACLE_HOME*/j2ee/OC4J_Portal/connectors/ContentSearchlet.

Registering the OmniPortlet with Oracle Internet Directory

Once you have deployed the Content Services Searchlet, you must register the OmniPortlet with Oracle Internet Directory by adding a <grant> entry to the jazn-data.xml file, and by running the ops2scfg script.

To register the OmniPortlet with Oracle Internet Directory:

1. Navigate to the *ORACLE_HOME*/config directory and open the jazn-data.xml file for editing.

2. Add the following <grant> entry to set access permissions on the OmniPortlet repository API:

```
<grant>
  <grantee>
    <codesource>
      <url>file:Oracle_home_path/portal/jlib/portaltools.jar</url>
    </codesource>
  </grantee>
  <permissions>
    <permission>

<class>oracle.ias.repository.schemaimpl.CheckRepositoryPermission</class>
      <name>makeNewOIDEntry</name>
    </permission>
    <permission>

<class>oracle.ias.repository.schemaimpl.CheckRepositoryPermission</class>
      <name>connectAs</name>
    </permission>
  </permissions>
</grant>
```

Make sure to replace *Oracle_home_path* with the actual path of the Oracle home.

3. Save the file.

4. Run the `ops2scfg` script, located in the *ORACLE_HOME*/portal/conf directory, and provide the following values when prompted:

   ■ Create a name and password for the OmniPortlet application entry in Oracle Internet Directory (for example, orclApplicationCommonName=OmniPortlet)

   ■ Provide the user name and password of an Oracle Internet Directory administrator

   When the script completes, copy and save the output. For example:

   ```
   orclApplicationCommonName=OmniPortlet,cn=Portal,cn=Products,cn=OracleContext
   ```

   You will need to provide this information when you add a Content Services datasource to the OmniPortlet framework.

   > **Note:** Be careful when you supply values for the `ops2scfg` script, because you can only run the script one time. If you need to update these values later, you must do so in Oracle Internet Directory.

Configuring the Content Services Searchlet

After you have registered the OmniPortlet with Oracle Internet Directory, you must configure the Content Services Searchlet by providing connection information in the `oc4J-ra.xml` file.

To configure the Content Services Searchlet:

1. Navigate to the *ORACLE_HOME*/j2ee/OC4J_Portal/application-deployments/default/ContentSearchlet directory.

2. Open the `oc4j-ra.xml` file for editing.

3. Specify the JNDI name for the Content Services Searchlet by setting the location in the `<connector-factory>` tag, as follows:

   ```
   <connector-factory location="eis/ContentSearchlet" connector-name="Content
   Search Adapter">
   ```

4. Set the value for the Search Web Service URL, as follows:

   ```
   <config-property name="webServiceURL" value="http://content_services_host_
   name:port/content/ws"/>
   ```

5. Save the file.

6. Restart the OC4J instance for OracleAS Portal (`OC4J_Portal`) using the Oracle Collaboration Suite Control, or you can use the following `opmnctl` command:

   ```
   opmnctl restartproc process-type=OC4J_Portal
   ```

Adding an Oracle Content Services Datasource to the OmniPortlet Framework

Once you have configured the Content Services Searchlet, you must add a datasource for Oracle Content Services to the OmniPortlet framework by creating a Datasource Descriptor file.

To add a datasource for Oracle Content Services to the OmniPortlet framework:

1. Create a directory called `Content` under the following directory:

   ORACLE_HOME/j2ee/OC4J_Portal/applications/portalTools/omniPortlet/WEB-INF/
   plugins/datasources

2. Navigate to the new folder.

3. Create a Datasource Descriptor file (`datasource.xml`) with the content that appears in the following sample. For `<OCSClientDN>`, provide the script output you saved from Step 4 of the procedure in "Registering the OmniPortlet with Oracle Internet Directory" on page 2-13.

   > **Note:** If you cut and paste the text directly from this document, remove the extra carriage return and any extra spaces between `oracle.webdb.reformlet.data.search` and `.SearchDataSourceDefinition`. Otherwise, the Datasource Descriptor file will not work.

```
<datasources>
  <datasource class="oracle.webdb.reformlet.api.plugin.DefaultDataSource">
  <name>Content</name>
  <displayName>Content</displayName>
  <icon>Content.gif</icon>
  <includeParamSection>true</includeParamSection>
  <editDefaultsHelp>rfdvdtwp.htm</editDefaultsHelp>

  <!-- Default values of datasource's metadata -->
  <metadata class="oracle.webdb.reformlet.data.search
.SearchDataSourceDefinition">
    <name>Content</name>
    <displayName>Content</displayName>
    <contentDataSourceJndiName>eis/ContentSearchlet</contentDataSourceJndiName>
    <requiresS2SAuthentication>true<requiresS2SAuthentication>
    <useSSL>true</useSSL>

<OCSClientDN>orclApplicationCommonName=OmniPortlet,cn=Portal,cn=Products,cn=Ora
cleContext</OCSClientDN>
  </metadata>
  </datasource>
</datasources>
```

4. Restart the OC4J instance for OracleAS Portal (`OC4J_Portal`) using the Oracle Collaboration Suite Control, or you can use the following `opmnctl` command:

   ```
   opmnctl restartproc process-type=OC4J_Portal
   ```

Defining the OmniPortlet in OracleAS Portal

Once you have added the datasource to the OmniPortlet framework, you can define the OmniPortlet in OracleAS Portal by choosing search criteria and deciding which fields to display.

To define the OmniPortlet in OracleAS Portal:

1. Create a page in OracleAS Portal. To do this, click **Create Page** from the OracleAS Portal home page and follow the Wizard instructions.

2. From your new page, click the **Add Portlet** icon and navigate to the OmniPortlet you registered. Then, select the portlet and click **OK**.

3. Click **Define**. The Type page appears.

4. Select **Content** and click **Next**.

5. On the Source page, click **Next**.

6. On the Filter page, provide search criteria for the OmniPortlet.

7. On the View page, click **Next**.

8. On the Layout page, enter the fields you want the OmniPortlet to return.

9. Click **Finish**.

> **Note:** When you click a folder link within the OmniPortlet, you may be asked to re-authenticate. This behavior does not appear if you click a document link.

3

Managing Workflows in Oracle Content Services

Oracle Content Services ships with two default workflow processes, Parallel Vote and Serial Approval:

- In a Parallel Vote workflow process, all approvers review the submitted request at the same time. The required number of approvers is configurable.

- In a Serial Approval workflow process, each approver reviews the submitted request in turn, one approver at a time. All reviewers must approve the request in order to complete the approval process.

Oracle Content Services uses **Oracle Workflow** to manage these processes. Oracle Workflow is configured and integrated with Oracle Content Services during Oracle Content Services configuration.

In addition to the two default workflow processes, you can define custom BPEL workflows in **Oracle BPEL Process Manager**, then register them for use in Oracle Content Services. The custom BPEL workflows are managed in Oracle BPEL Process Manager.

This chapter explains how to use Oracle Content Services with Oracle Workflow and Oracle BPEL Process Manager.

Topics include:

- Using Oracle Workflow with Oracle Content Services
- Using Custom BPEL Workflows in Oracle Content Services

Using Oracle Workflow with Oracle Content Services

Because Oracle Workflow is a required component of Oracle Content Services, you must manage Oracle Workflow along with Oracle Content Services. For information about most administration tasks related to Oracle Workflow, see *Oracle Workflow Administrator's Guide*.

Two tasks related to Oracle Workflow are covered in this guide:

- How to set up Oracle Workflow for use with Oracle Content Services if you are using an existing database as your **Oracle Collaboration Suite Database**
- How to set up e-mail notifications in Oracle Workflow

Setting Up Oracle Workflow for Use with Oracle Content Services

Typically, Oracle Workflow is set up for use with Oracle Content Services by default when the Oracle Collaboration Suite Database is installed. When you use an existing database as your Oracle Collaboration Suite Database, however, additional steps are needed.

> **Note:** You cannot use an existing database in which the Oracle Workflow schema, `owf_mgr`, is being used by other applications.

To set up Oracle Workflow if you are using an existing database as your Oracle Collaboration Suite Database:

1. Choose the Enable Customer Database option during **Oracle Collaboration Suite Infrastructure** installation.

2. Run the OracleAS Metadata Repository Creation Assistant to load the OracleAS Metadata Repository into your existing database. Performing this task will create application-server specific schemas, including the Oracle Workflow schema, into the database. You must perform this task even if you do not plan to use this database as your Metadata Repository.

   For full instructions on how to run the OracleAS Metadata Repository Creation Assistant, see *Oracle Application Server Metadata Repository Creation Assistant User's Guide*.

   > **Note:** If the `owf_mgr` schema exists, you must drop it before running the OracleAS Metadata Repository Creation Assistant.

3. If you plan to use this database as your Metadata Repository, no further steps are required to set up Oracle Workflow. If you do **not** plan to use this database as your Metadata Repository, you must connect to the database as the database user SYS in order to:

   - Change the Oracle Workflow schema password to be the same as the Oracle Content Services schema password

   - Unlock the Oracle Workflow schema

   To do this, use the following command:

   ```
   ALTER USER owf_mgr identified by new_schema_password account unlock
   ```

What if OracleAS Metadata Repository Creation Assistant Is Not Supported by My Database?

Some databases, such as Itanium databases, do not support the OracleAS Metadata Repository Creation Assistant. In this case, follow the subsequent procedure to set up Oracle Workflow for use with Oracle Content Services.

To set up Oracle Workflow for an existing database that does not support OracleAS Metadata Repository Creation Assistant:

1. Do not choose to configure Oracle Content Services during **Applications tier** installation.

2. On the database computer, launch the Oracle Workflow Configuration Assistant using the executable appropriate for your platform:

- UNIX: *ORACLE_HOME*/wf/install/wfinstall.csh

- Windows: *ORACLE_HOME*\wf\install\wfinstall.bat

Note: If the owf_mgr schema exists, you must drop it before running the Oracle Workflow Configuration Assistant.

Figure 3–1   Oracle Workflow Configuration Assistant

3. Provide the following parameters for the Oracle Workflow Configuration Assistant:

   - **Install Option:** Select **Server Only**.

   - **Workflow Account:** Leave the default, **owf_mgr**.

   - **Workflow Password:** Provide the same password as the Oracle Content Services schema password.

   - **SYS Password:** Provide the password for the database user SYS. You must supply this value.

   - **TNS Connect Descriptor:** Copy this value from the tnsnames.ora file, located in *ORACLE_HOME*/network/admin. For example:

     ```
     (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=myhost.mydomain.com)(PORT=1521))(
     CONNECT_DATA=(SERVER=DEDICATED)(SERVICE_NAME=orcl.mydomain.com)))
     ```

   Do not select **Enter LDAP Parameters**, **Enter Mailer Parameters**, or **Change Tablespace**.

4. Click **Submit**.

5. Configure Oracle Content Services using the Oracle Collaboration Suite Control, specifying the external database as the Oracle Collaboration Suite Database. See Appendix B, "Configuring, Unconfiguring, and Reconfiguring Oracle Content

Services" for more information about configuring Oracle Content Services using the Oracle Collaboration Suite Control.

Setting Up E-mail Notifications in Oracle Workflow

Users can view notifications about pending and approved workflow tasks from the Reports pane of the Oracle Content Services Web interface. In addition to the notifications displayed in the Reports pane, you can configure Oracle Workflow to send e-mail notifications to users to inform them of workflow tasks. To do this, you must configure the Oracle Workflow notification mailer using the Oracle Collaboration Suite Control.

To configure the Oracle Workflow notification mailer:

1. Create an e-mail account for the notification mailer administrator (for example, wfadmin). The workflow account you create should only be used by the notification mailer system. Concurrent connections to this account are not allowed.

2. Create three folders for this e-mail account: one to use as an inbox, one to store processed messages, and one to store discarded messages. The default values for these folders in the notification mailer configuration wizard are INBOX, PROCESS, and DISCARD.

3. Ensure that all Oracle Workflow and e-mail server processes are running.

4. Access the Oracle Collaboration Suite Control on the computer where Oracle Workflow is running and navigate to the Collaboration Suite Home page.

5. Click **Oracle Workflow** in the System Components table.

6. On the Workflow Home page, click **Service Components** in the Related Links: Configuration section.

7. In the Service Components table, select **Workflow Notification Mailer** and click **Edit**.

8. Ensure that **Automatic** is selected for **Startup Mode** and click **Next**.

9. Click **Next** on the following page.

10. In the Inbound EMail Account section, provide the following information:

    - **Server Name:** Provide the fully-qualified hostname for the incoming e-mail server.

    - **Username:** Provide the e-mail address you created for the workflow notification mailer administrator.

    - **Password:** Provide the password for the workflow notification mailer administrator e-mail address.

    - **Inbox Folder:** If the folder you created to use as an inbox has a name different from the default, provide the name of the inbox folder. The name for this folder is case-insensitive.

11. In the Outbound EMail Account section, in the **Server Name** field, provide the fully-qualified hostname for the outgoing e-mail server.

12. In the EMail Processing section, provide the names of the **Processed Folder** and **Discard Folder**. The names for these folders are case-sensitive.

13. Click **Next**.

14. In the Send section, provide the following information:

- **Reply-to Address:** Provide the e-mail address you created for the workflow notification mailer administrator.

- **HTML Agent:** Provide the base URL that identifies the HTML Web agent that handles HTML notification responses, in the format:

  `http://applications_tier_host:oracle_http_server_port`

15. Click **Next** on all the remaining pages, then click **Finish** on the Review page.

16. Return to the Collaboration Suite Home page, select **Service_Component_ Container**, and click **Restart**.

For more information about setting up the Oracle Workflow notification mailer, refer to the Oracle Workflow Help pages in the Oracle Collaboration Suite Control.

Using Custom BPEL Workflows in Oracle Content Services

In addition to the default workflow processes shipped with Oracle Content Services, you can define custom BPEL workflows in Oracle BPEL Process Manager, then register them for use in Oracle Content Services.

This section provides information about the following topics:

- About Custom Workflows
- About BPEL
- Creating Custom Workflows in Oracle BPEL Process Manager
- Registering Custom Workflows with Oracle Content Services
- Deleting Custom Workflows from Oracle Content Services

About Custom Workflows

Custom workflows can be created in Oracle BPEL Process Manager, an Oracle product that provides a framework for easily designing, deploying, monitoring, and administering processes based on BPEL standards. Custom workflows are only available to the default Site in Oracle Content Services; additional Sites cannot use the custom workflows.

Once you have created a custom workflow in Oracle BPEL Process Manager, you can use the Oracle Collaboration Suite Control to register the workflow in Oracle Content Services. You must provide detailed information about the workflow, including the names of the launch event and cancel event, as well as specific parameters that are used in the workflow. Custom workflows are disabled by default; before you can access the Custom Workflow pages in the Oracle Collaboration Suite Control, you must set the `IFS.DOMAIN.WORKFLOW.BPEL.CreationEnabled` domain property to True.

Custom workflows can be blocking or non-blocking. A blocking workflow is one that requires action in order to complete. For example, you could create a blocking workflow to handle the approval of documents for publication: action on the part of the approvers would be required before a document could be published. An example of a non-blocking workflow would be a workflow that handles sending out notifications for published documents; in this case, a document could be published without waiting for the notifications to be sent.

About BPEL

The Business Process Execution Language (BPEL) is an XML-based language for enabling task-sharing across multiple enterprises using a combination of Web services. BPEL is based on the XML Schema, simple object access protocol (SOAP), and web services description language (WSDL). Using BPEL, you design a business process that integrates a series of discrete services into an end-to-end process flow. For more information about BPEL and Oracle BPEL Process Manager, see *Oracle BPEL Process Manager Developer's Guide*.

Creating Custom Workflows in Oracle BPEL Process Manager

For more information about Oracle BPEL Process Manager, see *Oracle BPEL Process Manager Developer's Guide*. For information about creating custom workflows for use with Oracle Content Services, see the Oracle Content Services developer documentation.

Registering Custom Workflows with Oracle Content Services

Once the custom workflow has been created in Oracle BPEL Process Manager, you can register the custom workflow with Oracle Content Services using the Oracle Collaboration Suite Control. Before you can register the workflow, you must first enable BPEL workflow creation by setting the `IFS.DOMAIN.WORKFLOW.BPEL.CreationEnabled` domain property to True.

Enabling BPEL Workflow Creation in Oracle Content Services

To enable BPEL workflow creation in Oracle Content Services:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Domain Properties**.

3. Click **IFS.DOMAIN.WORKFLOW.BPEL.CreationEnabled**. You may need to move to the next page to find this property, or you can use the Search field.

4. Set the **Value** to True.

5. Click **OK**.

6. Return to the Content Services Home page and click **Restart Domain**.

Registering Custom Workflows

To register custom workflows in Oracle Content Services:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Custom Workflows**. You cannot access the custom workflow pages unless you have enabled BPEL workflow creation in Oracle Content Services.

3. Click **Register Workflow**.

4. Enter a name for the workflow. The name you provide must match the name of the workflow you created in Oracle BPEL Process Manager.

5. Provide a description of the workflow (optional).

6. Enter the **Launch Event** for the workflow. The event you provide must match the name of the launch event in Oracle BPEL Process Manager.

7. Enter the **Cancel Event** for the workflow. The event you provide must match the name of the cancel event in Oracle BPEL Process Manager.

8. Select **Blocking** if this workflow is a blocking workflow. A blocking workflow is one that requires action in order to complete.

9. Select **Approvers Required** if this workflow requires approvers.

10. Click **Add** to add parameters for this workflow.

11. On the Register Workflow - Add Parameter page, specify information for the parameter you want to add:

    - **Name:** The name you provide must match the name of the parameter in Oracle BPEL Process Manager.

    - **Description:** Provide an optional description of the parameter.

    - **Fixed Value:** Select this option if you do not want to allow changes to this parameter after the workflow has been created.

    - **Required:** Select this option if this parameter is required for the workflow to complete.

    - **Type:** Select one of the following type options for this parameter:
        - String
        - Boolean
        - Integer Number Range
        - String Enumeration
        - Date
        - Decimal Number Range
        - Path
        - Time Period
        - User/Group

      If you select **Integer Number Range**, **Decimal Number Range**, or **Time Period**, you may optionally specify a minimum and maximum value for this parameter. If you select **String Enumeration**, you must specify values for this parameter. To do this, specify a value and click **Add**. You can manage the list of enumerated values by using the arrows provided to alter the order of the list. You can remove values by clicking **Remove**.

12. Click **OK** on the Register Workflow - Add Parameter page.

13. Optionally, provide a default value for the parameter by specifying a value in the **Default Value** column of the Parameters table. If you selected **Fixed Value** for this parameter, you must provide a default value. Note the following:

    - To specify a default for a Date type parameter, click the calendar icon to ensure that the date you specify appears in the correct format (MM/dd/yyyy).

    - For a Path type parameter, you must supply a valid Oracle Content Services path (for example, /mysite/mylibrary/myfolder).

    - For a User/Group type parameter, you must supply a valid Oracle Content Services user or group name.

14. Repeat steps 10 - 13 to add additional parameters as needed. You can modify parameters that you have already added by clicking the parameter name.

15. Click **OK** on the Register Workflow page.

You cannot edit a registered workflow; if you need to make any changes, you must delete the custom workflow, then register it again.

Deleting Custom Workflows from Oracle Content Services

You can use the Oracle Collaboration Suite Control to delete custom workflows. If any folder or Library in Oracle Content Services has been configured to use a particular custom workflow, the custom workflow cannot be deleted.

To delete custom workflows:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Custom Workflows**. You cannot access the custom workflow pages unless you have enabled BPEL workflow creation in Oracle Content Services.

3. Select the workflow you want to delete and click **Delete**.

4. Click **OK** on the warning page. The workflow will be deleted as soon as the last active workflow completes.

4

Oracle Content Services Protocol Support

This chapter discusses the protocol servers supported by Oracle Content Services, along with the client access paths and software for the supported protocols. Topics include:

- About the Oracle Content Services Protocol Servers
- Using FTP with Oracle Content Services
- Using WebDAV with Oracle Content Services
- Providing Information About Protocol Access to End Users

About the Oracle Content Services Protocol Servers

Users can connect to Oracle Content Services using protocols appropriate to their platform. For example, Windows users can connect using Web Folders, Macintosh users can connect through WebDAV, and UNIX users can connect using FTP. Users on all platforms can connect using HTTP for Web browser-based access.

Oracle Content Services supports the following protocols:

- **HTTP**, the Hypertext Transfer Protocol, is used for Web browser-based access.
- **FTP**, the File Transfer Protocol, is used for file transfers across Wide Area Networks such as the Internet.

  The FTP protocol sends unencrypted passwords over the network. For this reason, users must create an FTP password for greater security. See the Oracle Content Services chapter of *Oracle Collaboration Suite Security Guide* for more information about FTP passwords.

  In addition to FTP, **FTPS** is supported. You can access Oracle Content Services using either implicit or explicit FTPS. Because FTPS does not send unencrypted passwords over the network, an FTP password is not necessary.

- **WebDAV**, Web-based Distributed Authoring and Versioning, is an HTTP-related protocol that is designed for Wide Area Networks such as the Internet. Currently, the most widespread WebDAV client is the Web Folders extension to Windows Explorer, also known as Network Places in Windows 2000/XP.

Table 4–1 lists some of the client platforms, protocols, and access methods supported by Oracle Content Services. See Oracle*MetaLink* at `http://metalink.oracle.com` for complete client certification information.

Table 4–1   Client Platforms and Protocol Support

Client Platform	Protocols Supported	Access Using[1]
Windows	HTTP, WebDAV, FTP/FTPS	Browser, Windows Explorer, FTP/FTPS client
Macintosh (Mac OS 10.3)	HTTP	Browser
UNIX	HTTP, FTP/FTPS	Browser, command line
Red Hat Linux Adv. Server 3.0 (Kernel 2.4.9-e.16)	HTTP, FTP/FTPS	Browser, command line

[1] For all protocols, if the server to which you are connecting uses DHCP, then you must use the current IP address of the host in the connection syntax instead of the hostname.

Using FTP with Oracle Content Services

FTP is the most lightweight protocol supported by Oracle Content Services and can move large amounts of data faster than the other protocols. For bulk operations, such as migrating files from an existing system, FTP is the protocol of choice. FTP is disabled by default after Oracle Content Services is installed and configured.

Oracle Content Services also supports FTPS, which uses SSL to provide a confidential, integrity-protected channel. There is wide support for FTPS among FTP clients. FTPS should not be confused with SFTP, a service of the Secure Shell that is not related to FTP. FTPS is also disabled by default after Oracle Content Services is installed and configured.

This section contains the following topics:

- Accessing Oracle Content Services Using FTP or FTPS

- Enabling FTP

- Enabling Anonymous FTP Access

- Enabling FTPS

Accessing Oracle Content Services Using FTP or FTPS

Once FTP or FTPS has been enabled, users can use FTP or FTPS with Oracle Content Services, as long as the following requirements are met:

- An FTP or FTPS client must be installed on the user's local computer.

- The user must know which port number to use. The default port number for FTP and for explicit FTPS is 21; the default port number for implicit FTPS is 990.

- For FTP only, each user must use a separate FTP password for greater security. See *Oracle Collaboration Suite Security Guide* for more information about how users can set the FTP password.

- Users who are not members of the default Site must specify the realm name when they access Oracle Content Services through FTP/FTPS, in the format `username@realmname`.

Oracle Content Services supports several FTP Quote commands that users can issue during an FTP or FTPS session. See Appendix F, "FTP Quote Command Reference" for more information.

Enabling FTP

You can enable FTP for Oracle Content Services so that users can upload and download files using FTP. The FTP protocol is disabled by default after Oracle Content Services is installed and configured.

To enable the Oracle Content Services FTP server:

1. Access the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. You may want to change the default port number for the FTP server. To do this:

   a. In the Administration section, click **Server Configurations**.

   b. Click **FtpServerConfiguration**.

   c. Click **IFS.SERVER.PROTOCOL.FTP.Port**, in the Properties section.

   d. Update the **Value** with the desired port number and click **OK**.

   e. Click **OK** on the Edit Server Configuration page.

3. Return to the Content Services Home page and click **Node Configurations**, in the Administration section.

4. Click the name of the node configuration that corresponds to the node where you want to run the FTP server. You can only run the FTP server on regular nodes; you cannot run FTP on HTTP nodes.

5. Scroll down to the Servers table and click **FtpServer**.

6. Select **Active** and **Initially Started**.

7. Click **OK** on the Edit Server page.

8. Click **OK** on the Edit Node Configuration page.

9. Return to the Content Services Home page and restart the node.

Repeat this procedure for any additional regular nodes on which you want to run FTP.

Enabling Anonymous FTP Access

For security reasons, anonymous FTP access is disabled by default. If you want to enable anonymous access, you must first modify the FTP server configuration to allow anonymous access, then allow public access to a particular folder or folders in Oracle Content Services.

Once public access has been enabled for a particular folder, users can connect directly to that folder using anonymous FTP. In most cases, anonymous users should use FTP links to connect. For example, if an administrator only enables public access to the folder `/us/TestFiles/PublicViewing`, users would need to configure an FTP client to connect directly to that folder. Anonymous users would not be able to connect to the root folder and navigate to the `PublicViewing` folder, because the `us` and `TestFiles` folders do not have public access enabled.

Modifying the FTP Server Configuration

To modify the FTP server configuration to allow anonymous access:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Server Configurations**.

3. Click **FtpServerConfiguration**.

4. In the Properties section, select
   IFS.SERVER.PROTOCOL.FTP.AnonymousAllowed and click **Edit**, or just click
   the property name.

5. Set the **Value** to True and click **OK**.

6. Click **OK** on the Edit Server Configuration page.

7. Return to the Content Services Home page and restart the node.

Enabling the Ability to Grant Public Access

Before you can allow public access to a particular folder, you must ensure that the
ability to grant public access has been enabled at the Site level.

To ensure that the ability to grant public access is enabled for the Site:

1. Connect to Oracle Content Services as a user with the Content Administrator and
   User Administrator roles, such as orcladmin.

2. Change to Administration Mode.

3. Access the Sharing Properties for the root Site folder.

4. Ensure that the option **Allow public access to be granted** has been enabled.

Allowing Public Access to Oracle Content Services Folders

To grant public access to a particular folder:

1. Connect to Oracle Content Services as a user with the Content Administrator and
   User Administrator roles, such as orcladmin.

2. Change to Administration Mode.

3. Access the Sharing Properties for the folder to which you want to grant public
   access.

4. Add the special group **Public** to this folder. If you cannot add this group, make
   sure that you enabled the ability to grant public access at the Site level, as
   described in the previous procedure.

Enabling FTPS

You can enable FTPS for Oracle Content Services so that users can upload and
download files using FTPS. The FTPS protocol is disabled by default after Oracle
Content Services is installed and configured. Users sign on to Oracle Content Services
over FTPS using their regular Single Sign-On password.

There are two types of FTPS supported by Oracle Content Services: Implicit FTPS and
Explicit FTPS. Implicit FTPS secures the channel on connection, while Explicit FTPS
secures the connection when the client issues an AUTH command. An Explicit FTPS
connection starts out as a regular FTP connection; the connection becomes secure only
after the client issues an AUTH command. You can choose to enable the Implicit FTPS
server, the Explicit FTPS server, or both.

To set up FTPS, you first need to use Oracle Wallet Manager to create a new wallet
and obtain a security certificate. You must configure the wallet for Auto Login. For
more information, see *Oracle Collaboration Suite Security Guide* and *Oracle Database
Advanced Security Administrator's Guide*.

Once you have obtained a security certificate, you can use the Oracle Collaboration Suite Control to enable the Oracle Content Services FTPS servers.

Enabling the Explicit FTPS Server

To enable Explicit FTPS:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. Click **Server Configurations** in the Administration section.

3. Click **FtpServerExplicitConfiguration**.

4. Select **IFS.SERVER.PROTOCOL.FTP.Port** and click **Edit**, or just click the property name.

5. Update the **Value** with the appropriate Explicit FTPS port number (for example, 21) and click **OK**.

6. Select **IFS.SERVER.PROTOCOL.FTPS.WALLET.Location** and click **Edit**, or just click the property name.

7. Update the value with the location of the wallet file (for example, `/CSHome/WALLET/cwallet.sso`) and click **OK**.

8. Click **OK** on the Edit Server Configuration page.

9. Return to the Content Services Home page and click **Node Configurations** in the Administration section.

10. Click the name of the regular node configuration that corresponds to the node where you want to run the Explicit FTPS server.

11. In the Servers section, select **FtpsServerExplicit** and click **Edit**, or just click the server name.

12. Select **Active** and **Initially Started**, then click **OK**.

13. Click **OK** on the Edit Node Configuration page.

14. Return to the Content Services Home page and restart the node.

Enabling the Implicit FTPS Server

To enable Implicit FTPS:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. Click **Server Configurations** in the Administration section.

3. Click **FtpServerImplicitConfiguration**.

4. Select **IFS.SERVER.PROTOCOL.FTP.Port** and click **Edit**, or just click the property name.

5. Update the **Value** with the appropriate Implicit FTPS port number (for example, 990) and click **OK**.

6. Select **IFS.SERVER.PROTOCOL.FTPS.WALLET.Location** and click **Edit**, or just click the property name.

7. Update the value with the location of the wallet file (for example, `/CSHome/WALLET/cwallet.sso`) and click **OK**.

8. Click **OK** on the Edit Server Configuration page.

9. Return to the Content Services Home page and click **Node Configurations** in the Administration section.

10. Click the name of the regular node configuration that corresponds to the node where you want to run the Implicit FTPS server.

11. Select **FtpsServerImplicit** and click **Edit**, or just click the server name.

12. Select **Active** and **Initially Started**, then click **OK**.

13. Click **OK** on the Edit Node Configuration page.

14. Return to the Content Services Home page and restart the node.

Using WebDAV with Oracle Content Services

The WebDAV protocol is enabled by default after Oracle Content Services is installed and configured.

Accessing Oracle Content Services Using WebDAV

Use the following URL to access Oracle Content Services with WebDAV:

```
http://server_name:port/content/dav
```

The value for *port* varies depending on your platform, and depending on whether OracleAS Web Cache is running. If OracleAS Web Cache is running, the typical values are:

- 7777 for UNIX systems

- 80 for Windows systems (unless port 80 is in use when the Applications tier is configured)

If OracleAS Web Cache is not running, the port number is typically 7778.

Users who are not members of the default Site must specify the realm name when they access Oracle Content Services through WebDAV, in the format `username@realmname`.

Providing Information About Protocol Access to End Users

You can choose to deploy the End-User Documentation Portal in order to provide your users with information about Oracle Content Services protocol access. The End-User Documentation Portal is a set of customizable HTML pages that provide an overview of Oracle Collaboration Suite clients and access methods, including information about how to connect to Oracle Content Services using the supported protocols.

The End-User Documentation Portal also includes links to the FAQ & Troubleshooting site on the Oracle Technology Network (OTN), as well as links to Oracle Collaboration Suite user tutorials.

For information about deploying the End-User Documentation Portal, see "Managing the End-User Documentation Portal" in Chapter 5 of *Oracle Collaboration Suite Administrator's Guide*.

5

Managing Oracle Content Services Processes

You can use the Oracle Collaboration Suite Control to manage Oracle Content Services processes, including starting and stopping the Oracle Content Services domain, starting and stopping servers, and managing nodes. You can also manage Oracle Content Services processes from the command line using `opmnctl`.

Topics in this chapter include:

- About the Oracle Content Services Domain
- Starting and Stopping the Oracle Content Services Domain
- Managing Nodes at Runtime
- Managing Services at Runtime
- Managing Servers at Runtime
- Managing Oracle Content Services from the Command Line

About the Oracle Content Services Domain

An Oracle Content Services **domain** is a logical grouping of Oracle Content Services nodes and an Oracle Database instance (called the Oracle Collaboration Suite Database) that contains the Oracle Content Services data.

The Oracle Content Services software runs as a set of Applications tier processes, called **nodes**. Oracle Content Services node processes manage one or more **services**, **agents**, and **protocol** servers.

Each node executes on a particular Applications tier, or in other words, within a particular Oracle home. You can have multiple Applications tiers on the same computer. Although a domain's nodes are often split across a set of Applications tiers, a single Applications tier can have more than one Oracle Content Services node.

There are two types of nodes: **regular nodes**, and **HTTP nodes**. Each HTTP node runs as part of an **OC4J** process. You cannot have more than two HTTP nodes on a single Applications tier: one to support the Oracle Content Services application, and one to support the Oracle Records Management application. The OC4J instance for the Oracle Content Services application is `OC4J_Content`, while the OC4J instance for the Oracle Records Management application is `OC4J_RM`.

Starting and Stopping the Oracle Content Services Domain

You can start and stop the domain using the Oracle Collaboration Suite Control. Even if your domain is distributed across multiple Applications tiers, you can start and stop the domain from a single Applications tier.

1. From the Collaboration Suite Home page, click the name of the Oracle Content Services domain. Oracle Content Services domain targets typically appear as **Content**.

Figure 5–1   Collaboration Suite Home Page

Application Server Control for Collaboration Suite: stadf44.stadf44.us.oracle.com

| Home | J2EE Applications | Ports | Infrastructure |

Page Refreshed **Jun 10, 2005 10:50:52 PM**

General

Stop All   Restart All

Status **Up**
Host stadf44.us.oracle.com
Oracle Home **/CSHOME/m13/midtier**

CPU Usage
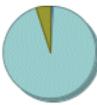
- Application Server (1%)
- Idle (94%)
- Other (5%)

Memory Usage
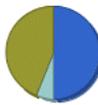
- Application Server (50% 1,012MB)
- Free (6% 111MB)
- Other (44% 883MB)

System Components

Enable/Disable Components   Configure Component

Start   Stop   Restart   Reload

Select All | Select None

Select	Name	Status	Start Time	CPU Usage (%)	Memory Usage (MB)	Administration
☐	CONTENT	⬆	Jun 10, 2005 9:21:53 PM	0.00	88.18	Unavailable
☐	HTTP_Server	⬆	Jun 10, 2005 7:46:11 PM	0.28	113.21	N/A
☐	OC4J_Content	⬆	Jun 10, 2005 9:22:53 PM	0.00	206.58	N/A
☐	OC4J_OCSClient	⬆	Jun 10, 2005 7:46:10 PM	0.00	63.54	N/A
☐	OC4J_RM	⬆	Jun 10, 2005 9:22:15 PM	0.00	117.13	N/A
☐	Oracle Workflow	⬆	N/A	N/A	N/A	N/A
☐	Service_Component_Container	⬆	Jun 10, 2005 8:57:18 PM	0.00	70.41	N/A
☐	Web Cache	⬆	Jun 10, 2005 7:46:10 PM	0.06	38.39	N/A

2. The Content Services Home page appears, showing the status of the set of nodes that belong to the domain. A green Up arrow in the Status column means the process is running.

Figure 5–2   Content Services Home Page

3. Start, stop, or restart the domain, as follows:

    ■   To start the Oracle Content Services domain, click **Start Domain**. The entire domain is started across all Applications tiers, including all regular nodes and all HTTP nodes. Processes that are already running are not affected.

    ■   To restart the Oracle Content Services domain, click **Restart Domain**, then click **Yes** on the Warning page. The entire domain is restarted across all Applications tiers, including all regular nodes and all HTTP nodes. Only those processes that are running are affected; processes that are not running will not be started.

    ■   To stop the Oracle Content Services domain, click **Stop Domain**, then click **Yes** on the Warning page. The entire domain is stopped across all Applications tiers, including all regular nodes and all HTTP nodes.

        Note: If you are performing scheduled maintenance and want to stop one Applications tier at a time, do not click **Stop Domain**. Instead, start and stop individual domain processes, as follows:

    ■   To start, stop, or restart individual processes, such as regular nodes or HTTP nodes, select the appropriate process and click **Start**, **Stop**, or **Restart**. You can start, stop, or restart nodes that are on the local Applications tier, or on remote Applications tiers.

Using the Collaboration Suite Home Page to Start and Stop Oracle Content Services

You can start, stop, and restart Oracle Content Services from the Collaboration Suite Home page. Because the Collaboration Suite Home page only shows processes for the current Applications tier, however, you would need to log in to all your Applications tiers separately in order to manage an Oracle Content Services deployment distributed across multiple Applications tiers.

The Content Services Home page allows you to see all Oracle Content Services processes across all Applications tiers. In addition, each node process is listed separately on the Content Services Home page, allowing you maximum flexibility.

To start, stop, or restart Oracle Content Services from the Collaboration Suite Home page, select the domain display name (typically **Content**) and click **Start**, **Stop**, or **Restart**. Do not use the **Reload** button with any Oracle Content Services processes.

Managing Nodes at Runtime

You can use the Oracle Collaboration Suite Control to start, stop, and restart nodes, as well as modify runtime node properties and deactivate nodes.

You can also use `opmnctl` to start, stop, and restart nodes, as well as check node status; see "Managing Oracle Content Services from the Command Line" on page 5-16 for more information.

This section contains the following topics:

- Starting, Stopping, and Restarting Nodes
- Modifying Nodes at Runtime
- Deactivating Nodes

Starting, Stopping, and Restarting Nodes

You can start, stop, and restart nodes using the Oracle Collaboration Suite Control. Even if your nodes are distributed across multiple Applications tiers, you can start, stop, and restart them from a single Applications tier, regardless of where the nodes are located.

If a node fails to start, stop, or restart, check the node log files for more information. Click Logs in the upper right corner of any Oracle Collaboration Suite Control page to search for and view node log files.

Starting Nodes

To start a regular node or HTTP node using the Oracle Collaboration Suite Control:

1. On the Content Services Home page, in the Processes section, select the node you want to start.

2. Click **Start**. The Status column displays a green arrow pointing up, indicating that the node is up.

Stopping Nodes

To stop a regular node or HTTP node using the Oracle Collaboration Suite Control:

1. On the Content Services Home page, in the Processes section, select the node you want to stop.

2. Click **Stop**.

3. On the Warning page, click **Yes** to stop the node. The Status column displays a red arrow pointing down, indicating that the node is down.

Restarting Nodes

You can only restart nodes that are already started.

To restart a regular node or HTTP node using the Oracle Collaboration Suite Control:

1. On the Content Services Home page, in the Processes section, select the node you want to restart.

2. Click **Restart**. The node is stopped, then started again.

Modifying Nodes at Runtime

You can make runtime changes to nodes, such as configuring loggers for the node log, changing the service used by the node, or changing servers. Changes made at runtime are lost when the node is restarted. If you want to make permanent changes, modify the **node configuration** for the node and then restart the node.

To modify a node at runtime using the Oracle Collaboration Suite Control:

1. On the Content Services Home page, in the Processes section, click the name of the node you want to modify. The Node page appears.

2. In the Logging section, you can configure Loggers for this node. See "Configuring Node Loggers" on page 6-12 for more information.

3. In the Services section, you can create, modify, or delete services for this node. See "Managing Services at Runtime" on page 5-5 for more information.

4. In the Servers section, you can create, modify, or delete servers for this node. See "Managing Servers at Runtime" on page 5-11 for more information.

Deactivating Nodes

As an alternative to deleting a node configuration, consider making a node inactive instead. This option allows you to keep the configuration information, and you can easily activate the node later.

To make a node inactive using the Oracle Collaboration Suite Control:

1. On the Content Services Home page, stop the node, if it is running.

2. In the Administration section, click **Node Configurations**.

3. Click the name of the node configuration that corresponds to the node you want to make inactive.

4. In the General section, deselect **Active**.

5. Click **OK**.

Although deactivating a node will stop the node, if it is running, it is a better practice to stop the node before you deactivate it.

Managing Services at Runtime

You can use the Oracle Collaboration Suite Control to create or delete **services** for a particular node. When you create a service, you specify what **service configuration** object should provide its properties.

You can make temporary (runtime) changes to a service by modifying the service from the Node page. You can also dynamically configure the Committed Data Cache, Read-only Connection Pool, and the Writeable Connection Pool while the service runs. Changes made to services at runtime are lost when the node is restarted.

You can also make permanent changes to a service by modifying its service configuration; see "Managing Service Configurations" on page 6-14 for more information.

This section contains the following topics:

- Creating Services
- Modifying Runtime Service Parameters

- [Managing the Committed Data Cache](#)
- [Managing the Connection Pools](#)
- [Deleting Services](#)

Creating Services

You can create services for a particular node by modifying the node at runtime, or by modifying the appropriate node configuration. You can also create services when you create node configurations.

Creating Services at Runtime

To create a service by modifying the node at runtime:

1. On the Content Services Home page, in the Processes section, click the name of the node for which you want to create a service.

2. On the Node page, in the Services section, click **Create**.

3. On the Create Service page, enter a name for the service. It must be unique within the node.

4. Choose a **Service Configuration** on which to base this service.

5. Click **OK** on the Create Service page.

These changes will be lost when the node is restarted.

Permanently Adding Services to a Node

To add a service to a node permanently by modifying its node configuration:

1. On the Content Services Home page, in the Administration section, click **Node Configurations**.

2. Click the name of the node for which you want to add a service.

3. In the Services section, click **Add**.

4. On the Add Service page, enter a name for the service. It must be unique within the node.

5. Choose a **Service Configuration** on which to base this service.

6. Select **Active** if you want this service to be automatically started by the node.

7. Click **OK** on the Add Service page.

8. Click **OK** on the Edit Node page.

Changes take effect when the node is restarted.

Modifying Runtime Service Parameters

You can make runtime changes to services, such as limiting concurrent sessions or choosing whether or not to accept new sessions. Changes you make at runtime are lost when the node is restarted. To make permanent changes to a service, edit the service configuration directly; see "Modifying Service Configurations" on page 6-16 for more information.

To modify runtime service parameters:

1. On the Content Services Home page, in the Processes section, click the name of the node that uses the service you want to change.

2. On the Node page, click the name of the service you want to modify.

3. You can change the following properties in the General section:

   - **Concurrent Sessions:** You can choose to have an unlimited number of concurrent sessions, or you can limit concurrent sessions to a specified number. If you choose to have an unlimited number of concurrent sessions, you may run out of memory. See Chapter 6, "Deploying Oracle Content Services" in *Oracle Collaboration Suite Deployment Guide* for more information.

   - **Accepting New Sessions:** Select this option if you want the service to accept additional sessions.

   - **Disposed on Last Disconnected Session:** Select this option if you want the service to shut down automatically when the last session is disconnected.

4. Click **Apply** to save your changes.

5. Use the breadcrumb navigator to return to the Node page.

Changing the Service Configuration Used by the Service

You can change the service configuration for a particular service from the Edit Node Configuration page:

1. On the Content Services Home page, click **Node Configurations**.

2. Click the name of the node configuration that uses the service you want to modify.

3. In the Services section, select the service you want to change and click **Edit**.

4. Select a new service configuration from the **Configuration** drop-down list.

5. Click **OK** on the Edit Service page.

6. Click **OK** on the Edit Node page.

Changes take effect when the node is restarted.

Managing the Committed Data Cache

The **Committed Data Cache** provides caching of the attribute values of frequently used objects without a database request, greatly improving performance and scalability. Least recently used data is periodically purged from the cache. Each service has its own Committed Data Cache.

You can make runtime changes to the Committed Data Cache properties for a particular service using the Oracle Collaboration Suite Control. You can also view Committed Data Cache statistics for a particular service; see "Monitoring Service Performance" on page 7-6 for information about viewing or resetting the statistics.

For more information about cache settings, see Chapter 6, "Deploying Oracle Content Services" in *Oracle Collaboration Suite Deployment Guide*.

Making Runtime Changes to Committed Data Cache Properties

To make runtime changes to Committed Data Cache properties:

1. On the Content Services Home page, click the name of the node that uses the service you want to modify.

2. On the Node page, click the name of the service you want to modify.

3. On the Service page, in the Administration section, click **Committed Data Cache Administration**.

Figure 5–3   Committed Data Cache Administration Page

4. You can change the following cache settings:

    ■ **Cache Capacity:** The absolute maximum size of the service's data cache, in
        LibraryObjects. The service data cache holds the attribute values of recently
        used LibraryObjects. Defaults to 7500.

        After you specify Cache Capacity, you can click **Calculate** to autofill the
        values for the other parameters based on the capacity you specified.

    ■ **Normal Purge Trigger:** The cache size, in LibraryObjects, at which the service
        data cache schedules a low-priority purge of data that has not been recently
        used. Defaults to 5000.

    ■ **Urgent Purge Trigger:** The cache size, in LibraryObjects, at which the service
        data cache schedules a high-priority purge of data that has not been recently
        used. Must be greater than Normal Purge Trigger. Defaults to 5500.

    ■ **Emergency Purge Trigger:** The cache size, in LibraryObjects, at which the
        service data cache performs an immediate purge of data that has not been
        recently used. Must be greater than Urgent Purge Trigger but less than Cache
        Capacity. Defaults to 6000.

    ■ **Purge Target:** The target cache size, in LibraryObjects, upon completion of a
        purge cycle. Must be less than Normal Purge Trigger. Defaults to 4000.

5. Click **Apply** when you are finished specifying cache settings.

Changes you make at runtime are lost when the node is restarted. To make permanent
changes to Committed Data Cache properties, edit the service configuration directly;
see for more information. The
following table maps the properties on the Committed Data Cache Administration
page with their service configuration parameter equivalents:

Table 5–1   Committed Data Cache Service Configuration Properties

Property	Service Configuration Parameter Equivalent
Cache Capacity	IFS.SERVICE.DATACACHE.Size
Normal Purge Trigger	IFS.SERVICE.DATACACHE.NormalTrigger
Urgent Purge Trigger	IFS.SERVICE.DATACACHE.UrgentTrigger
Emergency Purge Trigger	IFS.SERVICE.DATACACHE.EmergencyTrigger
Purge Target	IFS.SERVICE.DATACACHE.PurgeTarget

Managing the Connection Pools

There are two connection pools used by each service: the **Read-Only Connection Pool**
and the **Writable Connection Pool**. The Read-Only Connection Pool is a set of
database connections shared by the sessions to perform database read operations. The

Writeable Connection Pool is a set of database connections shared by the sessions to perform database read and write operations within a database transaction.

A minimum number of connections are created in each pool when the service is started. Depending on the number of concurrent operations performed by the sessions, and the nature of these operations, additional connections may be added to each pool up to a specified maximum.

You can make runtime changes to the Connection Pool properties for a particular service using the Oracle Collaboration Suite Control. You can also view Read-Only and Writeable Connection Pool statistics for a particular service; see "Monitoring Service Performance" on page 7-6 for information about viewing or resetting the statistics.

For more information about connection pool settings, see Chapter 6, "Deploying Oracle Content Services" in *Oracle Collaboration Suite Deployment Guide*.

Making Runtime Changes to Connection Pool Properties

To make runtime changes to Connection Pool properties:

1. On the Content Services Home page, click the name of the node that uses the service you want to modify.

2. On the Node page, click the name of the service you want to modify.

3. On the Service page, in the Administration section, click **Connection Pool Administration**.

Figure 5–4   Connection Pool Administration Page

4. You can change the following properties for each connection pool:

    ■   **Minimum Number of Connections:** The initial number of database connections in the connection pool. Defaults to 2.

        If you change this property, make sure the value you specify is greater than the current size for this connection pool. You can view the current connection pool size from the Connection Pool Statistics page; see "Monitoring Service Performance" on page 7-6 for more information.

    ■   **Target Maximum Number of Connections:** The target maximum number of database connections in the connection pool. Must be greater than or equal to **Minimum Number of Connections**. Defaults to 10.

    ■   **Absolute Maximum Number of Connections:** The absolute maximum number of database connections in the connection pool. Must be greater than or equal to **Target Maximum Number of Connections**. Defaults to 20.

- **Target Size Timeout:** The maximum period, in milliseconds, that the service will postpone a connection allocation request when there are no unallocated connections, if the current size of the connection pool is greater than or equal to its target size but less than the maximum size. If a database connection does not become available within this period, a new connection will be created. Defaults to 1000.

- **Maximum Size Timeout:** The maximum period, in milliseconds, that a service will postpone a connection allocation request when there are no unallocated connections, if the current size of the connection pool is equal to its maximum size. If a database connection does not become available within this period, the allocation request will fail and an exception will be thrown. Defaults to 10,000.

5. Click **Apply** when you are finished specifying connection pool settings.

Changes you make at runtime are lost when the node is restarted. To make permanent changes to Connection Pool properties, edit the service configuration directly; see "Modifying Service Configurations" on page 6-16 for more information. The following table maps the properties on the Connection Pool Administration page with their service configuration parameter equivalents:

Table 5–2   Connection Pool Service Configuration Properties

Property	Description
Minimum Number of Connections	`IFS.SERVICE.CONNECTIONPOOL.READONLY.MinimumSize` `IFS.SERVICE.CONNECTIONPOOL.WRITEABLE.MinimumSize`
Target Maximum Number of Connections	`IFS.SERVICE.CONNECTIONPOOL.READONLY.TargetSize` `IFS.SERVICE.CONNECTIONPOOL.WRITEABLE.TargetSize`
Absolute Maximum Number of Connections	`IFS.SERVICE.CONNECTIONPOOL.READONLY.MaximumSize` `IFS.SERVICE.CONNECTIONPOOL.WRITEABLE.MaximumSize`
Target Size Timeout	`IFS.SERVICE.CONNECTIONPOOL.READONLY.TargetSize Timeout` `IFS.SERVICE.CONNECTIONPOOL.WRITEABLE.TargetSize Timeout`
Maximum Size Timeout	`IFS.SERVICE.CONNECTIONPOOL.WRITEABLE.MaximumSize Timeout` `IFS.SERVICE.CONNECTIONPOOL.WRITEABLE.MaximumSize Timeout`

Deleting Services

You can delete services for a particular node by modifying the node at runtime, or by modifying the appropriate node configuration.

If you delete a service with active sessions, and if there are data transfers in progress over those sessions, data may be lost when you delete the service. In addition, any servers using this service will stop accepting new requests.

Deleting Services at Runtime

To delete a service by modifying the node at runtime:

1. On the Content Services Home page, in the Processes section, click the name of the node that uses the service you want to delete.

2. On the Node page, in the Services section, select the service you want to delete and click **Delete**. Each node must have one active service.

3. Click **Yes** on the Warning page.

If you delete a service at runtime that is defined in the node configuration, the service will re-appear on the node when the node is restarted. To permanently delete the service, you must remove it from the node configuration, as described in the following section.

Permanently Removing Services from a Node

To remove a service from a node permanently by modifying its node configuration:

1. On the Content Services Home page, in the Administration section, click **Node Configurations**.

2. Click the name of the node that uses the service you want to remove.

3. In the Services section, select the service you want to remove and click **Remove**.

   You cannot remove a service if it is the only service defined in the node configuration. Each node must have at least one active service.

4. Click **OK** on the Edit Node page.

Changes take effect when the node is restarted.

Managing Servers at Runtime

You can use the Oracle Collaboration Suite Control to create or delete **servers** for a particular node. When you create a server, you specify what **server configuration** object should provide its properties.

You can make temporary (runtime) changes to a server by modifying the server from the Node page. Changes made to servers at runtime are lost when the node is restarted.

You can also make permanent changes to a server by modifying its server configuration; see "Managing Server Configurations" on page 6-17 for more information.

This section contains the following topics:

- Creating Servers
- Starting, Stopping, Restarting, Suspending, and Resuming Servers
- Modifying Runtime Server Parameters
- Reloading Servers
- Deleting Servers

Creating Servers

You can create servers for a particular node by modifying the node at runtime, or by modifying the appropriate node configuration. You can also create servers when you create node configurations.

Creating Servers at Runtime

To create a server by modifying the node at runtime:

1. On the Content Services Home page, click the name of the node for which you want to create a server.

2. On the Node page, in the Servers section, click **Create**.

3. On the Create Server page, enter a name for the server. It must be unique within the node.

4. Select a **Service Name** to support this server.

5. Choose a **Server Configuration** on which to base this server.

6. Click **OK** on the Create Server page.

These changes will be lost when the node is restarted.

Permanently Adding Servers to a Node

To add a server to a node permanently by modifying its node configuration:

1. On the Content Services Home page, in the Administration section, click **Node Configurations**.

2. Click the name of the node for which you want to add a server.

3. In the Servers section, click **Add**.

4. On the Add Server page, enter a name for the server. It must be unique within the node.

5. Choose a **Server Configuration** on which to base this service.

6. Select a **Service** to support this server.

7. For **Initial Priority**, select the Java thread priority of the server.

8. Select **Active** to deploy this server on the node at runtime. If you do not select this option, this server will not appear in the Servers list on the Node page.

9. Select **Initially Started** if you want this server to be automatically started by the node. You should only select this option for active nodes.

10. Click **OK** on the Add Server page.

11. Click **OK** on the Edit Node page.

Changes take effect when the node is restarted.

Starting, Stopping, Restarting, Suspending, and Resuming Servers

You can manually start, stop, restart, suspend, and resume servers from the Node page. The Create, Delete, and Reload buttons are covered in separate sections.

To manage servers from the Node page:

1. On the Content Services Home page, click the name of the node that contains the server you want to manage. The Node page appears.

Figure 5–5   Services and Servers Section of Node Page

Services

[Delete] | [Create]

Select	Name	Accepting New Session	Auto Disposed	Connected Sessions	Max Concurrent Sessions
⦿	IfsDefaultService	✔		19	40

Servers

Status Legend: ▶ Started   ■ Stopped   ▷ Starting   ▫ Stopping   ‖ Suspended

Search [   ] [Go]

[Start] [Stop] [Restart] [Suspend] [Resume] [Reload] [Delete] | [Create]

Select	Name △	Type	Status	Last Start Time	Last Stop Time	Service	Priority
⦿	CleanupAgent	AGENT	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5
○	ContentAgent	AGENT	■	Unavailable	Unavailable	IfsDefaultService	5
○	ContentGarbageCollectionAgent	AGENT	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5
○	DanglingObjectAVCleanupAgent	AGENT	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5
○	EventExchangerAgent	AGENT	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5
○	ExpirationAgent	AGENT	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5
○	FolderIndexAgent	AGENT	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5
○	FolderIndexAnalyzerAgent	AGENT	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5
○	FtpServer	FTP	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5
○	FtpsServerExplicit	Secure FTP	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5
○	FtpsServerImplicit	Secure FTP	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5
○	GarbageCollectionAgent	AGENT	▶	May 12, 2005 8:37:10 PM	Unavailable	IfsDefaultService	5

2. On the Node page, in the Servers section, you can see a list of all servers for this node. Check the Status column to see whether a particular server is Started, Stopped, Starting, Stopping, or Suspended. Use the following buttons to manage servers:

- **Start:** Use this option to start a server that is not running.

- **Stop:** Use this option to stop a server that is running.

- **Restart:** Use this option to stop and then start a server that is running. This option does not refresh the server's configuration information.

- **Suspend:** Use this option to suspend a server that is running.

- **Resume:** Use this option to resume a server that is suspended.

    The Suspend and Resume functions are not available for all protocol servers, including the FTP server.

If a server fails to start, check the node log for errors. For regular nodes, you can click the **Base Log File** link in the Logging section to view the node log. For HTTP nodes, click **Logs** in the upper right corner of the screen and navigate to the appropriate log file.

Ensuring that Servers are Initially Started

Which servers and agents start up with the node are defined in the node configuration. Any servers and agents marked "Active" and "Initially Started" in the node configuration are started automatically when you start the domain.

If you want to ensure that a particular server starts up when the node restarts, you must modify the node configuration for the node where the server is running:

1. On the Content Services Home page, in the Administration section, click Node Configurations.

2. Click the name of the node configuration you want to modify.

3. In the Servers section, select the server you want to change and click **Edit**.

4. Select **Initially Started**.

5. Click **OK** on the Edit Server page.

6. Click **OK** on the Edit Node page.

Modifying Runtime Server Parameters

You can make runtime changes to servers, such as changing the Java thread priority of the server or changing runtime server properties. Changes you make at runtime are lost when the node is restarted or when the server is reloaded. To make permanent changes to a server, edit the server configuration directly; see "Modifying Server Configurations" on page 6-20 for more information.

To modify runtime server parameters:

1. On the Content Services Home page, click the name of the node that contains the server you want to change.

2. On the Node page, click the name of the server you want to modify.

3. In the Priority section, click **Change Priority** to change the Java thread priority of the server. On the Change Priority page, select a new priority and click **OK**. Most servers and agents allow you to change the Java thread priority at runtime, but a few servers, including the FTP server, do not provide this option.

4. The runtime properties for the server are displayed in the Runtime Properties section. Properties that can be modified at runtime are displayed as hyperlinks. Click the name of a property to update it. For example, to allow anonymous connections to the FTP server, click **IFS.SERVER.PROTOCOL.FTP. AnonymousAllowed**, change the **Value** to true, and click **OK**. Some runtime properties can only be modified when the server is stopped.

5. Use the navigation links at the top of the page to return to the Node page.

Changing the Server Configuration Used by the Server

To change the configuration used by a particular server, delete the existing server and then create a new server from the Node page. Alternatively, you can change the configuration for a particular server from the Edit Node Configuration page:

1. On the Content Services Home page, in the Administration section, click **Node Configurations**.

2. Click the name of the node configuration that contains the server you want to modify.

3. In the Servers section, select the server you want to change and click **Edit**.

4. Select a new server configuration from the **Configuration** drop-down list.

5. Click **OK** on the Edit Server page.

6. Click **OK** on the Edit Node page.

Changes take effect when the server is reloaded or when the node is restarted.

Reloading Servers

If you modify a server configuration, you need to reload the server before the changes take effect. Restarting a server and reloading a server are very different functions:

1. **Restart** stops and then starts the server. You can only restart servers that are started. Restarting the server will not pick up changes to server configuration properties.

2. **Reload** does the following:

    - Stops the server, if it is not stopped already.

    - Deletes the server.

    - Creates a new instance of the server, picking up any changes to the server configuration properties.

    - Returns the server to the state it was in when you clicked Reload (Stopped, Running, or Suspended).

Both restarting and reloading a server will disconnect any users connected to that server.

To reload a server:

1. On the Content Services Home page, in the Processes section, click the name of the node that contains the server you want to reload.

2. In the Servers section of the Node page, select the server you want to reload (for example, **FtpServer**).

3. Click **Reload**. The server picks up the new server properties.

Deleting Servers

You can delete servers for a particular node by modifying the node at runtime, or by modifying the appropriate node configuration.

Deleting Servers at Runtime

To delete a server by modifying the node at runtime:

1. On the Content Services Home page, click the name of the node that contains the server you want to delete.

2. On the Node page, in the Servers section, select the server you want to delete and click **Stop**, if it is not stopped already. You cannot delete a server that is running or suspended.

3. Select the server again and click **Delete**.

4. Click **Yes** on the Warning page.

If you delete a server at runtime that is defined in the node configuration, the server will re-appear on the node when the node is restarted. To permanently delete the server, you must remove it from the node configuration, as described in the following section.

Permanently Removing Servers from a Node

To remove a server from a node permanently by modifying its node configuration:

1. On the Content Services Home page, in the Administration section, click **Node Configurations**.

2. Click the name of the node that contains the server you want to remove.

3. In the Servers section, select the server you want to remove and click **Remove**.

4. Click **OK** on the Edit Node page.

Changes take effect when the node is restarted.

Managing Oracle Content Services from the Command Line

As an alternative to using the Oracle Collaboration Suite Control to manage the Oracle Content Services domain and nodes, you can use `opmnctl`, the command-line tool for OPMN. The OPMN command-line tool can be found in:

ORACLE_HOME/opmn/bin/opmnctl

Checking Node Status

Use the following command to check the status of Oracle Content Services nodes on the local Applications tier:

```
opmnctl status
```

Include the `@farm` option to check nodes on all Applications tiers, as follows:

```
opmnctl @farm status
```

Starting, Stopping, or Restarting the Oracle Content Services Domain

Use the following commands to start, stop, or restart Oracle Content Services domain processes across all Oracle Content Services Applications tiers:

```
opmnctl @farm startproc ias-component=Content
opmnctl @farm stopproc ias-component=Content
opmnctl @farm restartproc ias-component=Content
```

To start, stop, or restart Oracle Content Services domain processes on the local Applications tier, omit the `@farm` option, as follows:

```
opmnctl startproc ias-component=Content
opmnctl stopproc ias-component=Content
opmnctl restartproc ias-component=Content
```

> **Note:** If you have multiple Oracle Content Services domains registered in Oracle Internet Directory, you must specify which domain to start or stop. The first Oracle Content Services domain to be registered is always identified as "Content," while the second domain to be registered is identified as "Content_2," and so on. You should specify the appropriate domain display name in `opmnctl` commands. For example:
>
> ```
> opmnctl @farm startproc ias_component=Content_2
> ```

Starting, Stopping, or Restarting Node Processes

Use the following commands to start, stop, or restart Oracle Content Services regular and HTTP nodes on the local Applications tier:

```
opmnctl startproc process-type=node_display_name
opmnctl stopproc process-type=node_display_name
opmnctl restartproc process-type=node_display_name
```

For example:

```
opmnctl startproc process-type=OC4J_Content
opmnctl startproc process-type=Node
```

To start, stop, or restart Oracle Content Services processes on a remote Applications tier, include the Oracle Application Server instance name for the remote Applications tier. For example, use the following command to start a regular node on a remote Applications tier:

```
opmnctl @instance:remote_instance_name startproc process-type=Node
```

If you are unsure of which Oracle Application Server instance name to use, use the `opmnctl @farm status` command to list Oracle Application Server instance names.

In rare cases, a regular node will hang and will not respond to `opmnctl` commands. See Appendix A, "Troubleshooting Oracle Content Services" for information about how to solve this problem.

6

Changing Oracle Content Services Configuration Settings

Your initial Oracle Content Services domain configuration is based on default settings. You can change this configuration at any time using the Oracle Collaboration Suite Control.

When the Oracle Content Services domain is started, it uses the **domain properties** contained in the repository to determine domain behavior, such as the maximum size of a single file that can be uploaded to Oracle Content Services. Each node has a **node configuration** that determines its runtime behavior. Each service has a **service configuration** that determines its size and characteristics. The **server configuration** for each server or agent provides values for properties such as the default port number or activation period.

This chapter tells you how to use the Oracle Collaboration Suite Control to access specific configuration objects and modify their properties. Topics include:

- Managing Domain Properties
- Managing Node Configurations
- Managing Service Configurations
- Managing Server Configurations

Managing Domain Properties

Domain properties are settings that apply to the entire domain. When the Oracle Content Services domain is started, it uses the domain properties contained in the repository to determine domain behavior, such as the maximum size of a single file that can be uploaded to Oracle Content Services.

You can view all the domain properties using the Oracle Collaboration Suite Control. Only underlined properties may be changed.

Changing Domain Properties

To change domain properties:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Domain Properties**.

3. On the Domain Properties page, click the name of the property you want to change. Only underlined properties may be changed; see Table 6–1 for a list of editable properties.

You may need to move to the next page to find some properties, or you can use the **Search** field. For example, enter **workflow** and click **Go** (or press Enter) to see a list of workflow-related domain properties. You can use the wildcards ? or *.

4. Make the changes to the property and click **OK**.

5. Return to the Content Services Home page and click **Restart Domain**.

Table 6–1   Editable Oracle Content Services Domain Properties

Domain Property	Description
`IFS.DOMAIN.ANTIVIRUS.Enabled`	Whether Oracle Content Services is configured to work with the Symantec AntiVirus Scan Engine (SAVSE) to provide virus scanning and repair functionality. Defaults to False.
`IFS.DOMAIN.ANTIVIRUS.Host`	The host name or IP address of the computer where the SAVSE server is running.
`IFS.DOMAIN.ANTIVIRUS.MaxRepair Attempts`	The number of times the Virus Scan Agent will attempt to repair a file.
`IFS.DOMAIN.ANTIVIRUS.Port`	The port number for the SAVSE listener.
`IFS.DOMAIN.APPLICATION.ApplicationHost`	The host name of the Oracle Content Services application (where a user connects; for example, `content.oracle.com`).
`IFS.DOMAIN.APPLICATION.ApplicationMountPoint`	The mount point for the Oracle Content Services application (typically `/content/app`).
`IFS.DOMAIN.APPLICATION.ApplicationPort`	The port number for the Oracle Content Services application (typically 7777 on UNIX or 80 on Windows).
`IFS.DOMAIN.APPLICATION.ApplicationUseHttps`	Whether the Oracle Content Services application uses SSL. If SSL is enabled, users connect using HTTPS rather than HTTP (for example, `https://content.oracle.com`).
`IFS.DOMAIN.APPLICATION.RecordApplicationMountPoint`	The mount point for the Oracle Records Management application (typically `/rm/app`).
`IFS.DOMAIN.APPLICATION.WebDavMountPoint`	The mount point for the content/DAV servlet (typically `/content/dav`).
`IFS.DOMAIN.BFILE.AgingEnabled`	Whether or not Oracle Content Services is configured for BFILE aging. Defaults to False.
`IFS.DOMAIN.BFILE.ArchivingEnabled`	Whether or not Oracle Content Services is configured for BFILE archiving. Defaults to False.
`IFS.DOMAIN.BFILE.Enabled`	If set to true, enables Oracle Content Services to store content as BFILEs. Defaults to False.
`IFS.DOMAIN.CREDENTIALMANAGER.AutoUserProvisioningEnabled`	If set to True, enables on-demand enrollment, a process in which Oracle Content Services performs the necessary tasks to automatically provision a new user when the user first signs on.
`IFS.DOMAIN.CREDENTIALMANAGER.ServiceToServiceAuthenticationEnabled`	If set to True, enables Service to Service authentication, which allows a trusted partner application to establish user sessions with a digest credential (or basic credential over HTTPS) rather than using individual user credentials.
`IFS.DOMAIN.EMAIL.AdministratorAddress`	The e-mail address of an administrator where Site quota warning notifications should be sent.
`IFS.DOMAIN.EMAIL.SmtpHost`	The host name for the SMTP server used by Oracle Content Services.

Table 6–1   (Cont.) Editable Oracle Content Services Domain Properties

Domain Property	Description
`IFS.DOMAIN.EMAIL.SmtpPort`	The port number for the SMTP server used by Oracle Content Services.
`IFS.DOMAIN.EMAIL.SmtpTimeoutLength`	How long Oracle Content Services should wait for the SMTP server to return from sending mail.
`IFS.DOMAIN.EMAIL.SmtpUser`	The name of a user for the SMTP server used by Oracle Content Services.
`IFS.DOMAIN.HSM.Enabled`	If set to true, enables Oracle Content Services to store content in a records management retention device, such as EMC Centera or Network Appliance SnapLock. Defaults to False.

`IFS.DOMAIN.LIBRARYOBJECT.`
`SERVICECONFIGURATION.DefaultService`
`Configuration`
	The service configuration used by some internal Oracle Content Services processes, such as the command-line tools, to connect to the repository. Defaults to `SmallServiceConfiguration`.

`IFS.DOMAIN.MEDIA.CONTENTTRANSFER.` `ContentLimit`	The maximum size of a single file that can be uploaded to Oracle Content Services. The value you specify is interpreted as the maximum number of megabytes or characters allowed for a single upload. This limit does not apply to administrators. The value you specify is interpreted in different ways depending on file type: ■　For binary files, this number is the maximum number of megabytes. For example, if you enter 5, the limit will be 5 megabytes for binary files. ■　For text files, such as ASCII or HTML, the number you specify is first converted into bytes, then applied as a maximum character limit, taking into account multibyte encoding. For example, if you enter 5, the limit will be 5 x 1,048,576 = 5,242,380 characters for text files. Set this property to 0 (the default) if you do not want to limit the size of single file uploads. Users will then be able to upload any file whose size is within the last calculated available quota, as of the beginning of the upload.
`IFS.DOMAIN.PROTOCOLS.DAV.Null` `ResourceLockExpirationPeriod`	The time period, in seconds, after which namespaces reserved over WebDAV as part of a Null Resource Lock are released. The default is 3600.
`IFS.DOMAIN.PROTOCOLS.DAV.` `PersistentCookieName`	The name of the cookie stored by WebDAV clients that use persistent cookies.
`IFS.DOMAIN.PROTOCOLS.DAV.UserAgents`	A custom list of User-Agent headers for well-known WebDAV clients. This property is empty by default; do not provide values unless instructed by Oracle support.
`IFS.DOMAIN.RETENTION.CENTERA.` `Configuration`	If you have integrated Oracle Content Services with EMC Centera, this property contains the EMC Centera `ADDRESSLIST`, which stores the hostnames or IP addresses of Centera access nodes. You can provide multiple addresses separated by a comma on the Edit Property page.

Table 6–1   (Cont.) Editable Oracle Content Services Domain Properties

Domain Property	Description
IFS.DOMAIN.RETENTION.SNAPLOCK. Configuration	If you have integrated Oracle Content Services with Network Appliance SnapLock, this property contains the following SnapLock-related settings:
	■ **HOST:** The hostname or IP address of the Network Appliance device
	■ **MOUNTPOINT:** The absolute path where the Network Appliance is NFS-mounted on the database server
	■ **PORT:** The port used to communicate with the Network Appliance device through HTTP. The default port is 80.
	■ **RELATIVEPATH:** A path relative to the NFS mount point where content should be stored
	■ **SNAPLOCKEXPORTPATH:** The absolute path of the NFS-exported volume
IFS.DOMAIN.RETENTION.StorageDevice	The hardware-immutable storage device used for records retention.
IFS.DOMAIN.SEARCH.AttemptContext SearchRewrite	Whether or not Oracle Content Services should attempt to generate fast-response SQL for text searches. Defaults to True.
IFS.DOMAIN.WORKFLOW.BPEL.Creation Enabled	Whether or not Oracle Content Services is configured to integrate with custom BPEL workflows created in Oracle BPEL Process Manager.
IFS.DOMAIN.WORKFLOW.BPEL.Worklist URL	The URL of the Oracle BPEL Process Manager Worklist application.
IFS.DOMAIN.WS.Cleartext AuthenticationRequiresHttps	If set to True (recommended), does not allow cleartext authentication over Web services unless the Oracle Content Services application has been configured for SSL.

Managing Node Configurations

The runtime behavior of any node is specified in its **node configuration** object. Each node has its own corresponding node configuration. If you want to make permanent changes to a node, such as changing servers or services, modify the node configuration for the node. If you want to make temporary (runtime) changes to a node, modify the node itself. Changes made at runtime are lost when the node is restarted.

You cannot create a node directly using the Oracle Collaboration Suite Control. Instead, you must first create an active node configuration, and then a corresponding node will be created automatically. Similarly, to delete a node, you must delete its node configuration object (or mark its node configuration Inactive) rather than deleting the node directly.

Nodes and node configurations do not have identical names. HTTP nodes take the name of the corresponding OC4J instance, while regular nodes appear as the Display Name specified in the node configuration. The display name for each node is the same as the OPMN process type for both regular and HTTP nodes. For example, if you specify Node1 as the display name for a regular node, you can start that node using the following OPMN command:

```
opmnctl startproc process-type=Node1
```

This section covers the following topics:

■ Creating Regular Node Configurations

■ Creating HTTP Node Configurations

- Modifying Node Configurations
- Deleting Node Configurations
- Configuring Node Loggers

Creating Regular Node Configurations

When you create an active regular node configuration, a corresponding regular node is created automatically.

1. If you have multiple Oracle Content Services Applications tiers, connect to the Oracle Collaboration Suite Control on the Applications tier where you want to add and run the node.

2. On the Content Services Home page, in the Administration section, click **Node Configurations**.

3. On the Node Configurations page, decide whether to create a new regular node configuration from scratch, or to base it on the properties of an existing node configuration.

   - Click **Create Non-HTTP Node** to create the node configuration from scratch.

   - Select a regular node configuration and click **Create Like** to base the new node configuration on an existing node configuration.

   In both cases, the New Node Configuration page appears. If you selected **Create Like**, some properties have been filled in with those of the existing node configuration.

Figure 6–1   Create Non-HTTP Node Page

4. Provide a name for the node configuration. This name must be unique across the domain.

5. Provide additional node configuration properties in the General and Logging sections. See Table 6–2 for detailed information about these properties.

6. If you did not select **Create Like**, click **Add** in the Services section to add a default service for the node. Each node must have at least one active service.

   On the Add Service page, specify:

   - **Name:** Service name.

   - **Configuration:** Which service configuration object provides the service's configuration properties.

   - **Active:** Whether the service is currently active.

     Inactive services are not automatically started by the node. You must have at least one active service in order to add servers to this node configuration.

   When you are finished specifying parameters on the Add Service page, click **OK**.

7. If you selected **Create Like**, you may want to edit or remove an existing service.

   - To change service properties, select the service and click **Edit**. On the Edit Service page, change the appropriate information and click **OK**.

   - To remove a service, select it and click **Remove**. Each node must have at least one active service.

8. Click **Add** in the Servers section to choose default servers for the node.

   On the Add Server page, specify:

   - **Name:** Server name.

   - **Configuration:** Which server configuration object provides the server's configuration parameters. For example, select `FtpServerConfiguration` if you want to run an FTP server on this node.

   - **Service:** Name of the service against which the server should operate.

   - **Initial Priority:** Java thread priority of the server.

   - **Active:** Whether the server is currently active. Inactive servers are not automatically loaded by the node.

   - **Initially Started:** Whether the server is automatically started once loaded.

   When you are finished specifying parameters on the Add Server page, click **OK**.

9. If you selected **Create Like**, you may want to edit or remove an existing server.

   - To change server properties, select the server and click **Edit**. On the Edit Server page, change the appropriate information and click **OK**.

     If you want a particular protocol server to automatically start up when the node is started, select **Initially Started** on the Edit Server page.

   - To remove a server, select it and click **Remove**.

10. Click **OK** on the Create Non-HTTP Node page.

11. Optionally, start the node by selecting it from the Processes list on the Content Services Home page and clicking **Start**.

Creating HTTP Node Configurations

When you create an HTTP node configuration, a corresponding HTTP node and its OC4J instance are deployed automatically. Unlike regular node configurations, you do not specify configuration information when you create HTTP node configurations: the new HTTP node configuration is initially based on default settings. You can edit these default settings later.

To create an HTTP node configuration:

1. If you have multiple Oracle Content Services Applications tiers, connect to the Oracle Collaboration Suite Control on the Applications tier where you want to add and run the HTTP node.

2. On the Content Services Home page, in the Administration section, click **Node Configurations**.

3. Click **Create OC4J_Content** to create an HTTP node that supports the Oracle Content Services application. Click **Create OC4J_RM** to create an HTTP node that supports the Oracle Records Management application.

Figure 6–2   Create OC4J_Content Page

Figure 6–3   Create OC4J_RM Page
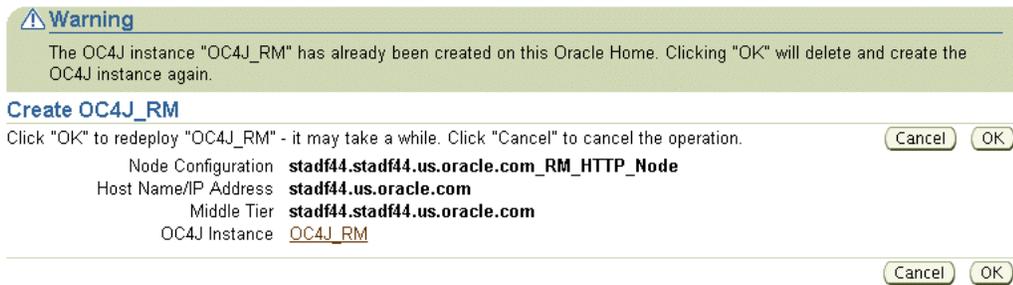
4. Click **OK** on the Create OC4J_Content or Create OC4J_RM page. In rare cases, you may need to provide a name for the node, such as `applications_tier_name_ HTTP_Node` or `applications_tier_name_RM_HTTP_Node`.

5. Optionally, start the node by selecting it from the Processes list on the Content Services Home page and clicking **Start**.

If you already have HTTP nodes on this Applications tier, this operation removes the currently deployed `OC4J_Content` or `OC4J_RM` instance and redeploys the instance again.

Modifying Node Configurations

You can make important changes to existing node configurations, such as changing which servers start up automatically with a particular node. Changes take effect when the node is restarted.

To modify a node configuration:

1. On the Content Services Home page, in the Administration section, click **Node Configurations**.

2. On the Node Configurations page, click the name of the node configuration you want to change. You can change both HTTP nodes and regular nodes.

3. Change the node configuration properties as desired. The node configuration properties are described in Table 6–2. Some properties apply to regular nodes only.

Table 6–2 Node Configuration Properties

Property Name	Description	Applies to HTTP Node?
Display Name	Appears in the Processes list on the Content Services Home page. This name is also used to identify nodes in `opmnctl` commands.	No For HTTP nodes, the display name is the same as the OC4J instance for the node (`OC4J_Content` or `OC4J_RM`). You cannot change this value.
Host Name/IP Address	The host name or IP address of the primary network card is displayed by default. If you have multiple network cards, you can change this value to an alternate host name or IP address.	Yes
Description	Description of the node configuration.	Yes
Access Control	The access level associated with the node configuration.	Yes
Active	Whether or not the node configuration is active. Deselect this option to make the node configuration inactive. When you deactivate a node configuration, its corresponding process type is disabled in OPMN. Making a node inactive is a good alternative to deleting the node configuration; the configuration information is retained, and you can easily activate the node later.	Yes
Node Manager Port Range	The port range for the Node Manager process. The default is 53140-53899. You can specify specific ports, a port range, or both. For example, you could specify 53140, 53141, or 53140, 53400-53500. You can enter any valid port number range.	Yes
Java Binary	The Java Binary for the node. The default is `ORACLE_HOME`/jdk/bin/java.	No
Java Parameters	Edit this value to specify command-line arguments for the Java VM. For example, add `java -Xmx512M` to increase the maximum size of the Java VM's memory to 512 MB. To log all garbage collection activity, add `-verbosegc` as an argument.	No To define Java parameters and arguments for an HTTP node: 1. From the Collaboration Suite Home page, click **OC4J_Content**. 2. Choose the **Administration** tab, then click **Server Properties**. 3. In the Command Line Options section, update the **Java Options** to include the new -Xmx setting. For example, enter -Xmx430m to specify 430 MB of memory for the Java heap. 4. Click **Apply**. 5. Return to the Collaboration Suite Home page and restart **OC4J_Content**.

Table 6–2   (Cont.) Node Configuration Properties

Property Name	Description	Applies to HTTP Node?
Maximum Sessions Per User	The maximum number of sessions allowed for a given user. The default value is 100. To allow an unlimited number of sessions for each user, set the value to 0.	Yes
Maximum Concurrent Requests Per User	The maximum number of outstanding requests allowed for a given user. An outstanding request is a request that the server is still processing, such as a search. The default value is 3. To allow an unlimited number of outstanding requests for each user, set the value to 0.	Yes
Transaction Timeout (seconds)	The inactivity timeout period for a transaction that spans multiple requests. This setting usually applies to Web services clients, since they are the only clients that can have transactions that span multiple requests. If there is an outstanding transaction and there is no request on the corresponding session for the transaction timeout period, the transaction will time out. The default value is 120. Do not set this property to a value lower than 15.	Yes
Transaction Timeout Check Interval (seconds)	The interval between successive checks for transactions that need to be timed out. The default value is 30. Follow these guidelines for setting this value: ■ This value must be smaller than the Transaction Timeout. ■ Setting a small value for this property may have a performance impact. ■ A large value for this parameter can significantly increase the actual transaction timeout. For example, if the Transaction Timeout is 120 seconds, and the Transaction Timeout Check Interval is 30 seconds, then a given transaction will time out between 120 and 150 seconds of inactivity, depending on the timing of the transaction check.	Yes
Guest Session Pool Target Size	How many sessions should be kept in the guest session pool. If the number of sessions in the guest pool is equal to the Guest Session Pool Target Size up on the return of a session, the session will be disconnected rather than returned to the pool. The default value is 10. If you are not allowing guest access, you can set this value to 0.	Yes
Guest Session Pool Maximum Size	The absolute maximum number of guest sessions that can be in use at a given time. The default value is 100. If you are not allowing guest access, you can set this value to 0. This value must be greater than the Guest Session Pool Target Size (if the Guest Session Pool Target Size is greater than 0).	Yes

Table 6–2 (Cont.) Node Configuration Properties

Property Name	Description	Applies to HTTP Node?
System Session Pool Target Size	How many sessions should be kept in the system session pool. If the number of sessions in the system pool is equal to the System Session Pool Target Size up on the return of a session, the session will be disconnected rather than returned to the pool. The default value is 5. Do not set this property to a value lower than 5.	Yes
System Session Pool Maximum Size	The absolute maximum number of system sessions that can be in use at a given time. The default value is 50. This value must be greater than the System Session Pool Target Size.	Yes
All Loggers	You can configure the level of logging for this node. See "Configuring Node Loggers" on page 6-12 for more information.	Yes
Format	Whether the log format should be Text or XML.	No
Max Log File Size (MB)	The maximum size for the log file. The default is 7 MB. Set this value to 0 to disable file size-based log rotation. You should set the Max Log File Size or the Rotation Interval, or both, to a value other than 0 to keep the log file from growing too large.	No
Rotation Interval (hours)	The interval in hours that the log file is archived and rotated. After this interval, the current log file is renamed to include a timestamp, and a new log file is created. Set this value to 0 to disable time-based log rotation.	No
Max Log Files	The maximum number of log files allowed. When the maximum number of files is reached, the oldest log file is overwritten. The default value is 5. Set this value to 0 in order to allow unlimited log files. If you set this value to 1, both file size-based and time-based log rotation are disabled, regardless of the values set for Max Log File Size and Rotation Interval.	No

4. In the Services section, you can add, edit, or remove services for this node.

   ■ To add a service, click **Add**, specify information for the service, and click **OK**.

   ■ To change service properties, select the service and click **Edit**, or click the service name. On the Edit Service page, change the appropriate information and click **OK**.

   ■ To remove a service, select it and click **Remove**. Each node must have at least one active service.

5. In the Servers section, you can add, edit, and remove servers for this node.

   ■ To add a server, click **Add**, specify information for the server, and click **OK**.

   ■ To change server properties, select the server and click **Edit**, or click the server name. On the Edit Server page, change the appropriate information and click **OK**.

If you want a particular server to automatically start up when the node is started, select **Active** and **Initially Started** on the Edit Server page.

- To remove a server, select it and click **Remove**.

6. Click **OK** on the Edit Node page to save the changes. You must restart the node in order for your changes to take effect.

Deleting Node Configurations

Deleting a regular node configuration also deletes the deployed node based on that node configuration. Typically, you can only delete regular node configurations that are local to the current Applications tier. In rare cases, however, a regular node configuration will not have corresponding configuration information in OPMN. You can delete these "hanging" node configurations regardless of whether they are local or remote.

Typically, you cannot delete HTTP node configurations - you can only make them inactive. In rare cases, however, an HTTP node configuration will not have corresponding configuration information in OPMN. You can delete these "hanging" node configurations using the following procedure.

To delete a node configuration:

1. On the Content Services Home page, stop the node, if it is running.

2. On the Content Services Home page, in the Administration section, click **Node Configurations**.

3. On the Node Configurations page, select the node configuration you want to delete.

4. Click **Delete**.

5. On the Warning page, click **Yes**. The node configuration is deleted.

Deactivating Nodes

Making a node inactive is a good alternative to deleting the node configuration. An inactive node is removed from the domain and is disabled in OPMN, but the configuration information is kept so that you can easily activate the node later. See "Deactivating Nodes" on page 5-5 for more information.

Configuring Node Loggers

You can configure **loggers** for each node to fine-tune the level of information you would like collect in each node log. For example, you can specify a more detailed level of logging for a particular protocol server or agent in which you are interested. All messages are logged in English. You can configure loggers from the Node page, or you can configure loggers by modifying the node configuration for a particular node.

Configuring Loggers from the Node Page

To configure loggers from the Node page:

1. On the Content Services Home page, in the Processes section, click the name of the node for which you want to configure loggers.

2. From the Node page, in the Loggers section, you can see a list of loggers and their current log level by expanding the **All Loggers** heading.

3. Click **Configure Loggers** to change log levels for particular loggers.

Figure 6–4   Configure Logger Levels Page

4. On the Configure Logger Level page, specify logging levels for loggers you want to configure. For example, you could increase the log level for FTP (under the AllProtocols heading) to obtain more detailed logging on the Oracle Content Services FTP server. The available log levels are:

   - **Severe:** Log only non-recoverable problems

   - **Warning:** Log only recoverable problems

   - **Important:** Log messages that are deemed important

   - **Information:** General level of log information

   - **Fine:** Level for debugging/tracing key operations

   - **Finer:** Level for debugging/tracing entry/exit of methods

   - **Finest:** Level for debugging/tracing within a method

5. Click **Save To Runtime** if you want your changes to take effect for the current node, but you do not want your changes to be saved when the node is restarted.

6. Click **Save To Configuration** if you want your changes to become a permanent part of the node configuration. Your changes will be retained when the node is restarted.

7. Click **Reset From Configuration** to erase any changes you made to this node at runtime, and to reset the values based on the values in the node configuration.

Configuring Loggers by Modifying the Node Configuration

To configure loggers by modifying the node configuration for a particular node:

1. On the Content Services Home page, in the Administration section, click **Node Configurations**.

2. On the Node Configurations page, click the name of the node configuration for which you want to configure loggers.

3. In the All Loggers section, specify logging levels for loggers you want to configure. For example, you could increase the log level for FTP (under the AllProtocols heading) to obtain more detailed logging on the Oracle Content Services FTP server. The available log levels are:

- **Severe:** Log only non-recoverable problems

- **Warning:** Log only recoverable problems

- **Information:** General level of log information

- **Fine:** Level for debugging/tracing key operations

- **Finer:** Level for debugging/tracing entry/exit of methods

- **Finest:** Level for debugging/tracing within a method

4. Click **OK** to save the changes.

Restart the node based on this node configuration for your changes to take effect.

Managing Service Configurations

A **service configuration** holds the default values used when a service is started for an Oracle Content Services node. This section explains how to manage service configurations using the Oracle Collaboration Suite Control.

This section contains the following topics:

- About Service Configurations

- Creating Service Configurations

- Modifying Service Configurations

- Deleting Service Configurations

About Service Configurations

Each service configuration specifies values for service properties such as credential manager settings, the sizes of the cache and database connection pools, the maximum number of sessions, and the service's default language and character set. (See Appendix D, "Service Configuration Properties" for a complete list of service configuration parameters.) Service configurations are uniquely named across the domain.

Whenever a new Oracle Content Services schema is created, three service configuration objects are generated:

- `SmallServiceConfiguration`

- `MediumServiceConfiguration,`

- `LargeServiceConfiguration`

These objects are named to reflect the sizes of their data caches.

Use the Oracle Collaboration Suite Control to create or edit service configuration objects. The services read their service configuration properties only when they start. You must stop and restart the affected nodes for changes to take effect. The changes you make this way are applied each time you start a service and overwrite any changes you make on a particular service while it is running.

Figure 6–5   Service Configurations Page

Like node configuration properties, you can change runtime service properties, change to a different service configuration, alter service configuration properties permanently, or create a new service configuration.

Creating Service Configurations

Use the Oracle Collaboration Suite Control to create service configurations.

To create a new service configuration:

1.   On the Content Services Home page, in the Administration section, click **Service Configurations**.

2.   On the Service Configurations page, decide whether to create a new service configuration from scratch, or to base it on the properties of an existing service configuration.

   ■   Select a service configuration and click **Create Like** to base the new service configuration on an existing service configuration (highly recommended).

   ■   Click **Create** to create the service configuration from scratch.

   In both cases, the New Service Configuration page appears. If you clicked **Create Like**, the service configuration properties have been filled in with those of the existing service.

Figure 6–6   New Service Configuration Page

New Service Configuration

Cancel   OK

Click "OK" to create the object, or "Cancel" to cancel this operation.

General

* Name [   ]

Description [   ]

Access Control [Private (system) ▼]

Properties

Search [   ] (Go)

(Remove) | (Add)   ⊘ Previous [1-25 of 75 ▼] Next 25 ⊗

Select	Name △	Type	Value
○	IFS.SERVICE.ACLCACHE.EmergencyTrigger	INTEGER	6000
○	IFS.SERVICE.ACLCACHE.NormalTrigger	INTEGER	5000
○	IFS.SERVICE.ACLCACHE.PurgeTarget	INTEGER	4000
○	IFS.SERVICE.ACLCACHE.Size	INTEGER	7500
○	IFS.SERVICE.ACLCACHE.UrgentTrigger	INTEGER	5500
○	IFS.SERVICE.CaseSensitiveAuthentication	BOOLEAN	true
○	IFS.SERVICE.CheckForOrphanSessionsPeriod	INTEGER	60
○	IFS.SERVICE.CONNECTIONPOOL.READONLY.MaximumSizeTimeout	INTEGER	10000

3. In the General section, enter a name for the new service configuration.

4. Enter a description of the service.

5. Assign an access level to the configuration by selecting from the **Access Control** list.

6. Add, remove, or update the new service's properties.

7. Click **OK** on the New Service Configuration page.

Modifying Service Configurations

You can use the Oracle Collaboration Suite Control to make important changes to service configurations, such as changing the capacity of the Committed Data Cache or changing the number of maximum concurrent sessions.

To modify a service configuration:

1. On the Content Services Home page, in the Administration section, click **Service Configurations**.

2. On the Service Configurations page, click the name of the service configuration you want to change.

3. On the Edit page, update the information in the General section as desired:

   ■ **Description:** Enter a description of the service configuration.

   ■ **Access Control:** Leave the default value.

4. To add new properties for this service configuration, follow these steps:

   a. In the Properties section, click **Add**.

   b. Provide a name for the new property.

    c. Select a **Type** (such as string, integer, or boolean). The page refreshes to display the appropriate **Value** field. For example, if you select BOOLEAN, a True/False drop-down list is displayed.

    d. Type or select a value for the property.

    e. Click **OK**.

5. To edit a service configuration property, click the name of the property, update the value, and click **OK**.

6. To remove a property from this service configuration, select the property, click **Remove**, then click **Yes**.

7. Click **OK** on the Edit page.

Services only read their service configuration properties as they start. You must stop and restart the node on which the service is running before your changes will take effect. When the node restarts, the changes you made to the service configuration overwrite any runtime changes made on the service.

Deleting Service Configurations

You cannot delete a service configuration that is being used by an active service. If the service configuration you want to delete is being used by an active service, perform one of the following tasks:

- Change the service configuration being used by the service by modifying the node configuration

- Delete the service from the node configuration

You cannot delete the service if it is the only service defined in the node configuration. Each node must have at least one active service.

To delete a service configuration:

1. On the Content Services Home page, in the Administration section, click **Service Configurations**.

2. On the Service Configurations page, select the service configuration you want to delete.

3. Click **Delete**.

4. Click **Yes** to confirm that you want to delete the service configuration.

Managing Server Configurations

A **server configuration** holds the default values used when a server is started for an Oracle Content Services node. This section explains how to manage service configurations using the Oracle Collaboration Suite Control.

This section contains the following topics:

- About Server Configurations

- Creating Server Configurations

- Modifying Server Configurations

- Deleting Server Configurations

About Server Configurations

Server configurations specify their server types as Java classnames. In addition to the server type, each server configuration specifies values for parameters relevant to that type (see Appendix E, "Server Configuration Properties"). For example, a server configuration for the Oracle Content Services FTP server specifies the FTP port number, whether anonymous FTP connections are allowed, and the connection time out period.

Most of the server configuration information is used by the server itself. Only the server Java class entry is used by the node to instantiate a new server.

When Oracle Content Services is installed, server configurations are automatically created for each protocol server and agent. You can edit these configurations or create additional server configurations using the Oracle Collaboration Suite Control. Any changes you make will be reflected the next time the node is restarted or when the server is unloaded and then loaded again.

Server configuration objects are of two types:

- **Abstract:** Used to set base values for the properties, which can then be inherited by some other configuration. You cannot start a server from any abstract server configuration.

- **Non-abstract:** Can be used to start servers.

When you create a new server configuration, you can choose to inherit the properties from one or more server configurations. These in turn bring into play their own properties and their respective values. You could choose to use the same values as inherited or to use different values.

Inheritance operations are accessed from the New Server Configuration page (Figure 6–7). See "Creating Server Configurations" on page 6-19 for more information on creating new server configurations.

Figure 6–7   Inheritance Operations on the New Server Configuration Page

Changing Values of Properties

To change the value of an inherited property, create a new property in the inherited server configuration object that is identical in name to the one in the parent, but has values that override those in the parent server configuration object.

Viewing Inherited Properties

View the inherited properties to determine whether the property in the current server configuration object is local to this object or taken from a parent server configuration object. You can also differentiate between inherited server configuration objects and those that are local to the server configuration.

Creating Server Configurations

Use the Oracle Collaboration Suite Control to create new server configurations.

To create a new server configuration:

1. On the Content Services Home page, in the Administration section, click **Server Configurations**.

2. On the Server Configurations page, decide whether to create a new server configuration from scratch, or to base it on the properties of an existing server.

   ■ Select a server configuration and click **Create Like** to base the new server configuration on an existing server configuration.

   ■ Click **Create** to create the server configuration from scratch.

   In both cases, the New Server Configuration page appears. If you clicked **Create Like**, the server configuration properties have been filled in with those of the existing server.

3. On the New Server Configuration page, in the General section, enter a name for the new server configuration.

4. Enter a description of the server.

5. Leave the default value for **Access Control**.

6. Select **Abstract** to make this server not instantiable. An abstract server configuration is used to set base values for properties, which can then be inherited by another server configuration. You cannot start a server from an abstract server configuration.

7. In the Inherited Server Configurations section, select the existing configurations from which the new configuration should inherit properties. Select configurations from the **Available Configurations** list and move them to the **Selected Configurations** list.

8. If you change the list of inherited server configurations, click **Update Inherited Properties** in the Properties section to display the properties of the inherited server configurations.

   The order of the items in the Inherited Configurations list determines which configuration takes precedence.

9. To edit server configuration properties, follow these steps:

   a. In the Properties section, select the property you want to change and click **Edit**.

   b. Update the value of the property.

    c. Click **OK**.

    For example, to change the FTP port number for a server configuration based on the FtpServerConfiguration, click **IFS.SERVER.PROTOCOL.FTP.Port**, update the value, and click **OK**.

    Inherited server configuration properties cannot be edited. Inherited properties display an icon in the Inherited column, and their names are not rendered as hyperlinks. To change the value of these properties, add a new property that is identical in name to the inherited property, but with a value that overrides the value of the inherited property.

10. To add new server configuration properties, follow these steps:

    a. Click **Add** in the Properties section.

    b. Provide a name for the new property. If you are adding a property to override an inherited property, make sure the name matches the inherited property.

    c. Select a **Type** (such as string, integer, or boolean). The page refreshes to display the appropriate **Value** field. For example, if you select **BOOLEAN**, a True/False drop-down list is displayed.

    d. Type or select a value for the property.

    e. Click **OK**. If you added a property to override an inherited property, the property name changes to a hyperlink, and the Inherited icon no longer appears.

11. To remove server configuration properties, select a property and click **Remove**.

12. When the server configuration is complete, click **OK**.

Modifying Server Configurations

You can use the Oracle Collaboration Suite Control to make important changes to server configurations, such as changing which configurations to inherit, as well as editing, adding, or removing server configuration properties. See Appendix E, "Server Configuration Properties" for more information about specific server configuration parameters.

To modify an existing server configuration:

1. On the Content Services Home page, in the Administration section, click **Server Configurations**.

2. On the Server Configurations page, click the name of the server configuration you want to modify.

3. On the Edit page, update the information in the General section as desired:

- **Description:** Enter a description of the server configuration.

- **Access Control:** Leave the default value.

- **Abstract:** Choose whether to make the server configuration abstract. An abstract server configuration is used to set base values for properties, which can then be inherited by some other server configuration. You cannot start a server from an abstract server configuration.

4. In the Inherited Server Configurations section, use the arrow buttons to add or remove server configurations from which this server configuration should inherit properties.

5. If you change the list of inherited server configurations, click **Update Inherited Properties** in the Properties section to display the properties of the inherited server configurations.

   The order of the items in the Inherited Configurations list determines which configuration takes precedence.

6. To edit server configuration properties, follow these steps:

   a. In the Properties section, select the property you want to change and click **Edit**.

   b. Update the value of the property.

   c. Click **OK**.

      For example, to change the FTP port number for a server configuration based on the FtpServerConfiguration, click **IFS.SERVER.PROTOCOL.FTP.Port**, update the value, and click **OK**.

      Inherited server configuration properties cannot be edited. Inherited properties display an icon in the Inherited column, and their names are not rendered as hyperlinks. To change the value of these properties, add a new property that is identical in name to the inherited property, but with a value that overrides the value of the inherited property.

7. To add new server configuration properties, follow these steps:

   a. Click **Add** in the Properties section.

   b. Provide a name for the new property. If you are adding a property to override an inherited property, make sure the name matches the inherited property.

   c. Select a **Type** (such as string, integer, or boolean). The page refreshes to display the appropriate **Value** field. For example, if you select BOOLEAN, a True/False drop-down list is displayed.

   d. Type or select a value for the property.

   e. Click **OK**. If you added a property to override an inherited property, the property name changes to a hyperlink, and the Inherited icon no longer appears.

8. To remove server configuration properties, select a property and click **Remove**.

9. When the server configuration is complete, click **OK**.

Servers only read their server configuration properties when they are reloaded, or when the node is restarted. You must reload the server before your changes will take effect; see "Reloading Servers" on page 5-14 for more information. These server configuration changes overwrite any changes you make on a particular server while it is running.

Deleting Server Configurations

You cannot delete a server configuration that is being used by an active server. If the server configuration you want to delete is being used by an active server, first edit the node configuration to remove the server, then delete the server configuration. Alternatively, you can change the server configuration being used by the server.

To delete a server configuration:

1. On the Content Services Home page, in the Administration section, click **Server Configurations**.

2. On the Server Configurations page, select the server configuration you want to delete.

3. Click **Delete**.

4. Click **Yes** on the Warning page.

7

Monitoring Domain, Node, Service, and Server Performance

Use the Oracle Collaboration Suite Control to monitor Oracle Content Services domain, node, service, and server performance. You can use this information to get an overall picture of the domain's performance, or to determine whether the domain's configuration needs modification.

This chapter includes the following topics:

- Monitoring Domain Performance
- Monitoring Node Performance
- Monitoring Service Performance
- Monitoring Server Performance
- Viewing Log Files

Monitoring Domain Performance

You can use the Oracle Collaboration Suite Control to view different types of performance information for the Oracle Content Services domain. This section contains the following topics:

- About Oracle Content Services Performance Metrics
- Viewing Performance Information
- Configuring Performance Metrics

About Oracle Content Services Performance Metrics

There are three types of Oracle Content Services performance metrics: repository metrics, Dynamic Monitoring Service (DMS) metrics, and other metrics. See "Monitoring Server Performance" on page 7-7 for information about DMS metrics.

Repository metrics are metrics that apply to the entire Oracle Content Services domain. These metrics include:

- Domain Response
- Documents
- Documents By MIME Type
- Users
- Users By Site

- Libraries By Site

- Nodes

- Sessions By Server (Node)

- Sessions By Server (Domain)

- All Sessions

Other Oracle Content Services performance metrics include:

- Response

- Resource Usage

- Processes

- Web Application URL Timing

- RM Application URL Timing

- Load Balanced Web Application URL Timing

- Load Balanced RM Application URL Timing

Some metrics must be configured for particular Applications tiers. See "Configuring Performance Metrics" on page 7-4 for more information.

Viewing Performance Information

You can view Oracle Content Services performance metrics in two ways:

- All Oracle Content Services metrics can be viewed from the All Metrics pages, as long as they are being collected on that Applications tier.

- In addition to the All Metrics pages, repository metrics can also be viewed from the Domain Performance & Statistics pages, which provide information in a more graphical format than the All Metrics pages. These pages are not available on Applications tiers where repository metrics are not being collected.

Using the All Metrics Link

All Oracle Content Services performance metrics that are being collected on a particular Applications tier can be accessed from the All Metrics pages in the Oracle Collaboration Suite Control. To access these pages, click **All Metrics** from the Performance section of the Content Services Home page.

To view information about a particular metric, click the metric name, then click **Help** on the resulting Metric Detail page.

Using the Domain Performance & Statistics Pages

The Domain Performance & Statistics pages in the Oracle Collaboration Suite Control provide tables and charts that present information about Oracle Content Services users, Libraries, documents, sessions, and overall usage patterns. This information can help you evaluate system performance and guide you in making any necessary changes to your configuration.

The Domain Performance & Statistics pages are only available on Applications tiers that have been configured for repository metrics. See "Configuring Performance Metrics" on page 7-4 for more information.

To view domain performance information:

1. On the Content Services Home page, click **Domain Performance & Statistics**.

Figure 7–1   Domain Performance & Statistics Page

2. Select one of the four subtabs:

   ■ The **Users and Libraries** subtab provides information about the total number of users and the number of users for each Site, as well as information on Personal and Shared Libraries for each Site.

   ■ The **Documents** subtab provides system-wide information about documents.

   ■ The **Sessions** subtab allows you to view the connected sessions by server type.

   ■ The **Overall Usage** subtab lets you monitor sessions, threads, and memory by node and host.

3. To refresh the information for the **Sessions** or **Overall Usage** subtabs, refresh your browser, or click the Refresh Data icon in the upper right portion of the page.

   Since data for the **Users and Libraries** and **Documents** subtabs is only collected at preset intervals, refreshing the page will not cause the data to be re-collected. To see the last time the data was collected on these tabs, look at the Data Collection Time displayed in the upper left corner of the page.

4. To navigate between the table view and the chart view, make a selection from the **Select a View** list.

Table 7–1 lists the various charts, graphs, and tables and shows you which subtab and view names you should select to access the information.

Table 7–1   Reference to Statistical Information about the Domain and Nodes

Chart, Graph, or Table Name	Statistics or Information Displayed	Subtab	Select a View Item
Users	■　Total Number of Users ■　Total Number of Users by Site	Users and Libraries	N/A
Libraries	Tabular display showing: ■　Total number of Libraries for each Site ■　Total allocated quota for each Site ■　Total consumed quota for each Site ■　Percentage of quota consumed for each Site These statistics are also available for Personal and Shared Libraries for each Site; click **Show** in the Details column to access this information.	Users and Libraries	N/A
Document Table	Document distribution and space consumption by MIME type.	Documents	Table
Document Distribution Chart	Space consumed displayed by MIME type (displays a bar chart comparing quantities of the different types of documents stored in the system).	Documents	Distribution Chart
Document Consumption Chart	Space consumed displayed by MIME type.	Documents	Consumption Chart
Sessions Table	Tabular display of the total number of connected sessions for each protocol server or agent.	Sessions	Table
Sessions Chart	Pie chart of total number of connected sessions for each protocol server or agent. The sessions for all the agents are displayed as a combined result.	Sessions	Chart
Node Usage Table	Tabular display of node name, hostname and IP address, number of sessions, number of threads, and JVM total/free/used memory for each node.	Node Usage	Table
Node Usage Chart	Bar charts showing the same information as the Overall Usage Table.	Node Usage	Chart

Configuring Performance Metrics

You can use the Oracle Collaboration Suite Control to select which Oracle Content Services performance metrics to configure on this Applications tier. For example, you can choose whether to collect metrics related to Oracle Content Services Web application response time.

To configure performance metrics:

1.　On the Content Services Home page, in the Performance section, click **Metric Configuration**.

2.　You can choose whether to collect repository metrics on this Applications tier. To do this, select **Run Repository Metric?** and provide the Oracle Content Services schema password and the database connect descriptor. If you don't know the database connect descriptor, you can copy it from the Content Services Home page.

You should only run repository metrics on one Applications tier to avoid the potential performance impact of duplicate metric collection. Be aware that the Domain Performance & Statistics pages are only available from Applications tiers on which repository metrics are collected.

3. You can choose whether to collect metrics related to Oracle Content Services Web application response time on this Applications tier.

   ■ To collect metrics related to the Oracle Content Services Web application URL for this Applications tier, select **Run Web Application Response Time Metric?** and provide the correct Oracle Content Services Web application URL for this Applications tier.

   ■ To collect metrics related to the load-balanced URL for the Oracle Content Services Web application, select **Run Load Balanced Web Application Response Time Metric?** and provide the correct Oracle Content Services load-balanced Web application URL.

4. You can choose whether to collect metrics related to Oracle Records Management Web application response time on this Applications tier.

   ■ To collect metrics related to the Oracle Records Management Web application URL for this Applications tier, select **Run RM Application Response Time Metric?** and provide the correct Oracle Records Management Web application URL for this Applications tier.

   ■ To collect metrics related to the load-balanced URL for the Oracle Records Management Web application, select **Run Load Balanced RM Application Response Time Metric?** and provide the correct Oracle Records Management load-balanced Web application URL.

   If Oracle Records Management has not been enabled, these metrics will report that the Oracle Records Management Web application URLs are down.

5. Click **OK**.

Monitoring Node Performance

You can use the Oracle Collaboration Suite Control to view performance information about both regular nodes and HTTP nodes, including JVM total, used, and free memory, JVM thread count, and default time zone and locale.

To view node performance information:

1. On the Content Services Home page, click the name of the node for which you want to view performance information.

2. On the Node page, click the **Details** link to display operating system and JVM information about that node.

Figure 7–2   Details Page for Selected Node

Details

Java VM Total Memory (MB)	**28**
Java VM Used Memory (MB)	**15**
Java VM Free Memory (MB)	**13**
Java VM Thread Count	**50**
Java VM Default Time Zone	**US/Pacific**
Java VM Default Locale	**en**
IP Address	**dsunran01.us.oracle.com/144.25.32.81**
Java Vendor	**Sun Microsystems Inc.**
Java Version	**1.4.2_04**
Java Home	**/private/mapawar/as10_1206/midtier/jdk/jre**
Operating System Name	**SunOS**
Operating System Architecture	**sparc**
Operating System Version	**5.8**
Files Version (beans-side)	**10.1.1.0.1**
Files Version (server-side)	**10.1.1.0.1**

Monitoring Service Performance

You can view real-time statistics for the Committed Data Cache, the Read-Only Connection Pool, and the Writable Connection Pool for each service. You can also reset the statistics.

1. On the Content Services Home page, click the node whose service you want to monitor.

2. On the Node page, click the service (for example, **IfsDefaultService**).

3. On the Service page, scroll to the Performance section.

4. Click the link to the statistics you want to view: **Committed Data Cache Statistics** or **Connection Pool Statistics**.

Figure 7–3   Committed Data Cache Statistics

Committed Data Cache Statistics

(Reset Statistics)

Cache Size	**1,007**
Cache Puts	**1,075**
Cache Removes	**4**
Cache Purges	**0**
Cache Purge Cycles	**0**
Average Cache Purge Time (ms)	**0**
Cache Lookups	**450,235**
Cache Hits (%)	**99.8**

Figure 7–4   Connection Pool Statistics

Connection Pool Statistics

Read-only Connection Pool   (Reset Statistics) | **Writeable Connection Pool**   (Reset Statistics)

Read-only Connection Pool		Writeable Connection Pool	
Total Connections	**3**	Total Connections	**5**
Allocated Connections	**0**	Allocated Connections	**1**
Immediate Allocations	**778**	Immediate Allocations	**770**
Deferred Allocations	**0**	Deferred Allocations	**0**
Failed Allocations	**0**	Failed Allocations	**0**
Average Allocation Time (ms)	**0**	Average Allocation Time (ms)	**1**

5. Click **Reset Statistics** in the Committed Data Cache, Read-Only Connection Pool, or Writeable Connection Pool areas to reset cache or connection pool statistics.

Logging Service Performance Information

The Statistics Agent captures the statistics for the Committed Data Cache, as well as the Read-Only and Writeable Connection Pools, and writes them to the node log and the application log. You can also configure this agent to write statistics to a document stored in the Oracle Content Services repository.

See "Viewing Log Files" on page 7-7 for information about the node log and application log. See "Statistics Agent" on page E-13 for information about the Statistics Agent.

Monitoring Server Performance

You can monitor server performance by viewing Dynamic Monitoring Service (DMS) metrics that have been defined for some servers. DMS metrics are a special type of performance metric that can be defined in Oracle Application Server. DMS metrics for Oracle Content Services include:

■ WebDAV Servers

■ FTP Servers

■ Servers

Some DMS metric information can be viewed on the Node page, as well as on the Server page for some servers. For example, the Servers section of the Node page shows the Last Start Time and Last Stop Time for each server, while the FTP Server page displays Requests Completed, Average Request Processing Time (seconds), Downloaded Content Size (MB), and Uploaded Content Size (MB).

DMS metrics can also be viewed using `dmstool` and AggreSpy. For more information about DMS metrics and how to view them, see *Oracle Application Server Performance Guide*.

Viewing Log Files

The following sections provide a list of Oracle Content Services log files, as well as information about how to view logs in the Oracle Collaboration Suite Control.

Oracle Content Services Logs

Log files are generated by each node. Since some log files can grow very large, make sure to manage your log files to ensure that you do not run out of disk space.

You can set the level of logging for various loggers, such as the FTP server, repository, or Web application, from the Configure Loggers page in the Oracle Collaboration Suite Control. See "Configuring Node Loggers" on page 6-12 for more information.

The Node Log

The node log records major state transitions (such as started, failed, or restarted) and provides centralized data on overall node health. This log is useful for troubleshooting protocol servers and agents. All errors are logged with stack traces. Log file properties, such as Log Level and Rotation Interval, are specified in the node configuration of the node being monitored. The location of the node log cannot be changed. The node log is located in:

```
ORACLE_HOME/content/log/domain_name/node_name.log
```

The following OPMN log for the regular node is also useful:

```
ORACLE_HOME/opmn/logs/Content~Node~1
```

The Application Log

The application log records additional information for HTTP nodes. This log is useful for troubleshooting the Oracle Content Services and Oracle Records Management applications and the WebDAV server. All errors are logged with stack traces. By default, application log files are located in:

```
ORACLE_HOME/j2ee/OC4J_Content/application-deployments/Content/OC4J_Content_
default_island_1/application.log
```

```
ORACLE_HOME/opmn/logs/Content~OC4J_Content~default_island~1
```

```
ORACLE_HOME/j2ee/OC4J_RM/application-deployments/rm/OC4J_RM_
default_island_1/application.log
```

```
ORACLE_HOME/opmn/logs/Content~OC4J_RM~default_island~1
```

Viewing Oracle Content Services Logs from the Oracle Collaboration Suite Control

You can view a variety of log files from the Oracle Collaboration Suite Control. This feature lets you view the logs without having to remember the individual log file location.

To view log files, click the **Logs** link in the upper-right corner of any Oracle Collaboration Suite Control page.

- The View Logs page provides a custom list of log files relevant to the component from where the link was clicked. For example, if you click **Logs** from any Oracle Content Services page, the View Logs page will display relevant Oracle Content Services logs such as the node logs.

- You can also use Simple Search to locate logs. To do this, select the target that corresponds to the type of log you want to see from the **Available Components** list and move it to the **Selected Components** list:

  – Select the Oracle Content Services instance (for example, **Content**) if you want to see the node log.

  – Select **OC4J_Content** or **OC4J_RM** to see the application log for Oracle Content Services or Oracle Records Management.

  – Select **Enterprise Manager** to see Oracle Collaboration Suite Control logs.

  Click **Search** to see the log names in the Results table.

Click the name of a log to see the log data. By default, the last 500 lines in the log file appear in the log viewer. You can view up to 2000 lines. To download the contents of the entire log, click the log file name at the top of the screen. If the log file is very large, the download may take several minutes.

8

Managing Oracle Content Services Formats

Oracle Content Services associates a format (also known as a MIME type) with each document. You can add, modify, and delete formats using the Oracle Collaboration Suite Control.

This chapter explains how to view and manage formats using the Oracle Collaboration Suite Control. Topics include:

- About Formats
- Adding Formats
- Modifying Formats
- Deleting Formats
- Default Formats

About Formats

The **format** of a document indicates the file type (for example, .doc or .zip). Oracle Content Services needs to know the format of documents to determine how to index their content. In addition, the Documents tab of the Domain Performance & Statistics page in the Oracle Collaboration Suite Control provides information about documents according to their MIME type.

A format contains the following information:

- **MIME type:** Specifies the type of content stored in Oracle Content Services, such as `text/plain` or `text/html`.
- **Extension type:** Specifies the default extension for files that use this format, such as `.fm` or `.jar`.
- **Binary setting:** Determines whether files that use this format are of binary type.
- **Index setting:** Determines whether files that use this format should be indexed.
- **Omitted From Anti-Virus Scan:** Determines whether files that use this format should be omitted from anti-virus scans.

Indexing a format type is the basis of content searching in Oracle Content Services. If a format is not indexed, content searches will fail. Content searches can also fail when formats are indexed incorrectly.

See Appendix B, "Oracle Text Supported Document Formats" in *Oracle Text Reference* for information about what formats can be indexed by Oracle Text.

Adding Formats

You can add additional formats to Oracle Content Services for special types of content. See "Default Formats" on page 8-3 for a list of default formats.

To add a format:

1. On the Content Services Home page, in the Administration section, click **Formats**.

2. On the Formats page, click **New Format**. The New Format page appears.

Figure 8–1   New Format Page

3. Enter the following information:

   - **Name:** Provide a name for the format (for example, "FrameMaker" or "Jar").

   - **Mime Type:** Specify the type of content stored in Oracle Content Services, such as `text/plain` or `text/html`. Click the Flashlight Lookup icon to select from a list of MIME types.

   - **Extension:** Specify the default extension for files that use this format, such as `.fm` or `.jar`. Click the Flashlight Lookup icon to select from a list of file extensions.

   - **Binary:** Specify whether files that use this format are of binary type.

   - **Omitted From Anti-Virus Scan:** Specify whether files that use this format should be omitted from anti-virus scans.

   - **Indexed:** Specify whether files that use this format should be indexed.

4. Click **OK**.

Modifying Formats

You can modify formats using the Oracle Collaboration Suite Control.

To modify a format:

1. On the Content Services Home page, in the Administration section, click **Formats**.

2. On the Formats page, click the name of the format you want to modify.

3. On the Edit Format page, you can change the following information:

   - **Mime Type:** Specify the type of content stored in Oracle Content Services, such as text/plain or text/html. Click the Flashlight Lookup icon to select from a list of MIME types.

   - **Extension:** Specify the default extension for files that use this format, such as .fm or .jar. Click the Flashlight Lookup icon to select from a list of file extensions.

- **Binary:** Specify whether files that use this format are of binary type.

- **Omitted From Anti-Virus Scan:** Specify whether files that use this format should be omitted from anti-virus scans.

- **Indexed:** Specify whether files that use this format should be indexed. Changing this setting only affects new documents that are uploaded to Oracle Content Services; the index setting for existing documents that use this format will not be changed. To force indexing of existing documents, upload the documents again after changing this setting.

4. Click **OK**.

Some formats must be indexed. For these formats, the index setting cannot be changed.

Deleting Formats

You can delete formats using the Oracle Collaboration Suite Control.

To delete a format:

1. On the Content Services Home page, in the Administration section, click **Formats**.

2. On the Formats page, select the format you want to delete.

3. Click **Delete**.

4. When asked to confirm the deletion, click **OK**.

Default Formats

Table 8–1 provides a list of default formats.

Table 8–1   Default System Formats

Format Name	Extension	Indexed by Default?	Can Change Index Setting?[1]
Advanced Stream Redirector File	asx	No	Yes
Advanced Streaming Format	asf	No	Yes
Apple Quicktime	mov	Yes	No
Apple Quicktime (qt)	qt	Yes	No
Audio Interchange File (aif)	aif	Yes	No
Audio Interchange File (aifc)	aifc	Yes	No
Audio Interchange File (aiff)	aiff	Yes	No
Basic audio	au	Yes	No
Bitmap image	bmp	Yes	No
c file	c	Yes	Yes
C Header	h	Yes	Yes
C++ Header (h++)	h++	Yes	Yes
C++ Header (hh)	hh	Yes	Yes
C++ Header (hpp)	hpp	Yes	Yes
C++ Header (hxx)	hxx	Yes	Yes

Table 8–1 (Cont.) Default System Formats

Format Name	Extension	Indexed by Default?	Can Change Index Setting?[1]
C++ Source Code (C++)	c++	Yes	Yes
C++ Source Code (cc)	cc	Yes	Yes
C++ Source Code (cpp)	cpp	Yes	Yes
CC++ Source Code (cxx)	cxx	Yes	Yes
Comma-Separated Values	csv	Yes	Yes
Compiled WML Document	wmlc	No	Yes
Compiled WML Script	wmlsc	No	Yes
Compressed File	taz	No	Yes
Corel Photo-Paint Image	cpt	No	Yes
Corel Vector Graphic Drawing	cdr	No	Yes
Corel Vector Pattern	pat	No	Yes
CorelDraw Template	cdt	No	Yes
Debian Linux Package	deb	No	Yes
Difference File	diff	Yes	Yes
Email Message	eml	Yes	No
Encapsulated PostScript	eps	Yes	Yes
Extensible HyperText Markup Language File	xhtml	Yes	Yes
Extensible Markup Language	xml	Yes	Yes
FileMaker Pro Spreadsheet	fm	Yes	Yes
FrameMaker Book	book	Yes	Yes
FrameMaker FBDOC	fbdoc	Yes	Yes
FrameMaker FRAME	frame	Yes	Yes
FrameMaker FRM	frm	Yes	Yes
FrameMaker MAKER	maker	Yes	Yes
GIF	gif	Yes	No
GNU tar Compressed File Archive (GNU Tape Archive)	gtar	No	Yes
GZIP	gz	No	Yes
HTML	htm	Yes	Yes
HTML unix	html	Yes	No
Hypertext Cascading Style Sheet	css	Yes	Yes
JAR	jar	No	Yes
Java Bytecode	class	No	Yes
java file	java	Yes	Yes
Java Serialized Object File	ser	No	Yes
JavaScript Source Code	js	Yes	Yes

Table 8–1   (Cont.) Default System Formats

Format Name	Extension	Indexed by Default?	Can Change Index Setting?[1]
JNLP	jnlp	No	Yes
JPEG	jpg	Yes	No
JPEG (jpe)	jpe	Yes	No
JPEG (jpeg)	jpeg	Yes	No
JSP	jsp	Yes	Yes
Lotus 123 Spreadsheet	wk	Yes	Yes
Macintosh Sound Resource	snd	No	Yes
Macromedia Director Movie	dir	No	Yes
Macromedia Director Protected Movie File	dxr	No	Yes
Macromedia Flash Format File	swf	No	Yes
Macromedia Flash Format File - swfl	swfl	No	Yes
MHTML Document mhtm	mht	Yes	Yes
MHTML Document mhtml	mhtml	Yes	Yes
Microsoft AVI	avi	Yes	No
Microsoft PowerPoint	ppt	Yes	Yes
Microsoft Powerpoint (pot)	pot	Yes	Yes
Microsoft Powerpoint Show	pps	Yes	Yes
Microsoft Wave Audio	wav	Yes	No
MIDI	mid	No	Yes
Money Data File	mny	No	Yes
MP3 Playlist File	m3u	No	Yes
MPEG	mpg	No	Yes
MPEG (mpe)	mpe	No	Yes
MPEG (mpeg)	mpeg	No	Yes
MPEG - mpega	mpega	Yes	No
MPEG Layer 2	mp2	Yes	No
MPEG Layer 3 Audio	mp3	Yes	No
MPEG Layer 3 Audio Stream	mpga	Yes	No
MS Access	mdb	Yes	Yes
MS DOS Batch Processing	bat	Yes	Yes
MS Excel	xls	Yes	Yes
MS Excel (xlb)	xlb	Yes	Yes
MS Executable File	exe	No	Yes
MS Windows Dynamic Link Library	dll	No	Yes
MS Word	doc	Yes	Yes
MS Word (dot)	dot	Yes	Yes

Table 8–1   (Cont.) Default System Formats

Format Name	Extension	Indexed by Default?	Can Change Index Setting?[1]
MS Works	msw	Yes	Yes
Object File	o	No	Yes
OpenOffice.org Drawing	sda	No	Yes
OpenOffice.org Presentation	sdd	Yes	Yes
Outlook Express News File	nws	No	Yes
PCX	pcx	No	Yes
PDF	pdf	Yes	Yes
PERL Program File	pl	Yes	Yes
Portable (Public) Network Graphic	png	No	Yes
portable pixmap	ppm	No	Yes
Postscript	ps	No	Yes
postscript-ai	ai	No	Yes
Project File	mpp	Yes	Yes
Real Audio (ra)	ra	Yes	No
Real Audio (ram)	ram	Yes	Yes
Real Media (rm)	rm	Yes	No
Real Video	rv	Yes	No
RedHat Package Manager	rpm	No	Yes
RichText	rtf	Yes	Yes
RichText (rtx)	rtx	Yes	Yes
Schedule/Schedule+ Data	scd	No	Yes
SGI Video	movie	No	Yes
Shell Script	sh	Yes	Yes
Shockwave Movie	dcr	No	Yes
Sourcecode	src	Yes	Yes
Standard General Markup Language	sgml	Yes	Yes
Tab Separated Values File	tsv	Yes	Yes
Tar	tar	No	Yes
Tcl (Tool Command Language) Language Script	tcl	Yes	Yes
Text	txt	Yes	Yes
Text Document (text)	text	Yes	Yes
TIFF	tif	Yes	No
TIFF (tiff)	tiff	Yes	No
Tk Language Script	tk	Yes	Yes
UNIX Compressed Archive File	z	No	Yes
UNIX csh Shell Script	csh	Yes	Yes

Table 8–1 (Cont.) Default System Formats

Format Name	Extension	Indexed by Default?	Can Change Index Setting?[1]
UNIX Tar File Gzipped	tgz	No	Yes
Unknown	(N/A)	No	Yes
Unknown Binary	bin	No	Yes
URL Reference	url	No	Yes
vCalendar File	vcs	No	Yes
vCard File	vcf	Yes	Yes
Visio Drawing	vsd	Yes	Yes
VRML	vrml	No	Yes
Windows Help File	hlp	No	Yes
Windows Icon	ico	No	Yes
Wireless Markup Language File	wml	Yes	Yes
WML Script	wmls	Yes	Yes
Word Perfect	wpd	Yes	Yes
Wordperfect 5.1 Document	wp5	Yes	Yes
XFIG Graphic File	fig	No	Yes
xpixmap	xpm	No	Yes
xpixmap pm	pm	No	Yes
Zip	zip	No	Yes

[1] Some formats must be indexed. For these formats, the index setting cannot be changed.

9

Managing Oracle Content Services Sites

In Oracle Content Services, a **Site** is a discrete organizational entity whose users can collaborate on files and folders. Users in one Site do not have access to the content of users in another Site. Each Site has an allocated quota that specifies the amount of content (in MB, GB, or TB) that can be stored in the Site. Oracle Content Services Sites are based on **identity management realms**.

You can use the Oracle Collaboration Suite Control to create new Sites, or enable, disable, modify, or delete existing Sites.

This chapter explains how to view and manage sites using the Oracle Collaboration Suite Control. Topics include:

- About Sites
- Creating Sites
- Modifying Sites
- Enabling and Disabling Sites
- Deleting Sites

About Sites

Oracle Content Services Sites are based on the realms that have been defined in Oracle Identity Management. A realm is a collection of identities and associated policies that is typically used when enterprises want to isolate user populations and enforce different identity management policies for each population.

Each installation of Oracle Content Services has a default Site, based on the default realm in Oracle Identity Management.

> **Important:** If you want to choose another realm as the default, or if you want to change the name of the default realm, you must do so before you install and configure Oracle Content Services. You cannot change the default realm or realm name once Oracle Content Services has been installed and configured.

You can create and manage additional realms using the Oracle Internet Directory Self-Service Console. You must configure OracleAS Single Sign-On for multiple realms if you want to have more than one realm in your deployment. For information about how to do this, see "Setting Up and Enabling Multiple Realms" in Chapter 7 of *Oracle Collaboration Suite Administrator's Guide*.

There are a number of application administrators for each Site who perform functions such as allocating quota and assigning roles, including the User Administrator, Content Administrator, and Quota Administrator. For more information about the application administrator roles and tasks, see *Oracle Content Services Application Administrator's Guide*.

Each Site has an allocated quota that specifies the amount of content (in MB, GB, or TB) that can be stored in the Site. When the quota consumed by any given Site reaches 95% of the allocated quota, an e-mail notification is sent to the administrator e-mail address specified in the `IFS.DOMAIN.EMAIL.AdministratorAddress` domain property, as well as to any users of that Site with the Quota Administrator role. See "Changing Domain Properties" on page 6-1 for information about how to specify this administrator e-mail address.

Quota warning e-mail notifications are issued by the Cleanup Agent. You can change the properties of this agent to adjust the warning threshold, or to specify whether files in the **Archive** should count against a Site's quota. These properties are not Site-specific; they apply to all the Sites in your deployment. See "Cleanup Agent" on page E-2 for more information about these properties.

Creating Sites

Each new Site that you create must be based on an existing realm; if all the realms have been used for other Sites, you must create a new realm in Oracle Internet Directory before you can create a new Site.

To create a new Site:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Sites**.

3. On the Sites page, click **Create**.

4. In the **Name** field, provide a name for the new Site.

   Oracle recommends that you use the name of the realm on which this Site will be based for the name of the Site. Because users for this Site will need to provide the realm name during authentication, having the Site name based on the realm name provides consistency. The Site name cannot be changed once the Site is created.

   The Site name is used as the top folder name for the new Site and will appear in all Site paths. Because of this, you cannot use the following characters in the Site name: \ / : * ? " < > |. Also, you should keep Site names short to avoid long pathnames, and avoid using spaces since these characters will be replaced by "%20" in URLs, making the URL long and hard to read.

5. For **Realm**, select a realm on which you want to base the new Site.

6. Specify an **Allocated Quota** for the new Site, in megabytes (MB), gigabytes (GB), or terabytes (TB).

7. Specify whether you want the new Site to be enabled by default. Disabled Sites cannot accept new user sessions.

8. Click **OK**.

9. Return to the Content Services Home page and restart **OC4J_Content**.

If you would like to change the default location of the Personal Libraries for new users of this Site, modify the Site once it has been created and specify the required properties. See the following section for more information.

Modifying Sites

You can change settings for existing Sites, including updating Site quota and changing the location of new users' Personal Libraries.

To modify an existing Site:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. On the Content Services Home page, in the Administration section, click **Sites**.

3. Click the name of the Site you want to modify.

4. Specify the amount of quota you want to allocate in the **Allocated Quota** field, then specify whether you want to allocate the quota in Megabytes (MB), Gigabytes (GB), or Terabytes (TB) by selecting from the drop-down list. The quota you allocate must be larger than the quota that has already been used by the Site.

5. In the Personal Libraries section, you have the option of changing the location of new users' Personal Libraries. Using this option requires custom Java code; contact your Oracle Support representative for more information. To change the location of new users' Personal Libraries, provide the following two parameters:

   - **Locator Class Name:** Specify the name of the custom class you created for the new Personal Library location.

   - **Root Path:** Specify the new root path for Personal Libraries.

   Only new users' Personal Libraries will use the new path. Personal Libraries for existing users will remain in the old location.

6. Click **OK**.

Enabling and Disabling Sites

You can choose whether to enable or disable Sites. Disabled Sites cannot accept new user sessions.

To enable a Site:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Sites**.

3. Select the Site you want to enable and click **Enable**.

4. Click **Yes** on the Warning page.

To disable a Site:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Sites**.

3. Select the Site you want to disable and click **Disable**.

4. Click **Yes** on the Warning page.

5. Once you disable a Site, it will not accept any new sessions. To terminate existing sessions, return to the Content Services Home page and click **Restart Domain**.

Deleting Sites

You should only delete a Site if you are sure that you will not need to access anything in the Site again. When a Site is deleted, all content and associated metadata is deleted also, as well as the Containers, Libraries, users, groups, roles, Categories, and the Archive for the Site. You cannot delete the default Site.

To delete a Site:

1. Connect to the Oracle Collaboration Suite Control and navigate to the Content Services Home page.

2. In the Administration section, click **Sites**.

3. If the Site you want to delete is enabled, select the Site and click **Disable**, then click **Yes** on the Warning page. Enabled Sites cannot be deleted.

4. Select the Site and click **Delete**, then click **Yes** on the Warning page. Everything associated with that Site, including content, metadata, users, and Libraries, is deleted, and the Site is removed from the Sites list.

You cannot delete a Site that contains records. See *Oracle Records Management Administrator's Guide* for information about managing records.

10

Oracle Content Services Maintenance and Tuning

This chapter provides important information about ongoing system maintenance, performance tuning, and recovery. As with any production system, your implementation of Oracle Content Services should include a basic disaster recovery plan.

This chapter includes the following topics:

- Backup and Recovery
- Service Configurations and Java Memory Sizing
- Performance Tuning
- Analyzing Performance Problems

Backup and Recovery

Planning for failures is one of the most important jobs of any system administrator or DBA. Be sure to implement a daily or weekly backup plan that meets the needs of your business and operations environment. Take advantage of the Oracle database backup capabilities, built right into the database.

Always back up the system before upgrading, migrating new data, or making other major changes. See *Oracle Collaboration Suite Administrator's Guide*, as well as *Oracle Database Backup and Recovery Basics*, for additional information.

> **Note:** In addition to the Oracle Content Services schema, there are two "special" schemas that ensure secure connectivity to other systems. When you back up your system, make sure to include these schemas.
>
> The special schema names are derived from the Oracle Content Services schema name. For example, if the Oracle Content Services schema name is `CONTENT`, the additional schemas are `CONTENT$CM` and `CONTENT$ID`.

Service Configurations and Java Memory Sizing

In Oracle Content Services, the default service configurations specify the maximum number of sessions which can connect to the service. This is to reduce the likelihood of experiencing `java.lang.OutOfMemory` errors in `OC4J_Content.default_island.1` or in `application.log`.

In previous releases, the default service configurations allowed an unlimited number of sessions. Due to this change, you may now see the following errors:

- Oracle Content Services Web interface: "The maximum number of concurrent sessions has been reached. Please try your request again later."

- `OC4J_Content.default_island.1` or `application.log`: "IFS-20127: Service too busy (maximum concurrent sessions)"

If you see either of these errors, change the service configuration from Small to Medium or from Medium to Large, or create your own custom service configuration. If you use the Large service configuration, or if you create your own custom service configuration, you must adjust your `-Xmx` setting.

If you see `java.lang.OutOfMemory` errors in your `OC4J_Content.default_island.1` or `application.log` files, then you also need to adjust your `-Xmx` setting.

Table 10–1 describes factors that might require you to change the `-Xmx` setting.

Table 10–1   Xmx Settings

Service Configuration	Setting for IFS.SERVICE. Maximum ConcurrentSessions	Expected PCCU	Recommended size for Xmx (Java maximum memory)	Need to change the default Xmx setting of 256MB?
Small	40	25	64 MB	No
Medium	70	45	162 MB	No
Large	200	125	430 MB	**Yes**

> **Note:** The term PCCU refers to Peak Concurrent Connected Users. PCCU is the number of users who are signed in to Oracle Content Services and have performed an operation during the peak hour of the day. If you do not know how many users that is likely to be, assume 10% of your entire Oracle Content Services named user population.

See "Managing Service Configurations" on page 6-14 for additional information about creating and changing service configurations.

Calculating Xmx Settings

A general guideline for calculating the `Xmx` setting is:

```
Xmx = PCCU * 2.8MB
```

Alternatively, you can use the following equation to determine a more precise value:

```
Xmx = (PCCU * 1.6 sessions per PCCU * 1MB per session) + (DATACACHE.Size * 3KB per
data cache object) + (8MB + (CONNECTIONPOOL.READONLY.MaximumSize +
CONNECTIONPOOL.WRITEABLE.MaximumSize)) + (20% JVM overhead for garbage collection)
```

The maximum value for the `Xmx` depends on your operating system. On Linux operating systems, the setting cannot exceed 2GB. On Solaris operating systems, the setting cannot exceed 4GB. Oracle recommends that the `Xmx` setting should not exceed 2GB for Oracle Content Services.

See "Modifying Node Configurations" on page 6-8 for more information about how to change the Xmx setting.

Adjusting Service Configuration Settings

If you expect your peak concurrent connected users (PCCU) to exceed 125, you should create your own service configuration using the following recommendations:

```
MaximumConcurrentSessions = 1.6 * PCCU
DATACACHE.Size = 400 * PCCU
DATACACHE.EmergencyTrigger = 0.80 * DATACACHE.Size
DATACACHE.UrgentTrigger = 0.75 * DATACACHE.Size
DATACACHE.NormalTrigger = 0.65 * DATACACHE.Size
DATACACHE.PurgeTarget = 0.55 * DATACACHE.Size
CONNECTIONPOOL.WRITEABLE.MaximumSize = 0.05 * PCCU
CONNECTIONPOOL.WRITEABLE.TargetSize = 0.04 * PCCU
CONNECTIONPOOL.WRITEABLE.MinimumSize = 5
CONNECTIONPOOL.READONLY.MaximumSize = 0.05 * PCCU
CONNECTIONPOOL.READONLY.TargetSize = 0.04 * PCCU
CONNECTIONPOOL.READONLY.MinimumSize = 5
```

The other settings in the service configuration do not generally need to be adjusted.

Performance Tuning

Performance is typically affected by network input/output (I/O), hard-disk drive I/O, memory (random access memory) I/O, or some combination of these three or other factors. Adjusting one of the factors sometimes moves the bottleneck to a new location, so you must approach the tuning task in a logical manner.

The performance tips in this section cover the basics and include:

- Running the Oracle Content Services analyze.sql Script
- Providing Adequate Storage to Improve Performance

See *Oracle Database Performance Tuning Guide* for complete information.

Running the Oracle Content Services analyze.sql Script

Oracle Content Services uses the Oracle database's Cost-Based Optimizer (CBO) to determine the most efficient way to execute SQL statements. For the CBO to work properly, the Oracle Content Services analyze.sql script should be run as part of regular Oracle Content Services operations, especially after large volume changes to the data, such as after users have loaded a large number of files into the instance. This script generates statistics about the distribution of data in Oracle Content Services so that the CBO can choose the most efficient way to execute SQL statements. For more information about the Cost-Based Optimizer, see *Oracle Database Performance Tuning Guide*.

Run the script during non-busy periods to avoid impeding performance for users.

The analyze.sql script, which makes calls to the DBMS_STATS package, exports schema statistics to a backup table, so you can restore statistics later, if necessary, as discussed in "Restoring Prior Statistics" in the following section. To run the script, enter the following at the command line:

```
cd ORACLE_HOME/content/admin/sql
sqlplus content_services_schema/password@connect_string @analyze.sql content_
services_schema
```

This script may take a while to run, especially if Oracle Content Services contains a large number of documents.

Restoring Prior Statistics

Before gathering new statistics, the `analyze.sql` script exports backup statistics to the `IFS_BACKUP_STATS` table, marking the set of statistics with a timestamp. You can query the table for existing saved sets by executing this SQL statement:

```
SQL> select distinct statid from ifs_backup_stats;
```

This query returns a list of all statistics by `statid` (the date and time stamp). For example:

```
STATID
-----------------------------
01-MAY-02 02:15.36
04-MAY-02 20:00.15
08-MAY-02 02:15.48
11-MAY-02 06:21.40
11-MAY-02 20:15.37
```

You can then restore the statistics from a day and time when you know your performance was better. For example, if you find that after using the statistics from your 8:00 pm running of `analyze` that performance is worse, then you can restore your statistics from earlier that day using:

```
SQL> @import_backup_stats.sql user_name '08-MAY-02 06:21.40'
```

By restoring the statistics, you are directing the CBO to revert to the way it previously executed SQL statements.

Providing Adequate Storage to Improve Performance

The largest consumption of disk space occurs on the disks that actually contain the documents residing in Oracle Content Services, namely the Indexed Medias and Non-Indexed Medias tablespaces. This section explains how the documents are stored and how to calculate the amount of space those documents will require.

Document Storage and Sizing Issues

BLOBs provide for transactional semantics much like the normal data stored in a database. To meet the criteria of transactional semantics, BLOBs must be broken down into smaller pieces which are individually modifiable and recoverable. These smaller pieces are referred to as chunks. Chunks are actually a group of one or more sequential database blocks from a tablespace that contains a BLOB column.

Both database blocks and chunk information within those blocks (BlockOverhead) impose some amount of overhead for the stored data. BlockOverhead is presently 60 bytes per block and consists of the block header, the BLOB header, and the block checksum. Oracle Content Services configures its BLOBs to have a 32 K chunk size. As an example, assume that the `DB_BLOCK_SIZE` parameter of the database is set to 8192 (8 K). A chunk would require four contiguous blocks and impose an overhead of 240 bytes. The usable space within a chunk would be 32768-240=32528 bytes.

Each document stored in Oracle Content Services will consist of some integral number of chunks. Using the previous example, a 500K document will actually use 512000/32528=15.74=16 chunks. Sixteen chunks will take up 16*32 K = 524288 bytes. The chunking overhead for storing this document would then be 524288-512000=12288

bytes which is 2.4 percent of the original document's size. The chunk size used by Oracle Content Services is set to optimize access times for documents. Note that small documents, less than one chunk, will incur a greater disk space percentage overhead since they must use at least a single chunk.

Another structure required for transactional semantics on BLOBs is the BLOB Index. Each BLOB index entry can point to eight chunks of a specific BLOB object (NumLobPerIndexEntry = 8). Continuing the example, whereas a 500 K document takes up 16 chunks, two index entries would be required for that object. Each entry takes 46 bytes (LobIndexEntryOverhead) and is then stored in an Oracle B*Tree index, which in turn has its own overhead depending upon how fragmented that index becomes.

The last factor affecting BLOB space utilization is the `PCTVERSION` parameter used when creating the BLOB column. For information about how `PCTVERSION` works, please consult *Oracle Database SQL Reference*.

Oracle Content Services uses the default `PCTVERSION` of 20 percent for the BLOB columns it creates. This reduces the possibility of "ORA-22924 snapshot too old" errors occurring in read consistent views. By default, a minimum of a 20 percent increase in chunking space must be added in to the expected disk usage to allow for persistent `PCTVERSION` chunks.

For large systems where disk space is an issue, set the `PCTVERSION` to 1 to reduce disk storage requirements. This may be done at any time in a running system with these SQL commands:

```
alter table odmm_contentstore modify lob (globalindexedblob) (pctversion 1);
alter table odmm_contentstore modify lob (intermediablob) (pctversion 1);
alter table odmm_contentstore modify lob (intermediablob_t) (pctversion 1);
alter table odmm_nonindexedstore modify lob (nonindexedblob2) (pctversion 1);
```

The steps for calculating BLOB tablespace usage are as follows:

1. Calculate the number of chunks a file will take up by figuring the number of blocks per chunk and then subtracting the BlockOverhead (60 bytes) from the chunk size to get the available space per chunk.

2. Divide the file size by the available space per chunk to get the number of chunks.

    ```
    chunks = roundup(FileSize/(ChunkSize-((ChunkSize/BlockSize) * BlockOverhead)))
    ```

    For example, if FileSize = 100,000, ChunkSize = 32768, Blocksize = 8192, and BlockOverhead = 60, then Chunks = roundup (100000 /(32768 - ((32768 / 8192) * 60)))= 4 Chunks.

3. Calculate the amount of disk space for a file by multiplying the number of chunks times the chunk size and then multiplying that result by the `PCTVERSION` factor. Then add the space for NumLobPerIndexEntry (8) and LobIndexEntryOverhead (46 bytes).

    ```
    FileDiskSpaceInBytes = roundup(chunks*ChunkSize*PctversionFactor) +
    roundup(chunks/NumLobPerIndexEntry*LobIndexEntryOverhead)
    ```

    Continuing from the preceding example, chunks = 4, ChunkSize = 32768, PctversionFactor = 1.1, NumLobPerIndexEntry = 8, and LobIndexEntryOverhead = 46, so FileDiskSpaceInBytes = roundup (4 * 32768 * 1.1) + (roundup(4/8) * 46) = 144226 FileDiskSpaceInBytes.

4. Calculate the total disk space used for file storage by summing up the application of these formulas for each file to be stored in the BLOB.

```
TableSpaceUsage = the total of FileDiskSpaceInBytes for all files stored
```

Oracle Content Services creates multiple BLOB columns. The space calculation must be made for each tablespace based upon the amount of content that will qualify for storage in each tablespace.

Oracle Content Services Metadata and Infrastructure

The Oracle Content Services server keeps persistent information about the file system and the contents of that file system in database tables. These tables and their associated structures are stored in the Oracle Content Services Primary tablespace. These structures are required to support both the file system and the various protocols and APIs that make use of that file system. The administration and planning tasks of this space should be very similar to operations on a normal Oracle database installation.

You should plan for approximately 6 K of overhead for each document to be used from this tablespace, or about 2 percent of the overall content. If there is a significant number of custom metadata, such as attributes, subclasses or categories, this overhead should be much larger.

The initial disk space allocated for the primary tablespace is approximately 50 MB for a default installation. Of the 50 MB, 16 MB is actually used at the completion of installation. This includes instantiations for all required tables and indexes and the metadata required for the 700+ files that are loaded into Oracle Content Services as part of the installation. Different tables and indexes within this tablespace will grow at different rates depending on which features of Oracle Content Services get used in a particular installation.

Analyzing Performance Problems

After ensuring that you have run statistics properly and have enough free hard-disk drive to support the tablespaces, you may still have performance problems. If that is the case, you must determine whether the performance bottleneck is caused by the Oracle database, by Oracle Content Services, or by other factors.

To isolate the problem, start by looking at which processes are running and how many resources they are consuming.

1. Run `top` (on UNIX) or Task Manager (on Windows platforms) as you reproduce the problem.

2. Determine whether a Java process, the Oracle shadow process, I/O, or a combination is the bottleneck during that time.

If the Database Is the Bottleneck

If the bottleneck is the Oracle shadow process, use the Statspack utility to determine the SQL statement which is causing the largest number of buffer gets, and run Explain Plan on it.

If you see full table scans, then that may be the cause of the problem; the optimizer may not be choosing an appropriate plan. Report that problem to Oracle Support. Additional work must be done to isolate the problem.

For more information about the Statspack utility and Explain Plan, see *Oracle Database Performance Tuning Guide*.

If the Java Processes Are the Bottleneck

You may have too little memory. For example, if you see any `java.lang.OutOfMemoryError` errors in your log files, increase your Maximum Memory (`Xmx`) settings for that JVM. See "Modifying Node Configurations" on page 6-8 for more information about changing the `Xmx` setting.

If users are complaining about poor response times, and `top` (on UNIX) or its equivalent (for example, Task Manager on Windows platforms), shows a Java process running at 100 percent of a CPU for a minute or longer, then the `Xmx` setting for Java may be too small.

1. Turn on verbose garbage collection (`verbosegc`). To do this, edit the Java Properties of the node configuration. See Table 6–2, " Node Configuration Properties" on page 6-9 for more information.

   In the node log file, output related to garbage collection appears as follows:

   ```
   [Full GC 1476K->1476K(2112K), 0.0549430 secs]
   ```

   A Full GC occurs when the Garbage Collector has exhausted all available memory in the nursery, and has to go into the rest of the heap to reclaim memory.

2. If Full GCs generally occur more than once every 10 minutes (not just after startup), increase your `Xmx` settings for that JVM.

Viewing Cache Statistics and Changing Cache Settings

If the bottleneck is an Oracle Content Services Java process, start by checking the percentage of cache hits for the Oracle Content Services service using the Oracle Collaboration Suite Control, as follows:

1. On the Content Services Home page, click the name of the node you want to manage.

2. Click the name of the service. Typically, this will be `IfsDefaultService`. The Service page appears.

3. Scroll to the Performance section and click **Committed Data Cache Statistics**. The Committed Data Cache Statistics page appears, showing real-time data for Cache Size, Cache Puts, Cache Removes, Cache Purges, Cache Purge Cycles, Cache Lookups, and Cache Hits.

   The goal is to have a high percentage of Cache Hits; as much as 100 percent is possible. If the percentage of Cache Hits for the service is less than 98 percent, the size of the Committed Data Cache may be too small.

   Because the Statistics Agent captures the real-time data, you can also see prior statistics by viewing the node log or application log. You can also configure this agent to write statistics to a document stored in the Oracle Content Services repository. See "Statistics Agent" on page E-13 for information about the Statistics Agent.

4. To change the runtime Cache settings, return to the Service page and click **Committed Data Cache Administration** in the Administration section.

5. Proportionately increase all Cache settings (Cache Capacity, Normal Purge Trigger, Urgent Purge Trigger, Emergency Purge Trigger, Purge Target) and click **Apply**.

   This will increase your memory usage on the Applications tier computer by approximately 3 KB for each object. For example, if you increase cache capacity by 5000, your memory usage will grow by 15 MB.

To make the changes permanent, update the service configuration. See "Modifying Service Configurations" on page 6-16 for more information.

Viewing Connection Pool Statistics and Changing Connection Pool Settings

Check the target and maximum number of connections for the Read-Only and Writable connection pools using the Oracle Collaboration Suite Control, as follows:

1. On the Content Services Home page, click the name of the node you want to manage.

2. Click the name of the service. Typically, this will be `IfsDefaultService`. The Service page appears.

3. Scroll to the Performance section and click **Connection Pool Statistics**.

   You should increase the "Target max. number of connections" and "Absolute max. number of connections" if any of the following is true:

   - "Failed allocation" is greater than zero.

   - "Total Connections" is more than two higher than "Target max number of connections."

   - "Deferred allocations" is greater than 5 percent and "Average time to allocate" is more than 10 milliseconds.

   Because the Statistics Agent captures the real-time data, you can also see prior statistics by viewing the node log or application log. You can also configure this agent to write statistics to a document stored in the Oracle Content Services repository. See "Statistics Agent" on page E-13 for information about the Statistics Agent.

4. To change the runtime Connection Pool settings, return to the Service page and click **Connection Pool Administration** in the Administration section.

5. Increase the "Target max. number of connections" and "Absolute max. number of connections" and click **Apply**.

   Each additional Target or Absolute connection will use approximately 8 MB for each connection on the Applications tier and 1 MB for each connection on the database.

To make the changes permanent, update the service configuration. See "Modifying Service Configurations" on page 6-16 for more information.

A

Troubleshooting Oracle Content Services

This appendix provides information that can help you troubleshoot problems in your Oracle Content Services installation.

Topics include:

- Solving General Administration Problems
- Solving Problems with Oracle Content Services Protocols
- Solving Performance Problems
- Solving Oracle Workflow Problems

Solving General Administration Problems

Table A–1 provides information about how to troubleshoot general Oracle Content Services administration problems.

Table A–1   General Administration Issues

Problem	Probable Cause	Corrective Action
An out-of-memory exception is raised when running Oracle Content Services.	The maximum Java heap size is too low.	Increase the heap size by modifying the -Xmx setting for that node configuration. See "Modifying Node Configurations" on page 6-8 for more information.
Content queries through the Web and Windows return no rows.	Oracle Text indexing of the documents has not occurred.	See "Maintaining the IFS_TEXT Index by Using the Oracle Text PL/SQL Packages" on page C-2 for more information.
The administrator has uploaded files and removed them and doesn't see the space retrieved in the tablespace.	The Initial Time of Day and Activation Period has been set incorrectly for the Content GarbageCollectionAgent.	Use the Oracle Collaboration Suite Control to look at the Initial Time of Day and Activation Period entries for the Content Garbage Collection Agent. Also check the node log and see if the Content Garbage Collection Agent is getting activated at the periodic intervals.
Users fail to be provisioned, or newly provisioned users cannot be added to Libraries.	Required user attributes were not set in Oracle Internet Directory.	The following Oracle Internet Directory user attributes must be non-null for all users: sn, givenName, mail. In addition, all users must have a non-null username. The username is specified by the orclCommonNickname Attribute in the realm's OracleContext. See *Oracle Internet Directory Administrator's Guide* for more information on viewing the orclCommonNicknameAttribute.

Table A–1   (Cont.) General Administrator Issues

Problem	Probable Cause	Corrective Action
Cannot connect to Oracle Content Services.	The Oracle Content Services server may be using DHCP.	If Oracle Content Services is using DHCP, use the server's current IP address to connect rather than the hostname. All Oracle Content Services protocols are affected, including HTTP.
On UNIX systems, the regular node does not respond to `opmnctl stop` or `opmnctl restart` commands.	The node is hanging and must be stopped manually by the root user.	Because regular nodes run as root, nodes that are hanging must be shut down manually by the root user: `kill -9 process-id` To find out whether a node is hanging, use the `opmnctl status` command. Nodes that are hanging will show a status of "Stop." Nodes sometimes hang when the Applications tier computer is low on resources, causing the node startup time to exceed 5 minutes.
Cannot log in to a new Site that was added using the Oracle Collaboration Suite Control.	`OC4J_Content` was not restarted after the Site was added.	You must restart `OC4J_Content` after you add a new Site. Restart `OC4J_Content` from the Content Services Home page in the Oracle Collaboration Suite Control, or use the following `opmnctl` command: `opmnctl restartproc process-type=OC4J_Content`

Solving Problems with Oracle Content Services Protocols

Table A–2 provides information about how to troubleshoot problems with Oracle Content Services protocols.

Table A–2   Protocol Issues

Problem	Probable Cause	Corrective Action
Problems with outbound FTP on UNIX.	You are using `/usr/bin/ftp` on UNIX and the default port number in `/etc/services` is a port other than 21, such as 2100.	Specify the port number explicitly, for example, `"ftp ifs.us.oracle.com 21"`, where "21" is the port assigned.
Cannot log in to FTP.	The FTP password has not been set.	Log in to Oracle Content Services with the user account that cannot access FTP and set an FTP password. You can then log in to FTP using the FTP password.
Multibyte file names for files that were uploaded over FTP appear garbled in the Web interface.	Protocol command character set was not specified for the FTP client.	When uploading files with multibyte file names over FTP, you must specify a protocol command character set to ensure the file names are properly encoded. This step is only required when the install locale has a different default character set than the file name you are specifying over FTP. For example, if you want to upload a file with a Japanese file name over FTP, but the install locale is Spanish, explicitly set the protocol command character set to shift_jis, as follows: `FTP> quote setcommandcharacterset shift_jis` See "Globalization and the Oracle Content Services Protocols" on page G-4 for more information about protocol command character sets.

Solving Performance Problems

Table A–3 provides information about how to troubleshoot problems with Oracle Content Services performance.

Table A–3   Performance Issues

Problem	Probable Cause	Corrective Action
Server is generally slow for read and write activity (case #1).	Server memory is overcommitted. The server is excessively swapping memory blocks to disk.	Run system monitoring tools, such as `vmstat` (UNIX) and look for excessive page swapping to verify the problem. Adjust the following parameters in your database's `init.ora` file: ■ Reduce `processes`. ■ Reduce `open_cursors`. ■ Reduce `db_block_buffers`. Stop unneeded Java VMs or other unneeded processes. You may also need to add memory to your server or, if you are running a single-tier configuration, reconfigure your Oracle Content Services server into a two-tier configuration. For more information on adjusting the parameters in the `init.ora` file, see *Oracle Collaboration Suite Installation Guide for Solaris Operating System*.
Server is generally slow for read and write activity (case #2).	`CTXHX` is using 100 percent of your CPU.	See Appendix C, "Managing the Oracle Text Index".
Server is slow only on read or search activity.	Large volumes of data have been loaded but the CBO statistics weren't updated.	If the Cost-Based Optimizer is using stale statistics data, performance suffers. Run the `analyze.sql` script located in the *ORACLE_HOME*/content/admin/sql directory to refresh the statistics.
Server is slow only on content-based search activity (case #1).	Oracle Text tablespaces are on the same disk as other database files.	Move the Oracle Text tablespaces to other disks. See *Oracle Collaboration Suite Installation Guide for Solaris Operating System* and *Oracle Database Administrator's Guide* for more information on moving tablespaces.
Server is slow only on content-based search activity (case #2).	Oracle Text indexes have become fragmented.	Regularly optimize the Oracle Text Oracle index IFS_TEXT. See "Maintaining the IFS_TEXT Index by Using the Oracle Text PL/SQL Packages" on page C-2 for more information.
Server is slow only on write activity (case #1).	Large amounts of documents are being loaded and the Redo logs are too small.	Add two or more 100 MB or larger Redo logs. See *Oracle Database Administrator's Guide* for more information. In general, Redo logs should be switching every hour or less frequently. See the *ORACLE_HOME*/rdbms/sid/bdump directory for the latest logs which indicate the frequency of Redo log switching.
Server is slow only on write activity (case #2).	Large amounts of documents are being loaded and the Redo logs are on the same disk as the database files.	Place the Redo logs on a separate disk from the database files. See *Oracle Database Administrator's Guide* and *Oracle Database Performance Tuning Guide* for more information. For optimal performance, dedicate one or more disks (and, if possible, a disk controller) exclusively to the Redo logs, and optimize the disks for sequential write activity. For example, on Solaris Operating System (SPARC), you may choose raw partitions or UNIX file systems for the disks. If you choose UNIX file systems on Solaris 2.6 or later, use the "forcedirection" option when mounting the file systems. These options should only be used if the file systems are dedicated exclusively to the Redo logs.

Solving Oracle Workflow Problems

Table A–4 provides information about how to troubleshoot problems with Oracle Workflow.

Table A–4   Oracle Workflow Issues

Problem	Probable Cause	Corrective Action
Users cannot log in to Oracle Workflow.	Users do not understand how Oracle Workflow functions with Oracle Content Services 10*g*.	Ensure that users are aware that Oracle Content Services workflow features are significantly different from workflow features in Oracle Files. In Oracle Content Services, all workflow operations are performed from the Oracle Content Services Web interface. Users cannot access the Oracle Workflow interface to perform workflow-related tasks.
Users are not receiving Oracle Workflow e-mail notifications.	E-mail notifications have not been configured.	Oracle Workflow is not configured to send e-mail notifications by default. You must configure the Oracle Workflow notification mailer. See "Setting Up E-mail Notifications in Oracle Workflow" on page 3-4 for more information.

B

Configuring, Unconfiguring, and Reconfiguring Oracle Content Services

You can configure, unconfigure, and reconfigure Oracle Content Services Applications tiers using the Oracle Collaboration Suite Control.

This appendix contains the following topics:

- Configuring Oracle Content Services
- Unconfiguring Oracle Content Services
- Reconfiguring Oracle Content Services

Configuring Oracle Content Services

If you did not configure Oracle Content Services during Oracle Collaboration Suite installation, or if you want to configure Oracle Content Services on additional Applications tiers, you can use the Oracle Collaboration Suite Control to configure Oracle Content Services on a particular Applications tier.

You can only configure Oracle Content Services on an Applications tier that does not already have Oracle Content Services configured.

To configure Oracle Content Services on a particular Applications tier:

1. Connect to the Oracle Collaboration Suite Control on the Applications tier where you want to configure Oracle Content Services and navigate to the Collaboration Suite Home page.

2. Click **Configure Component**.

3. On the Configure Component: Select Component screen, select **Oracle Content Services** and click **Continue**.

4. Follow the wizard directions to navigate through the remaining configuration pages. For more information about a particular page, click **Help** to access context-sensitive help information.

Unconfiguring Oracle Content Services

You can use the Oracle Collaboration Suite Control to unconfigure Oracle Content Services from a particular Applications tier. This action will remove all traces of the current Oracle Content Services configuration from that Applications tier.

You cannot unconfigure Oracle Content Services from any Applications tier that is also running Oracle Workflow.

Unconfiguring Oracle Content Services can have several consequences for your deployment, depending on your current configuration. For example:

- If the Oracle Internet Directory Service Registry contains Oracle Content Services Web application URLs that point to the Applications tier where you want to unconfigure Oracle Content Services, you must change these URLs once you unconfigure Oracle Content Services. For more information about how to change URLs in the Oracle Internet Directory Service Registry, see *Oracle Collaboration Suite Administrator's Guide*.

- If you have set the `IFS.DOMAIN.APPLICATION.ApplicationHost` domain property to point to the Applications tier where you want to unconfigure Oracle Content Services, you must update this domain property once you unconfigure Oracle Content Services.

- If you are currently running Oracle Content Services agents on the Applications tier where you want to unconfigure Oracle Content Services, you must configure these agents to run elsewhere once you unconfigure Oracle Content Services. To do this, modify the node configuration of a node running on another Applications tier.

- If you currently collect domain and repository metrics on the Applications tier where you want to unconfigure Oracle Content Services, you must configure these metrics elsewhere once you unconfigure Oracle Content Services.

To unconfigure Oracle Content Services on a particular Applications tier:

1. Connect to the Oracle Collaboration Suite Control on the Applications tier where you want to unconfigure Oracle Content Services and navigate to the Content Services Home page.

2. On the Content Services Home page, stop any node processes that are running on this Applications tier. Local nodes display a checkmark in the **Local** column of the Processes table.

3. Click **Unconfigure** in the Administration section. This option does not appear for any Applications tier that is also running Oracle Workflow.

    You cannot unconfigure Oracle Content Services unless all nodes on this Applications tier are stopped.

4. Click **Yes** on the Warning page.

Reconfiguring Oracle Content Services

Once Oracle Content Services is unconfigured on a particular Applications tier, you have the option of configuring Oracle Content Services again on that Applications tier. For example, you might want unconfigure Oracle Content Services on an Applications tier that was configured against a test schema, then configure the Applications tier again against a production schema.

To reconfigure Oracle Content Services, unconfigure Oracle Content Services from a particular Applications tier, then configure Oracle Content Services again, as described in the preceding sections.

C

Managing the Oracle Text Index

Oracle Content Services uses Oracle Text to facilitate full-text search and other advanced capabilities. The speed with which results are returned depends on several factors, including the quality of the Oracle Text index used with Oracle Content Services (`IFS_TEXT`). In addition, the end user's experience of the performance of the search can depend on how much time you let elapse before an in-progress search times out.

Oracle Content Services uses an additional index, the `IFS_LYKE` index, to speed up substring searches on known items. For example, the `IFS_LYKE` index facilitates searches such as "*planning*" or "*.doc." The `IFS_LYKE` index is automatically created and maintained and does not normally require any administration. If you are having problems related to the `IFS_LYKE` index, contact Oracle Support for troubleshooting information.

This appendix provides information about how to maintain the Oracle Text index to ensure optimal Oracle Content Services performance, and includes these topics:

- Oracle Text Tablespaces and Disk Utilization
- Creating and Maintaining the Oracle Text Index
- Modifying the Search Timeout Parameter
- Troubleshooting Oracle Text Problems

Previous names for Oracle Text include Oracle Context and Oracle interMedia Text. Many of the underlying indexes, views, tables, and various PL/SQL packages referred to in much of the administrator and application developer documentation still use Context or interMedia-related nomenclature. For example, the database schema that owns all Oracle Text objects, such as the indexes, is `CTXSYS`.

For detailed information about Oracle Text, visit the Oracle Technology Network (`http://www.oracle.com/technology/products/text/`).

Oracle Text Tablespaces and Disk Utilization

Disk space for Oracle Text is divided among three distinct tablespaces:

- The **Oracle Text Tokens** tablespace contains tables that hold text tokens (separate words) that exist within the various indexed documents. The storage for these text tokens is roughly proportional to the ASCII content of the document. The ASCII content percentage will vary depending on the format of the original document. Text files only have white space as their non-ASCII content and, therefore, will incur a greater per-document percentage overhead. Document types such as Microsoft Word or PowerPoint contain large amounts of data required for formatting that does not qualify as text tokens. The per-document percentage on

these types of documents will, therefore, be lower. On a system with diverse content types, the expected overhead is approximately 8 percent of the sum of the original sizes of the indexed documents.

■ The **Oracle Text Index** tablespace contains the B*tree database index that is used against the text token information stored in the Oracle Text Tokens tablespace. This will grow as a function of the ASCII content just as the Oracle Text Tokens tablespace does. On a system with diverse content types, the expected overhead is approximately 4 percent of the sum of the ASCII content of the documents, or approximately 1 percent of the sum of the total sizes of the indexed documents.

■ The **Oracle Text Other** tablespace contains the tables and indexes required to translate from the Oracle Content Services locator of a document (the Oracle Content Services DocID) to the Oracle Text locator of that same document (the Oracle Text DocID). The expected space utilization for this tablespace is approximately 70 bytes for each indexed document.

Use this information to estimate and plan disk storage needs for your Oracle Content Services instance.

Creating and Maintaining the Oracle Text Index

The configuration process for Oracle Content Services uses the SQL scripts shown in Table C–1 to create and populate the `IFS_TEXT` index.

These scripts are located in the following directory:

`ORACLE_HOME/content/admin/sql`

Table C–1   SQL Scripts for Creating Oracle Text Index

Script	Usage	Login As	Arguments
`CreateContext FunnelProcedure.sql`	Creates the procedure used by USER_DATASTORE.	*content_ services_ schema_owner*	none
`GrantContext ToIFS.sql`	Grants the Oracle Content Services user (schema) privileges on the Oracle Text-specific commands required to maintain the index.	*sys*	*content_services_schema_ name*
`CreateContext Preferences.sql`	Tablespace and other text preferences are created by the Oracle Content Services user.	*content_ services_ schema_owner*	*OracleText_index_ tablespace* *OracleText_keymap_ tablespace* *OracleText_data_ tablespace* *content_services_schema_ name*
`CreateContext Index.sql`	Creates the `IFS_TEXT` index based on the text preferences.	*content_ services_ schema_owner*	none

Maintaining the IFS_TEXT Index by Using the Oracle Text PL/SQL Packages

Two PL/SQL procedures are provided with Oracle Text for maintaining the index. Unlike a regular database index, the Oracle Text index is not dynamically updated with each insert or update of information. Rather, the index must be refreshed (or

synchronized) periodically, using the Oracle Text stored procedure `ctx_ddl.sync_index`.

The `ctx_ddl.sync_index` procedure does not rebuild the entire index, but adds and deletes records that have changed since the last synchronization. Since the changes are incremental, the more frequently this procedure is run, the faster it runs. Over the course of time, however, the index can become fragmented, so a companion procedure (`ctx_ddl.optimize_index`) is provided to optimize the index.

During Oracle Content Services configuration, the procedures to sync and optimize the `IFS_TEXT` index are automatically set up to run periodically in the background, using the `DBMS_JOBS` package of the Oracle database. `DBMS_JOBS` procedures, which are similar to `cron jobs` on UNIX systems, are portable across all platforms on which the Oracle database runs.

When the Oracle Content Services schema is created during configuration, two `DBMS_JOBS` are set up: Sync Job and Optimize Job.

> **Note:** Sync Job and Optimize Job are only created automatically when a new schema is created. If you are upgrading from an existing schema, these jobs will not be created automatically.

Sync Job

Sync Job will periodically call the `'ctx_ddl.sync_index()'` method. This method indexes the documents that were created or updated since the last run. By default, this job is set up to run every 30 minutes.

Optimize Job

Optimize Job will periodically call the `'ctx_ddl.optimize_index()'` method. The goal of this job is to optimize the `IFS_TEXT` index by defragmenting it. By default, this job is run in `FULL` mode, with a maximum of one hour allocated for the optimization task. The job is set up to run every 24 hours, starting at midnight.

Monitoring DBMS_JOBS

`DBMS_JOB` log files can be found under the Oracle home that hosts the Oracle database, in the directory that holds the background process logs. This directory is pointed to by the `BACKGROUND_DUMP_DEST` configuration parameter of the database server. You can recognize the log trace files by their name pattern, `DBNAME_j###_process-id.trc`.

Another database configuration parameter, `JOB_QUEUE_PROCESSES`, determines how many processes are available at any given time to run all background tasks. You may need to increase the value of this parameter if not enough processes are available to run Sync Job and Optimize Job. The default value is 10.

You can also look at the `USER_JOBS` view to see a list of all the jobs set up by the current schema user. The `USER_JOBS` view shows details such as the PL/SQL being run by each job, the last time each job was run, and when the jobs are scheduled to be run next. To see the `USER_JOBS` view, log on to the Oracle Content Services schema using SQL*Plus.

Changing or Removing the Default DBMS_JOBS

Two SQL files are used to set up and clear `DBMS_JOBS` in Oracle Content Services: `SetupContextJobs.sql` and `ClearContextJobs.sql`. These files are located in the following directory:

ORACLE_HOME/content/admin/sql

`SetupContextJobs.sql` is used by the system during configuration to set up Sync Job and Optimize Job. `ClearContextJobs.sql` is provided for you to remove Sync Job and Optimize Job, in case you want to set up your own `DBMS_JOBS`.

See *Oracle Database Administrator's Guide* for information about setting up your own `DBMS_JOBS`. You can also look at Sync Job and Optimize Job as examples.

Manually Synchronizing and Optimizing IFS_TEXT

To synchronize an existing `IFS_TEXT` index, use SQL*Plus to connect as the Oracle Content Services schema user, and enter:

```
exec ctx_ddl.sync_index('ifs_text');
```

You can also run the `SyncContextIndex.sql` script from the *ORACLE_HOME*/content/admin/sql directory. In addition to synchronizing the `IFS_TEXT` index, this script will print extra log information to the console.

To optimize an existing `IFS_TEXT` index, use SQL*Plus to connect as the Oracle Content Services schema user, and enter:

```
exec ctx_ddl.optimize_index('ifs_text', 'FAST');
```

or

```
exec ctx_ddl.optimize_index('ifs_text', 'FULL', maxtime);
```

Monitoring Oracle Text Indexing of Oracle Content Services Documents

Oracle Content Services provides some utility-type SQL scripts to facilitate interaction with Oracle Text (see Table C–2). Read each `.sql` file for additional usage details. All scripts are available in:

ORACLE_HOME/content/admin/sql

Table C–2   SQL Scripts for Monitoring Oracle Text Indexing

Script	Usage
`ViewContextErrors.sql`	Script that decodes the operating system specific errors that were generated during Oracle Text indexing.
`SyncContextIndex.sql`	Script that synchronizes the Oracle Text index and enables you to monitor the Oracle Text synchronization process. Uncomment the first two lines in the script, which includes call to `ctx_output.add_event()`, to monitor on a rowid by rowid basis.
`ViewDocumentByRowID.sql`	Script that enables you to view additional information about a document that is indexed by Oracle Text. Use the `docid` from the Oracle Text log with this script.

Indexing Non-Standard Content Types

Oracle Content Services does not by default index every file that is moved into the system, but you can configure it to index any type of content you choose. To do this, designate the MIME type as "Indexed" on the New Format page (or Edit Format page, if the format already exists) in the Oracle Collaboration Suite Control. The MIME type of a document is determined by its extension.

For example, you may want to index all your C# (`.cs`) source code files. To do so:

1. Use the Oracle Collaboration Suite Control to add the `.cs` MIME type and designate it as **Indexed** on the New Format page.

2. Upload the files into the repository.

3. Sync the index using the procedure discussed in "Manually Synchronizing and Optimizing IFS_TEXT" on page C-4.

Modifying the Search Timeout Parameter

The `IFS.SERVICE.SESSION.DefaultSearchTimeoutPeriod` service configuration parameter specifies the timeout period for a running search that has not yet returned results. The default setting for this parameter (in the default service configurations) is 60 seconds. If you increase this value, users will wait longer than a minute before a search times out; decrease the value to shorten the time in which a running search will time out.

See "Modifying Service Configurations" on page 6-16 for information about how to modify service configuration parameters.

Troubleshooting Oracle Text Problems

This section provides Oracle Text troubleshooting information.

Table C–3   Troubleshooting Oracle Text Problems

Problem	Probable Cause	Corrective Action
Cannot search on contents of any documents.	Documents have not been indexed.	Start the database instance and make sure that the Oracle Text indexing jobs are running. See "Creating and Maintaining the Oracle Text Index" on page C-2 for more information.
Server is slow only on content-based search activity (case #1).	Oracle Text tablespaces are on the same disk as other database files.	Move the Oracle Text tablespaces to other disks. See *Oracle Database Administrator's Guide* for more information on moving tablespaces.
Server is slow only on content-based search activity (case #2).	Oracle Text indexes have become fragmented.	Regularly optimize the Oracle Text index `GLOBALINDEXEDBLOB_I`. See "Manually Synchronizing and Optimizing IFS_TEXT" on page C-4 for more information.
Searching on the contents of new documents stops working.	A recent document has caused Oracle Text server to fail.	1. Log in to SQL*Plus as *content_services_ schema*/*schema_password*, and enter the following command: `select count(*) from ctx_user_pending;` 2. If there are any rows in that view and the rows are not changing, then a recent document has caused Oracle Text to stop indexing. To determine which Oracle Content Services documents these rows refer to, see the problem "Oracle Content Services rows show up in the Oracle Text view `ctx_user_index_errors`." 3. Check again to see if there are any rows in ctx_user_ pending and, if so, that the rows are changing. 4. If this does not resolve the issue, contact your Oracle Support Representative for further assistance.

Table C–3   (Cont.) Troubleshooting Oracle Text Problems

Problem	Probable Cause	Corrective Action

Oracle Content Services rows show up in the Oracle Text view `ctx_user_index_errors`.	Oracle Content Services documents are corrupt or do not have the correct extension.	**1.** Determine which Oracle Content Services document is being referred to, based on the `err_texkey` from `ctx_user_index_errors`.
		
		`sqlplus content_services_schema/schema_password`
		
		`select du.uniquename, vd.name, co.contentsize,`
		`cs.id, vd.id`
		`from odmv_document vd, odm_contentobject co,`
		`odmm_contentstore cs, odm_document od,`
		`odm_directoryuser du`
		`where vd.id = od.id`
		`and od.contentobject = co.id`
		`and co.content = cs.id`
		`and du.id = vd.owner`
		`and cs.id in`
		`(`
		`select distinct od.id`
		`from ctx_user_index_errors cp, odmm_`
		`contentstore od`
		`where od.rowid = `**`err_textkey`**
		`)`
		`order by cs.id;`
		
		2. Log in to Oracle Content Services as a user with the Content Administrator role (such as the `orcladmin` user) and switch to Administration Mode.
		
		3. Search on the document name *vd.id*, where *vd.id* is the `vd.id` returned from the select statement provided in step 1.
		
		4. Check document attributes, such as document size, to make sure that it is the correct document.
		
		5. Examine this document, looking for these problems:
		Is the file damaged in any way?
		Is the file name extension correct for this document?
		Is the character set of the document correct?
		
		6. If no obvious problems are found, send the document to your Oracle Support Representative for further diagnosis.

Oracle Content Services rows never get processed and never leave the Oracle Text view `ctx_user_pending`.	Oracle Content Services documents are corrupt or do not have the correct extension.	**1.** Follow the steps in "Oracle Content Services rows show up in the Oracle Text view `ctx_user_index_errors`." to determine which Oracle Content Services documents are being referred to, substituting `ctx_user_pending` for `ctx_user_index_errors` and `pnd_rowid` for `err_textkey`. **2.** Examine this document, looking for these problems: Is the file damaged in any way? Is the file name extension correct for this document? Is the character set of the document correct? **3.** If no obvious problems are found, send the document to your Oracle Support Representative for further diagnosis. **4.** Delete the document from Oracle Content Services.

D
Service Configuration Properties

An Oracle Content Services service comprises a Java runtime environment for the protocol servers and agents that it supports. A service also manages connections to the database through JDBC. There are three default service configuration objects you can use to create new services on nodes:

- SmallServiceConfiguration
- MediumServiceConfiguration
- LargeServiceConfiguration

The differences among the three configuration templates are in the number of connections and sessions supported.

This appendix lists the service configuration properties and their default values.

> **Note:** Spaces can be included in service configuration properties. For this reason, do not use spaces to separate alternate values of a property. You must use a comma as a delimiter.

Table D–1   `IFS.SERVICE.*` Properties

Property	Description and Usage Note	Default	Required?
IFS.SERVICE. DefaultCharacterSet	Default character set, in IANA format, for Oracle Content Services Subscribers. Can be overridden on a per-session basis. Default character set for each user is determined by the user's Primary User Profile.	Character set of the database instance ISO-8859-1	No
IFS.SERVICE. DefaultLanguage	Default language, as an Oracle language name, for Oracle Content Services Subscribers. Can be overridden on a per-session basis. Default language for each user is determined by the user's Primary User Profile.	Based on configuration.	No
IFS.SERVICE. MaximumConcurrentSessions	Maximum number of sessions the service can support concurrently. Default of 0 means unlimited.	0	No

Table D–1   (Cont.) `IFS.SERVICE.*` Properties

Property	Description and Usage Note	Default	Required?
`IFS.SERVICE.` `CheckForOrphanSessionsPeriod`	Number of seconds between checks for orphan sessions. (Active sessions generate heartbeats. An orphan session is one that no longer generates session heartbeats. When the service detects an orphan session, it disconnects the session and releases the session's resources.) Default is 60 seconds between checks. Set to 0 to disable the checking.	60	No
`IFS.SERVICE.` `SessionOperationTimeoutPeriod`	Number of seconds after which certain Oracle Content Services API calls are terminated, even if incomplete. If an operation times out in this manner, it is terminated, its transaction is aborted, and an exception is thrown. The session performing the operation remains valid. Set to 0 to disable session operation timeout.	300	No
`IFS.SERVICE.` `OrphanSessionTimeoutPeriod`	Number of seconds after which a session that no longer generates a heartbeat becomes an orphan. Set to 0 to disable orphan session timeout.	600	No
`IFS.SERVICE.` `ServiceKeepAliveEventPeriod`	Seconds between service heartbeats. The Service Watchdog Agent detects services that cease to have a heartbeat, and cleans up information associated with the failed service in the Oracle Content Services repository. Set to 0 to disable heartbeat.	60	No
`IFS.SERVICE.` `PollForEventsFromOtherServices` `Period`	Seconds between checks for incoming events from other services. Set to 0 to disable inter-service event polling.	2	No
`IFS.SERVICE.` `TransportEventsToOtherServices` `Period`	Maximum length of time (seconds) that outgoing events are buffered before sending. Set to 0 to disable outgoing event buffer.	2	No
`IFS.SERVICE.ACLCACHE.` `Size`	The absolute maximum size of the service's ACL cache, in ACLs. The service ACL cache holds resolved access levels of ACLs.	750 - Small 3000 - Medium 7500 - Large	No
`IFS.SERVICE.ACLCACHE.` `NormalTrigger`	The cache size, in ACLs, at which the service ACL cache schedules a low-priority purge of data that has not been recently used.	500 - Small 2000 - Medium 5000 - Large	No
`IFS.SERVICE.ACLCACHE.` `UrgentTrigger`	The cache size, in ACLs, at which the service ACL cache schedules a high-priority purge of data that has not been recently used. Must be greater than `IFS.SERVICE.` `ACLCACHE.NormalTrigger`.	550 - Small 2200 - Medium 5500 - Large	No
`IFS.SERVICE.ACLCACHE.` `EmergencyTrigger`	The cache size, in ACLs, at which the service ACL cache performs an immediate purge of data that has not been recently used. Must be greater than `IFS.SERVICE.ACLCACHE.` `UrgentTrigger` but less than `IFS.SERVICE.ACLCACHE.Size`.	600 - Small 2400 - Medium 6000 - Large	No
`IFS.SERVICE.ACLCACHE.` `PurgeTarget`	The target cache size, in ACLs, upon completion of a purge cycle. Must be less than `IFS.SERVICE.ACLCACHE.` `NormalTrigger`.	400 - Small 1600 - Medium 4000 - Large	No

Table D–1   (Cont.) `IFS.SERVICE.*` **Properties**

Property	Description and Usage Note	Default	Required?
`IFS.SERVICE.CONNECTIONPOOL.` `READONLY.MinimumSize`	The initial number of database connections in the read-only connection pool.	2 - Small 4 - Medium 6 - Large	No

`IFS.SERVICE.CONNECTIONPOOL.`
`READONLY.TargetSize`
	The target maximum number of database connections in the read-only connection pool. Must be greater than or equal to `IFS.SERVICE.`
	`CONNECTIONPOOL.READONLY.`
	`MinimumSize.`
		10 - Small
		20 - Medium
		30 - Large
			No

`IFS.SERVICE.CONNECTIONPOOL.`
`READONLY.MaximumSize`
	The absolute maximum number of database connections in the read-only connection pool. Must be greater than or equal to `IFS.SERVICE.`
	`CONNECTIONPOOL.READONLY.`
	`TargetSize.`
		20 - Small
		40 - Medium
		60 - Large
			No

`IFS.SERVICE.CONNECTIONPOOL.` `READONLY.TargetSizeTimeout`	The maximum period, in milliseconds, that the service will postpone a connection allocation request when there are no unallocated connections, if the current size of the read-only connection pool is greater than or equal to its target size but less than the maximum size. If a database connection does not become available within this period, a new connection will be created.	1000	No
`IFS.SERVICE.CONNECTIONPOOL.` `READONLY.MaximumSizeTimeout`	The maximum period, in milliseconds, that a service will postpone a connection allocation request when there are no unallocated connections, if the current size of the read-only connection pool is equal to its maximum size. If a database connection does not become available within this period, the allocation request will fail and an exception will be thrown.	10000	No
`IFS.SERVICE.CONNECTIONPOOL.` `WRITEABLE.MinimumSize`	The initial number of database connections in the writeable connection pool.	2 - Small 4 - Medium 6 - Large	No

`IFS.SERVICE.CONNECTIONPOOL.`
`WRITEABLE.TargetSize`
	The target maximum number of database connections in the writeable connection pool. Must be greater than or equal to `IFS.SERVICE.`
	`CONNECTIONPOOL.WRITEABLE.`
	`MinimumSize.`
		10 - Small
		20 - Medium
		30 - Large
			No

`IFS.SERVICE.CONNECTIONPOOL.`
`WRITEABLE.MaximumSize`
	The absolute maximum number of database connections in the writeable connection pool. Must be greater than or equal to `IFS.SERVICE.`
	`CONNECTIONPOOL.WRITEABLE.`
	`TargetSize.`
		20 - Small
		40 - Medium
		60 - Large
			No

`IFS.SERVICE.CONNECTIONPOOL.` `WRITEABLE.TargetSizeTimeout`	The maximum period, in milliseconds, that the service will postpone a connection allocation request when there are no unallocated connections, if the current size of the writeable connection pool is greater than or equal to its target size but less than the maximum size. If a database connection does not become available within this period, a new connection will be created.	1000	No

Table D–1   (Cont.) `IFS.SERVICE.*` Properties

Property	Description and Usage Note	Default	Required?
`IFS.SERVICE.CONNECTIONPOOL.` `WRITEABLE.MaximumSizeTimeout`	The maximum period, in milliseconds, that a service will postpone a connection allocation request when there are no unallocated connections, if the current size of the writeable connection pool is equal to its maximum size. If a database connection does not become available within this period, the allocation request will fail and an exception will be thrown.	10000	No
`IFS.SERVICE.` `CaseSensitiveAuthentication`	Whether, in performing Cleartext authentication, passwords are case sensitive.	false	No

`IFS.SERVICE.CREDENTIALMANAGER.`
`CredentialNameTokenizer`
	The fully qualified classname of the `CredentialNameTokenizer`.	`oracle.ifs.`
		`common.`
		`IfsCredential`
		`NameTokenizer`
			No

`IFS.SERVICE.CREDENTIALMANAGER.*`	The configuration of credential managers for the service. Do not edit these properties directly, except for `IFS.SERVICE.` `CREDENTIALMANAGER.Oid.OidSsl` and `IFS.SERVICE.` `CREDENTIALMANAGER.Oid.OidUrl`.	N/A	N/A
`IFS.SERVICE.CREDENTIALMANAGER.` `Oid.OidSsl`	Whether Oracle Content Services connects to Oracle Internet Directory using SSL.	Set during configuration	No
`IFS.SERVICE.CREDENTIALMANAGER.` `Oid.OidUrl`	The URL for Oracle Internet Directory.	Set during configuration	No
`IFS.SERVICE.DATACACHE.` `Size`	The absolute maximum size of the service's data cache, in LIBRARYOBJECTs. The service data cache holds the attribute values of recently used LIBRARYOBJECTs.	7500 - Small 30000 - Medium 75000 - Large	No
`IFS.SERVICE.DATACACHE.` `NormalTrigger`	The cache size, in LIBRARYOBJECTs, at which the service data cache schedules a low-priority purge of data that has not been recently used.	5000 - Small 20000 - Medium 50000 - Large	No
`IFS.SERVICE.DATACACHE.` `UrgentTrigger`	The cache size, in LIBRARYOBJECTs, at which the service data cache schedules a high-priority purge of data that has not been recently used. Must be greater than `IFS.SERVICE.` `DATACACHE.NormalTrigger`.	5500 - Small 22000 - Medium 55000 - Large	No
`IFS.SERVICE.DATACACHE.` `EmergencyTrigger`	The cache size, in LIBRARYOBJECTs, at which the service data cache performs an immediate purge of data that has not been recently used. Must be greater than `IFS.SERVICE.DATACACHE.` `UrgentTrigger` but less than `IFS.` `SERVICE.DATACACHE.Size`.	6000 - Small 24000 - Medium 60000 - Large	No
`IFS.SERVICE.DATACACHE.` `PurgeTarget`	The target cache size, in LIBRARYOBJECTs, upon completion of a purge cycle. Must be less than `IFS.SERVICE.DATACACHE.Normal` `Trigger`.	4000 - Small 16000 - Medium 40000 - Large	No
`IFS.SERVICE.HSM.` `PrimaryDevice`	This property is not used.	none	No

Table D–1 (Cont.) `IFS.SERVICE.*` Properties

Property	Description and Usage Note	Default	Required?
`IFS.SERVICE.JDBC.DefaultRowPrefetch`	Number of result set rows prefetched. If set to null or 0, prefetches 10 rows. Do not change.	0	No
`IFS.SERVICE.JDBC.DriverType`	Specifies the JDBC driver type. Do not change.	oci8	No
`IFS.SERVICE.JDBC.TracingEnabled`	Prints JDBC debugging information to the standard output. Do not change.	false	No
`IFS.SERVICE.SESSION.TransactionStackSize`	The maximum number of nested transactions by the session.	100	No
`IFS.SERVICE.SESSION.EventPoller`	The event poller used by a session to generate the session's "heartbeat." Must be either `oracle.ifs.beans.LibrarySessionEventPollerThreadPerProcess` (recommended) or `oracle.ifs.beans.LibrarySessionEventPollerThreadPerSession`.	`oracle.ifs.beans.LibrarySessionEventPollerThreadPerProcess`	No
`IFS.SERVICE.SESSION.EventPollerPeriod`	The period, in milliseconds, of the session's "heartbeat." In addition to indicating the session's health to the service, the heartbeat allows an idle session to process events generated by other sessions or services.	2500	No
`IFS.SERVICE.SESSION.DefaultSearchTimeoutPeriod`	The period, in seconds, after which a search API call is terminated, even if incomplete. If a search times out in this manner, it is terminated and an exception is thrown. The session performing the search remains valid. A value of 0 disables search time-outs.	60	No
`IFS.SERVICE.SESSION.BEANSOBJECTCACHE.Size`	The target maximum size of the "bean-side" session object cache, in LIBRARYOBJECTs. The bean-side session object cache holds instances of `oracle.ifs.beans.LibraryObject`. If `IFS.SERVICE.SESSION.SERVEROBJECTCACHE.IsUnbounded` is false, this value is ignored and implicitly equal to `IFS.SERVICE.SESSION.SERVEROBJECTCACHE.Size`.	750	No
`IFS.SERVICE.SESSION.FOLDERPATHCACHE.Enabled`	Whether the session caches the resolution of folder paths.	true	No
`IFS.SERVICE.SESSION.FOLDERPATHCACHE.Size`	The absolute maximum size of the session's folder path cache, in cached folder paths.	150	No
`IFS.SERVICE.SESSION.FOLDERPATHCACHE.NormalTrigger`	The cache size, in folder paths, at which the session's folder path cache schedules a low-priority purge of data that has not been recently used.	100	No
`IFS.SERVICE.SESSION.FOLDERPATHCACHE.UrgentTrigger`	The cache size, in folder paths, at which the session's folder path cache schedules a high-priority purge of data that has not been recently used. Must be greater than `IFS.SERVICE.SESSION.FOLDERPATHCACHE.NormalTrigger` and less than `IFS.SERVICE.SESSION.FOLDERPATHCACHE.Size`.	110	No

Table D–1 (Cont.) `IFS.SERVICE.*` Properties

Property	Description and Usage Note	Default	Required?
`IFS.SERVICE.SESSION.` `FOLDERPATHCACHE.PurgeTarget`	The target cache size, in folder paths, upon completion of a purge cycle. Must be less than `IFS.SERVICE.` `SESSION.FOLDERPATHCACHE.` `NormalTrigger`.	80	No
`IFS.SERVICE.SESSION.` `SERVEROBJECTCACHE.Size`	The absolute maximum size of the "server-side" session object cache, in LIBRARYOBJECTs. The server-side session object cache holds instances of `oracle.ifs.server.S_Library` `Object` and `oracle.ifs.beans.` `LibraryObject`.	750	No
`IFS.SERVICE.SESSION.` `SERVEROBJECTCACHE.NormalTrigger`	The cache size, in LIBRARYOBJECTs, at which the session data caches schedule a low-priority purge of data that has not been recently used.	500	No
`IFS.SERVICE.SESSION.` `SERVEROBJECTCACHE.UrgentTrigger`	The cache size, in LIBRARYOBJECTs, at which the session data caches schedule a high-priority purge of data that has not been recently used. Must be greater than `IFS.SERVICE.` `SESSION.SERVEROBJECTCACHE.` `NormalTrigger`.	550	No

`IFS.SERVICE.SESSION.`
`SERVEROBJECTCACHE.EmergencyTrigger`
	The cache size, in LIBRARYOBJECTs, at which the session data caches perform an immediate purge of data that has not been recently used. Must be greater than `IFS.SERVICE.`
	`SESSION.SERVEROBJECTCACHE.`
	`UrgentTrigger` but less than `IFS.`
	`SERVICE.SESSION.SERVER`
	`OBJECTCACHE.Size`.
		600	No

`IFS.SERVICE.SESSION.` `SERVEROBJECTCACHE.PurgeTarget`	The target cache size, in LIBRARYOBJECTs, upon completion of a purge cycle. Must be less than `IFS.SERVICE.SESSION.SERVER` `OBJECTCACHE.NormalTrigger`.	400	No
`IFS.SERVICE.TRACING.` `ChannelCount`	The number of trace logger channels. Oracle reserves channels 0 to `TraceLogger.LAST_RESERVED_` `CHANNEL`. Refer to the Javadoc for class `oracle.ifs.common.Trace` `Logger` for a list of Oracle-defined channels.	50	No
`IFS.SERVICE.TRACING.` `ServiceTraceType`	The destination of trace data generated by a service. Must be `TRACETYPE_` `NONE` (disabled) or `TRACETYPE_LOCAL` (writes to a file on the local file system).	`TRACETYPE_NONE`	No
`IFS.SERVICE.TRACING.` `ServerSessionTraceType`	The destination of trace data generated by a server-side session. Must be `TRACETYPE_NONE` (disabled), `TRACETYPE_LOCAL` (writes to a file on the local file system), `TRACETYPE_` `REMOTE` (routes to the service's trace logger), or `TRACETYPE_BOTH` (writes to a file on the local file system and routes to the service's trace logger).	`TRACETYPE_NONE`	No

Table D–1 (Cont.) `IFS.SERVICE.*` Properties

Property	Description and Usage Note	Default	Required?
`IFS.SERVICE.TRACING.` `BeansSessionTraceType`	The destination of trace data generated by a bean-side session. Must be `TRACETYPE_NONE` (disabled), `TRACETYPE_LOCAL` (writes to a file on the local file system), `TRACETYPE_REMOTE` (routes to the server-side session's trace logger), or `TRACETYPE_BOTH` (writes to a file on the local file system and routes to the server-side session's trace logger).	`TRACETYPE_NONE`	No
`IFS.SERVICE.TRACING.` `TraceLevelChanneln`	Tracing verbosity for trace channel n. Refer to the Javadoc for class `oracle.ifs.common.Trace Logger` for a list of Oracle-defined trace levels.	none	No
`IFS.SERVICE.TRACING.` `DefaultTraceLevel`	Default tracing verbosity for all trace channels. See `oracle.ifs.common.TraceLogger` Javadoc for a list of trace levels.	none	No

E

Server Configuration Properties

Each Oracle Content Services node can support multiple **servers**. These servers can be either protocol servers or agents:

- The protocol servers, such as the FTP server, listen for requests from clients on a specific Internet Protocol (IP) port and respond to requests according to the rules of the protocol specification.

- Agents perform operations periodically (time-based) or in response to events generated by other Oracle Content Services servers or processes (event-based). Although different agents can run in different nodes, each agent must run only on a single node. Typically, most of the shipped agents must be run to ensure a stable system.

Each server is based on a particular **server configuration** that holds the default values used when the server is started for an Oracle Content Services node. For example, a server configuration for the Oracle Content Services FTP server contains properties that specify the FTP port number, whether anonymous FTP connections are allowed, and the connection time-out period.

The properties listed in this appendix are all required for an agent or protocol server to run properly. When you install and configure an Oracle Content Services instance, the properties are configured using the default values shown in the following tables.

This appendix provides information about the following topics:

- Shared Properties
- Cleanup Agent
- Content Agent
- Content Garbage Collection Agent
- Dangling Object AV Cleanup Agent
- Event Exchanger Agent
- Expiration Agent
- Folder Index Agent
- Folder Index Analyzer Agent
- FTP Server
- FTPS Server - Explicit
- FTPS Server - Implicit
- Garbage Collection Agent

- HTTP Server

- Inbound Queue Listener Agent

- Lock Expiration Agent

- Most Recent Doc Agent

- Oracle Internet Directory Credential Manager Agent

- Quota Agent

- Read Document Agent

- Reassign Quota Agent

- Records Management HTTP Server

- Records Management Lifecycle Agent

- Service Warmup Agent

- Service Watchdog Agent

- Statistics Agent

- Version Purge Agent

- Virus Repair Agent

Shared Properties

Table E–1 defines server configuration properties that are shared between more than one server or agent.

Table E–1   Shared Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.Class`	The class used to instantiate the server.	Default varies from server to server.
`IFS.SERVER.SESSION.LOCALE.Country`	Default country to be used in session localizer.	US
`IFS.SERVER.SESSION.LOCALE.Language`	Default language to be used in session localizer.	en
`IFS.SERVER.SESSION.User`	User name for server session. Must be a user with Oracle Content Services administrator privileges.	system
`IFS.SERVER.TIMER.ActivationPeriod`	Time interval to when the agent runs again. Specified as a number followed by a time unit, such as "4h" to indicate a four-hour interval. Time units are: h=hours, m=minutes, s=seconds	Default varies from server to server.
`IFS.SERVER.TIMER.InitialDelay`	The delay before the first time interval, relative to when the server is started. This property is ignored if a value is specified for `IFS.SERVER.TIMER.InitialTimeOfDay`.	Default varies from server to server.
`IFS.SERVER.TIMER.InitialTimeOfDay`	The first timer event. Set time based on a 24-hour clock.	00:15:00

Cleanup Agent

This agent performs a variety of "clean-up" tasks on a periodic basis, such as deleting content in the Archive that has passed the expiration period set by the Content Administrator. Each of these tasks has a corresponding property called an Activation Multiplier that controls how often the task is performed.

The Activation Multiplier works in conjunction with the `IFS.SERVER.TIMER.ActivationPeriod` property. For example, if `IFS.SERVER.TIMER.ActivationPeriod` is set to 1h, and `ECM.AGENT.CLEANUPAGENT.EMPTYARCHIVE.ActivationMultiplier` is set to 8, then the Cleanup Agent will delete expired content in the Archive every 8 hours.

The descriptions and notes provided in the following table assume an ActivationPeriod of one hour (1h), which is the default for this agent.

The default name for this server configuration is:

```
CleanupAgentConfiguration
```

Table E–2   Cleanup Agent Configuration Properties

Property	Description and Usage Notes	Default
`ECM.AGENT.CLEANUPAGENT.ARCHIVETOBFILE.ActivationMultiplier`	Controls how often content in the Archive is moved to BFILE. This action is only performed when BFILE archiving has been enabled; see "Setting Up Data Archiving" on page 2-6 for more information.	24
`ECM.AGENT.CLEANUPAGENT.BaseTimeOfDay`	The time of day from which all intervals for this agent are based. This property determines the time at which tasks will be executed that perform only once every 24 hours, and the relative time for tasks performed only a few times in a 24-hour period. For example, if a task has an ActivationMultiplier of 8 and the BaseTimeOfDay is set to 20:15:00, that task will execute at 20:15, 4:15, and 12:15.	20:15:00
`ECM.AGENT.CLEANUPAGENT.CALCULATEARCHIVEQUOTA.ActivationMultiplier`	Controls how often the quota consumed by files in each Site's Archive is recalculated.	4
`ECM.AGENT.CLEANUPAGENT.CALCULATEDOMAINQUOTA.ActivationMultiplier`	Controls how often the total quota consumed by all files residing in Libraries for each Site is recalculated.	1
`ECM.AGENT.CLEANUPAGENT.CLEARLINKREFERENCE.ActivationMultiplier`	Controls how often links that reference inaccessible items have their internal representation optimized.	12
`ECM.AGENT.CLEANUPAGENT.DELETEDOMAINADMINUSER.ActivationMultiplier`	Controls how often the administration mode representation for users is removed from the system, for users whose application administration access has been disabled for a sufficient period of time. This time period is controlled by the `ECM.AGENT.CLEANUPAGENT.DELETEDOMAINADMINUSER.InactivityPeriod` property.	12
`ECM.AGENT.CLEANUPAGENT.DELETEDOMAINADMINUSER.InactivityPeriod`	The amount of time the administration representation for a user remains after the user loses all application administration rights, before that user is removed from the system.	24h
`ECM.AGENT.CLEANUPAGENT.DELETEGRANT.ActivationMultiplier`	Controls how often security configurations are optimized to reflect users or groups that have been removed from the system.	24
`ECM.AGENT.CLEANUPAGENT.DELETETRASHACL.ActivationMultiplier`	Controls how often unused security configurations for items in Trash folders are removed from the system.	24
`ECM.AGENT.CLEANUPAGENT.DELETEWORKFLOWUSER.ActivationMultiplier`	Controls how often workflow components are optimized with respect to users that have been removed from the system.	12

Table E–2   (Cont.) Cleanup Agent Configuration Properties

Property	Description and Usage Notes	Default
`ECM.AGENT.CLEANUPAGENT.DISABLEDOMAINADMINUSER.ActivationMultiplier`	Controls how often verification is performed for administrative users to ensure that the users still have administration mode access. For users that have lost all administration mode access, the administration representation of the user is disabled, and remains disabled until the user is again granted application administration access, or is removed from the system.	1
`ECM.AGENT.CLEANUPAGENT.EMPTYARCHIVE.ActivationMultiplier`	Controls how often content that has passed the expiration period set by the Content Administrator is deleted from the Archive.	24
`ECM.AGENT.CLEANUPAGENT.EMPTYTRASH.ActivationMultiplier`	Controls how often Trash folders that have been configured for "auto empty" are emptied.	4
`ECM.AGENT.CLEANUPAGENT.ISSUEDOMAINQUOTAWARNING.ActivationMultiplier`	Controls how often e-mail notification warnings are sent when the quota consumed by a Site is at or near the allocated quota limit in effect for that Site. E-mail notifications are sent to any users of that Site with the Quota Administrator role, as well as to the administrator e-mail address specified in the `IFS.DOMAIN.EMAIL.AdministratorAddress` domain property.	12
`ECM.AGENT.CLEANUPAGENT.ISSUEDOMAINQUOTAWARNING.ConsumptionPercentageThreshhold`	Specifies how close the consumed quota for a Site needs to be to the allocation limit for a Site quota warning to be issued. The value is specified as a percentage of the Site quota allocation.	95
`ECM.AGENT.CLEANUPAGENT.ISSUEDOMAINQUOTAWARNING.IncludeArchiveConsumption`	Specifies whether documents in a Site's Archive are considered to count against the consumed quota for a Site.	true
`ECM.AGENT.CLEANUPAGENT.PURGEDELETEDWORKSPACE.ActivationMultiplier`	Controls how often Libraries that have been deleted and that are unreferenced in the Archive are permanently removed from the system.	24

Content Agent

This agent controls the management of document content when BFILE aging has been set up. Once BFILE aging has been enabled, the Content Agent moves content to BFILE if it has not been accessed after the retention period. See "Managing Storage Options" on page 2-4 for information on setting up BFILE aging.

The default name for this server configuration is:

`ContentAgentConfiguration`

Table E–3   Content Agent Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.AGENT.CONTENTAGENT.ContentToBfileManager`	The fully qualified classname of the `ContentToBfileManager` interface.	`oracle.ifs.management.servers.content.IfsContentToBfileManager`
`IFS.SERVER.AGENT.CONTENTAGENT.MaxFilesPerFolder`	For every relative path created, the maximum number of files that can be moved to a folder.	500
`IFS.SERVER.AGENT.CONTENTAGENT.MaxFoldersPerActivationPeriod`	The maximum number of folders created when the Content Agent runs.	20
`IFS.SERVER.AGENT.CONTENTAGENT.RetentionPeriod`	How long a file may be kept in the database as a LOB if no one accesses it.	30d

Content Garbage Collection Agent

File attributes and content are stored separately. For performance reasons, the content of a document is not deleted when the document is deleted. The Content Garbage Collection Agent deletes the unreferenced content. Like many agents, this agent runs at a specific time as specified in the `IFS.SERVER.TIMER.InitialTimeOfDay` and `IFS.SERVER.TIMER.ActivationPeriod` properties.

The default name for this server configuration is:

`ContentGarbageCollectionAgentConfiguration`

Table E–4   Content Garbage Collection Agent Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.AGENT.CONTENTGARBAGE COLLECTIONAGENT.FilteredContent RemovalPeriod`	Amount of time filtered content is kept in the system before it is deleted. HTML-generated rendition of content is an example of filtered content. Unit of measure is seconds.	3600
`IFS.SERVER.AGENT.CONTENTGARBAGE COLLECTIONAGENT.FreedContentBatch Size`	The maximum number of unreferenced ContentObjects that are freed in a single iteration of this agent.	10000

Dangling Object AV Cleanup Agent

Similar to the Garbage Collection Agent, the Dangling Object AV Cleanup Agent removes orphaned object type references and identifies all invalid object references, such as references to objects that no longer exist, and sets these references to null for array type attributes and zero for scalar attributes. For example, this agent cleans up the owner attribute of a document pointing to directory object which was deleted and is now invalid.

The default name for this server configuration is:

`DanglingObjectAVCleanupAgentConfiguration`

Table E–5   Dangling Object AV Cleanup Agent Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.AGENTS.DANGLING OBJECTAVCLEANUPAGENT. ExcludedAttributeList`	A list of attributes for which invalid references to Library Objects are not cleaned up. Do not delete the default values, so the Garbage Collection Agent can handle deleted users correctly. Add additional attributes as needed.	AUDITENTRY PUBLICOBJECT:OWNER PUBLICOBJECT:DELETOR PUBLICOBJECT:CREATOR PUBLICOBJECT:LASTMODIFIER VERSIONSERIES:RESERVOR

Event Exchanger Agent

This agent periodically purges expired events from the event queue.

The default name for this server configuration is:

`EventExchangerAgentConfiguration`

Table E–6   Event Exchanger Agent Configuration Properties

Property	Description and Usage Note	Default
`IFS.SERVER.EventLifespan`	The time, in seconds, after which an event is assumed to have been delivered and become eligible for purging.	1800

Expiration Agent

All public objects have an attribute called ExpirationDate. Once this date passes, the Public Objects are automatically deleted. This is handled by the Expiration Agent, which periodically deletes expired objects. If the expiration date of a Public Object passes, the agent deletes the Public Object. Like many agents, this agent runs at a specific time as specified in the `IFS.SERVER.TIMER.InitialTimeOfDay` and `IFS.SERVER.TIMER.ActivationPeriod` properties.

The default name for this server configuration is:

```
ExpirationAgentConfiguration
```

Folder Index Agent

The Folder Index Agent handles additional Folder Index functions not covered by the Folder Index Analyzer Agent. See the following section for more information on the Folder Index Analyzer Agent.

The default name for this server configuration is:

```
FolderIndexAgentConfiguration
```

Table E–7   Folder Index Agent Configuration Properties

Property	Description and Usage Notes	Default
IFS.SERVER.AGENTS.FOLDERINDEX AGENT.MaxDeferredUpdates	The maximum number of deferred updates processed in a single iteration of this agent.	5000

Folder Index Analyzer Agent

Oracle Content Services uses an internal mechanism called the Folder Index to speed up folder-restricted queries. This index is modified every time the folder hierarchy gets changed, to reflect the up-to-date folder hierarchy. However, certain forms of file links may leave the Folder Index in a suboptimal state. The Folder Index Analyzer Agent runs periodically to detect and correct any such state, and return the Folder Index to an optimal state.

The default name for this server configuration is:

```
FolderIndexAnalyzerAgentConfiguration
```

You should never modify these values.

Table E–8   Folder Index Analyzer Agent Configuration Properties

Property	Description and Usage Notes	Default
IFS.SERVER.AGENTS.FOLDERINDEX ANALYZERAGENT.MaxParentsThreshold	The threshold for max number of parents after which the Folder Index is considered suboptimal. This condition is ANDed with the `MaxChildrenThreshold`.	10
IFS.SERVER.AGENTS.FOLDERINDEX ANALYZERAGENT.MaxChildrenThreshold	The threshold for max number of children after which the Folder Index is considered suboptimal. This condition is ANDed with the `MaxParentsThreshold`.	10

FTP Server

The Oracle Content Services **FTP** server allows users to easily transfer files between one file system and the Oracle Content Services repository. FTP is particularly useful when performing bulk transfers.

The FTP server is disabled by default after Oracle Content Services is installed and configured. See "Enabling FTP" on page 4-3 for information about enabling the FTP protocol.

The default name for this server configuration is:

```
FtpServerConfiguration
```

Table E–9   FTP Server Configuration Properties

Property	Description and Usage Notes	Default
IFS.SERVER.PROTOCOL.FTP. AcceptQueueSize	The number of server requests back-logged before denying requests. Do not change.	50
IFS.SERVER.PROTOCOL.FTP. AnonymousAllowed	If set to true, allows anonymous connections.	false
IFS.SERVER.PROTOCOL.FTP. BannerText	The string displayed when the FTP client is started. The FTP Banner can only support ascii characters, because as not all FTP clients can support non-ascii text.	Oracle Content Services FTP Server ready. Access to this system is limited to authorized users for company business purposes only. Unauthorized access to or use of this system is prohibited and may subject you to civil and criminal prosecution. Use of this system may be monitored for the purpose of maintaining system security, and system information may be accessed or disclosed under limited circumstances.
IFS.SERVER.PROTOCOL.FTP. CommandCharacterSetIsUser CharacterSet	If set to true, character set is the same as the Default Character Set specified by the user in Globalization Preferences. If set to false, character set is the same as specified in IFS.SERVER.PROTOCOL.FTP. DefaultCommandCharacterSet. If no character set is found, character set is the same as specified in the service-wide default, IFS.SERVICE.DefaultCharacterSet.	true
IFS.SERVER.PROTOCOL.FTP. DateFormat	Specifies the default date format.	MMM dd HH:mm
IFS.SERVER.PROTOCOL.FTP. DefaultCommandCharacterSet	Default FTP protocol command character set.	ISO-8859-1
IFS.SERVER.PROTOCOL.FTP. Localhost	Optionally, specify the host name if the host is multi-homed in the network.	Default_Hostname
IFS.SERVER.PROTOCOL.FTP. MaximumConnections	The maximum number of connections for this FTP server.	100
IFS.SERVER.PROTOCOL.FTP. Port	The port on which the server is running.	21 If port 21 is already in use, 2100 is used.
IFS.SERVER.PROTOCOL.FTP. TimeoutPeriod	Amount of time between activity before the connection times out; default is 900 seconds or 15 minutes. Unit of measure is milliseconds.	900000

FTPS Server - Explicit

The Oracle Content Services FTPS servers provide support for FTP over SSL. Explicit FTPS secures the connection when the client issues an AUTH command. An Explicit FTPS connection starts out as a regular FTP connection; the connection becomes secure only after the client issues an AUTH command.

The FTPS servers are disabled by default after Oracle Content Services is installed and configured. See "Enabling FTPS" on page 4-4 for information about enabling the FTPS protocol.

The Explicit FTPS server contains many of the same properties as the FTP Server. Table E–10 only lists those properties that are specific to Explicit FTPS, along with those properties that have different default values. See Table E–9 for information about the other properties.

The default name for this server configuration is:

`FtpsServerExplicitConfiguration`

Table E–10   Explicit FTPS Server Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.PROTOCOL.FTP.` `Port`	The port on which the server is running.	21
`IFS.SERVER.PROTOCOL.FTPS.SECURITY.` `IMPLICIT`	Determines whether this FTPS server accepts Implicit FTPS or Explicit FTPS clients.	Set to false by default in the `FtpsServerExplicit Configuration`.
`IFS.SERVER.PROTOCOL.FTPS.WALLET.` `Location`	Location of the Wallet file.	`/scripts/cwallet.sso`

FTPS Server - Implicit

The Oracle Content Services FTPS servers provide support for FTP over SSL. Implicit FTPS secures the channel on connection.

The FTPS servers are disabled by default after Oracle Content Services is installed and configured. See "Enabling FTPS" on page 4-4 for information about enabling the FTPS protocol.

The Implicit FTPS server contains many of the same properties as the FTP Server. Table E–11 only lists those properties that are specific to Implicit FTPS, along with those properties that have different default values. See Table E–9 for information about the other properties.

The default name for this server configuration is:

`FtpsServerImplicitConfiguration`

Table E–11   Implicit FTPS Server Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.PROTOCOL.FTP.` `Port`	The port on which the server is running.	990
`IFS.SERVER.PROTOCOL.FTPS.SECURITY.` `IMPLICIT`	Determines whether this FTPS server accepts Implicit FTPS or Explicit FTPS clients.	Set to true by default in the `FtpsServerImplicit Configuration`.
`IFS.SERVER.PROTOCOL.FTPS.WALLET.` `Location`	Location of the Wallet file.	`/scripts/cwallet.sso`

Garbage Collection Agent

The Garbage Collection Agent fixes invalid Public Object owners, creators, and modifiers. For example, a document is created and modified by "jsmith." The creator, owner, and last modifier attribute of document are set to jsmith's object ID. If "jsmith" is deleted, the attribute value becomes invalid. The agent replaces these invalid

attribute values with the ID of the replacement owner, creator, or modifier specified in the server configuration properties.

The default name for this server configuration is:

`GarbageCollectionAgentConfiguration`

Table E–12   Garbage Collection Agent Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.AGENT.GARBAGECOLLECTIONAGENT.` `ReplacementOwner`	User to be replaced as owner. Modify as needed.	`system`
`IFS.SERVER.AGENT.GARBAGECOLLECTIONAGENT.` `ReplacementCreator`	User to be replaced as creator. Modify as needed.	`system`
`IFS.SERVER.AGENT.GARBAGECOLLECTIONAGENT.` `ReplacementModifier`	User to be replaced as modifier. Modify as needed.	`system`

HTTP Server

This server allows users to access the Oracle Content Services Web interface. It also contains properties for **WebDAV** access.

The default name of this server configuration is:

`EcmHttpServerConfiguration`

Table E–13   HTTP Server Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.PROTOCOL.DAV.Browse.Enabled`	If set to true, WebDAV will return a directory listing when a user tries to GET a folder through the WebDAV servlet. If set to false, the user is redirected to the Web interface.	true
`IFS.SERVER.PROTOCOL.DAV.` `DigestNonceTimeout`	Nonce refers to the challenge used by WebDAV in digest authentication. After using a nonce to authenticate, the client can continue accessing the server until the time-out period is reached, at which point the server sends another challenge and the client must authenticate again. Unit of measure is minutes.	10
`IFS.SERVER.PROTOCOL.DAV.` `Locks.Timeout.Min`	The minimum timeout value, in seconds, that a client can request when acquiring a lock. This value prevents clients from asking for short timeouts, then refreshing frequently, which increases server load.	601

Table E–13   (Cont.) HTTP Server Configuration Properties

Property	Description and Usage Notes	Default
IFS.SERVER.PROTOCOL.DAV. Propfind.Infinity.Enabled	Whether to allow depth-infinity PROPFIND requests on collections., which can be extremely expensive.	true
IFS.SERVER.PROTOCOL.DAV. Propfind.Infinity.MaxResponses	The maximum number of results to collect for a depth-infinity PROPFIND on a collection before rejecting the request. This limit only applies to depth-infinity PROPFIND requests; depth-one requests are not affected. Set to -1 to collect unlimited results. This property is ignored if IFS.SERVER. PROTOCOL.DAV.Propfind.Infinity. Enabled is set to false.	1001
IFS.SERVER.PROTOCOL.DAV.Welcome	The array of welcome document names that are served up if a GET is done on a directory containing one of these documents. Typically used so that index.html will be served automatically when the directory is requested. To disable this feature, set to an empty array.	index.html index.htm

Renaming the Oracle Content Services HTTP Server

Do not change the name of the EcmHttpServer. If you change the server name, you will not be able to access Oracle Content Services through the Web application interface.

If you must change the server name, you must also change the name in the web.xml configuration file. To change the server name:

1. Rename the server using the Oracle Collaboration Suite Control.

2. Edit web.xml, located in the following directory:

   ORACLE_HOME/j2ee/OC4J_Content/applications/files/files/WEB-INF/

   Look for the following lines of code and replace the value for <param-value>:

   ```
   <init-param>
     <param-name>IFS.SERVER.PROTOCOL.DAV.IfsServer.Name</param-name>
     <param-value>EcmHttpServer</param-value>
   </init-param>
   ```

3. Save the file.

4. Restart the OC4J instance.

Inbound Queue Listener Agent

The Inbound Queue Listener Agent is a time-based agent that polls all of the inbound queues periodically so that Oracle Content Services can act upon the messages placed on inbound queues. The Inbound Queue Listener Agent can dequeue a message and delegate the work of processing to the message object itself.

The default name for this server configuration is:

InboundQueueListenerAgentConfiguration

Table E–14   Inbound Queue Listener Agent Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.AGENT.INBOUNDQUEUELISTENERAGENT.Queues`	Holds a list of queues on which the agent will listen.	IFS_IN IFS_BPEL_IN

Lock Expiration Agent

The Lock Expiration Agent is a time-based agent that releases locks that are timed out. The agent needs to be running at all times for the lock auto-expiration function to work.

The default name for this server configuration is:

`LockExpirationAgentConfiguration`

Most Recent Doc Agent

The Most Recent Doc Agent is an event-based agent that reacts to documents that have been uploaded or accessed by each user. The information provided by the agent is used whenever a user accesses My Recent Documents.

The default name for this server configuration is:

`MostRecentDocAgentConfiguration`

Table E–15   Most Recent Doc Agent Configuration Properties

Property	Description and Usage Notes	Default
`ECM.AGENT.MOSTRECENTDOCAGENT.EventBatchSize`	The maximum number of events processed in a single iteration of this agent.	5000

Oracle Internet Directory Credential Manager Agent

The Oracle Internet Directory Credential Manager Agent is a time-based agent that polls for changes to Oracle Internet Directory users. If a user has been added, modified, or deleted in Oracle Internet Directory, the Oracle Internet Directory Credential Manager Agent provisions the change in Oracle Content Services.

Set the `IFS.SERVER.TIMER.ActivationPeriod` if you want to change how frequently this agent runs. The default is every 15 minutes.

The default name for this server configuration is:

`OidCredentialManagerAgent`

Table E–16   Oracle Internet Directory Credential Manager Agent Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.AGENT.OIDCREDENTIALMANAGERAGENT.MaxEventCount`	Number of events to handle at a time.	100
`IFS.SERVER.AGENT.OIDCREDENTIALMANAGERAGENT.OidChangeHandler`	The fully-qualified classname of the `OidChangeHandler` implementation.	`oracle.ifs.ecm.util.oid.EcmOidChangeHandler`

Quota Agent

The Quota Agent is triggered by an event to compute the consumed quota for Libraries. This agent also periodically checks all Libraries that are active, according to

a specified timer period. The agent updates the Library's consumed storage. When the consumed storage is over the allocated quota, users of the Library will not be able to add any more documents to that Library. Documents in Trash count toward a Library's quota.

A Library's quota is calculated based on the content already consumed. This means that a Library will go over quota when a user of that Library adds the final file that pushes the consumed storage over the allocated storage. When you set the allocated quota for a Library, remember that a user's last file will put the Library over quota before being denied.

Quotas will not be enforced if:

- The Quota Agent has not been started or is not running.

- The quota for a Library has not been enabled.

The default name for this server configuration is:

```
QuotaAgentConfiguration
```

Read Document Agent

The Read Document Agent is an event-based agent that reacts to documents read by users, by triggering a custom workflow if one is configured for the document that is read. If no custom workflow is configured for the "Read Document" operation on the folders where the documents are read, the agent takes no action.

The default name for this server configuration is:

```
ReadDocumentAgentConfiguration
```

Table E–17   Read Document Agent Configuration Properties

Property	Description and Usage Notes	Default
`ECM.AGENT.READDOCUMENTAGENT.EventBatchSize`	The maximum number of events processed in a single iteration of this agent.	5000

Reassign Quota Agent

The Reassign Quota agent is an event-based agent that adjusts the quota charged for content in the system when content is moved between Libraries, often a time-consuming task.

The default name for this server configuration is:

```
ReassignQuotaAgentConfiguration
```

Table E–18   Reassign Quota Agent Configuration Properties

Property	Description and Usage Notes	Default
`ECM.AGENT.REASSIGNQUOTAAGENT.EventBatchSize`	The maximum number of events processed in a single iteration of this agent.	5000

Records Management HTTP Server

This server allows users to access the Oracle Records Management Web interface.

The default name for this server configuration is:

```
RmHttpServerConfiguration
```

Records Management Lifecycle Agent

The Records Management Lifecycle Agent is a time-based agent that processes the cut-off, retention, and disposition instructions on Record Categories and Record Folders.

The default name for this server configuration is:

```
RmLifeCycleAgentConfiguration
```

Service Warmup Agent

When a node is started, this agent automatically preloads the service's data cache. All properties for this agent are required. Unlike most other agents, this agent is configured to run separately on each node.

The default name for this server configuration is:

```
ServiceWarmupAgentConfiguration
```

Table E–19   Service Warmup Agent Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.AGENT.SERVICEWARMUP.WarmupAcls`	If set to true, preloads ACL collection.	false
`IFS.SERVER.AGENT.SERVICEWARMUP.WarmupFormats`	If set to true, preloads format collection.	true
`IFS.SERVER.AGENT.SERVICEWARMUP.WarmupMedias`	If set to true, preloads Media collection.	true
`IFS.SERVER.AGENT.SERVICEWARMUP.WarmupSetAdmin`	Whether the preloading is done in administration mode.	true
`IFS.SERVER.AGENT.SERVICEWARMUP.WarmupUsers`	If set to true, preloads user collection.	false

Service Watchdog Agent

The Service Watchdog Agent cleans up after Oracle Content Services services that do not shut down cleanly.

The default name for this server configuration is:

```
ServiceWatchdogAgentConfiguration
```

Table E–20   Service Watchdog Agent Configuration Properties

Property	Description and Usage Notes	Default
`IFS.SERVER.AGENT.SERVICEWATCHDOGAGENT.ServiceTimeoutPeriod`	The number of seconds after which a service is considered inactive. When a service becomes inactive, it is eligible for cleanup by the Service Watchdog Agent.	120

Statistics Agent

The Statistics agent is a time-based agent that gathers statistics pertaining to service activity on the node where the agent is executing. Unlike most other agents, this agent is configured to run separately on each node, so that statistics are gathered independently for each node. The agent's properties determine whether the statistics are logged, and whether they are written to a document stored in the Oracle Content Services repository.

The default name for this server configuration is:

StatisticsAgentConfiguration

Table E–21   Statistics Agent Configuration Properties

Property	Description and Usage Notes	Default
ECM.AGENT.STATISTICSAGENT. CreateStatisticsDocument	Specifies whether an HTML document should be created, whose content is the currently gathered statistics. The name for this file is autogenerated and appears as *node_name*_log.html.	false
ECM.AGENT.STATISTICSAGENT.LogStatistics	If set to true, the currently gathered statistics are sent to the node or application log file.	true
ECM.AGENT.STATISTICSAGENT. StatisticsFolderPath	The path within the Oracle Content Services folder hierarchy where the statistics document should be created. The path must refer to a Library or a folder within a Library. Do not include a file name as part of this path; the statistics document file name is autogenerated.	N/A

Version Purge Agent

The Version Purge agent is an event-based agent that purges versioned documents that have exceeded the version limit specified by the Versioning Configuration in effect for the documents. The purged versions are moved to the associated Trash folder.

The default name for this server configuration is:

VersionPurgeAgentConfiguration

Table E–22   Version Purge Agent Configuration Properties

Property	Description and Usage Notes	Default
ECM.AGENT.VERSIONPURGEAGENT.EventBatchSize	The maximum number of events processed in a single iteration of this agent.	5000

Virus Repair Agent

The Virus Repair Agent is responsible for repairing files that have been infected with a virus, as well as retrieving the latest virus definitions. Whenever the agent becomes active, it will poll the SAVSE server for updated virus definitions, then attempt to repair the quarantined files. The agent will not attempt to repair the following files:

- Files that have exceeded the maximum number of repair attempts
- Files that have already experienced repair attempts using the current virus definitions

The default name for this server configuration is:

VirusRepairAgentConfiguration

F

FTP Quote Command Reference

This appendix provides information on using the FTP quote commands.

Topics include:

- SETCHARACTERSET
- SETCOMMANDCHARACTERSET
- SETLANGUAGE
- SHOWCHARACTERSET
- SHOWLANGUAGE

SETCHARACTERSET

This command was called SETCHARENCODING in previous releases of Oracle Content Services. Sets the character encoding to an IANA character set name for the session when loading documents. Should be used when loading documents that are different than the default system character encoding setting. The character encoding setting is important for content-based indexing, used for content searches. For more information on character encodings, see *Oracle Database Globalization Support Guide*.

Syntax	Example
`quote setcharacterset [character set]`	`quote setcharacterset UTF-8`

Valid character encodings include:

BIG5	ISO-2022-JP	KOI8-R	WINDOWS-1251
BIG5-HKSCS	ISO-2022-KR	KS_C_5601-1987	WINDOWS-1252
EUC-JP	ISO-8859-1	SHIFT_JIS	WINDOWS-1253
EUC-TW	ISO-8859-2	TIS-620	WINDOWS-1254
GB2312	ISO-8859-3	UTF-8	WINDOWS-1255
GB18030	ISO-8859-4	UTF-16BE	WINDOWS-1256
IBM850	ISO-8859-5	UTF-16LE	WINDOWS-1257
IBM852	ISO-8859-6	WINDOWS-936	WINDOWS-1258
IBM857	ISO-8859-7	WINDOWS-949	
IBM866	ISO-8859-8	WINDOWS-950	

ISO-2022-CN   ISO-8859-9   WINDOWS-1250

SETCOMMANDCHARACTERSET

Sets the command character set for the FTP session. This character set specifies the character encoding to be used in subsequent FTP commands. The FTP protocol server converts FTP commands from this character encoding to Java String and vice versa. When the FTP session is first created, the FTP server uses the default character set of the session. The IANA naming standards should be used to specify the character set. See "SETCHARACTERSET" on page F-1 for a list of valid character encodings.

Syntax	Example
`quote setcommandcharacterset [character set]`	`quote setcommandcharacterset UTF-8`

SETLANGUAGE

Sets the language for the session when loading documents. Should be used when loading documents that are different than the default system language. The language setting is important for content-based indexing, used for content searches. For more information on language setting, see *Oracle Database Globalization Support Guide*.

Syntax	Example
`quote setlanguage [language]`	`quote setlanguage French` `quote setlanguage "Latin American Spanish"`

The list of valid languages is given in the following table. For languages that are longer than one word, the language needs to be enclosed in quotes as shown in the preceding example.

American	Egyptian	Japanese	Russian
Arabic	English	Korean	Simplified Chinese
Bengali	Estonian	Latin American Spanish	Slovak
Brazilian Portuguese	Finnish	Latvian	Slovenian
Bulgarian	French	Lithuanian	Spanish
Canadian French	German	Malay	Swedish
Catalan	Greek	Mexican Spanish	Thai
Croatian	Hebrew	Norwegian	Traditional Chinese
Czech	Hungarian	Polish	Turkish
Danish	Indonesian	Portuguese	Ukrainian
Dutch	Italian	Romanian	Vietnamese

SHOWCHARACTERSET

This command was called SHOWCHARENCODING in previous releases of Oracle Content Services. Displays the both the current command character set and the current document character set of the FTP session.

Syntax	Example
quote showcharacterset	quote showcharacterset

SHOWLANGUAGE

Displays the current language setting for the session.

Syntax	Example
quote showlanguage	quote showlanguage

G

Oracle Content Services Globalization Support

Oracle Content Services globalization support enables users to store and search documents of heterogeneous character sets and languages in a single Oracle Content Services instance. The globalization infrastructure ensures that the resource strings, error messages, sort order, date, time, numeric, and calendar conventions adapt automatically to any native language and locale.

Globalization support is provided in the Oracle Content Services repository so that the other dependent processes, such as the protocol servers, can share and utilize this support. The major globalization goal for the repository is to ensure efficient storage of documents of heterogeneous character sets and languages, and to allow effective update, retrieval, and search on these documents.

This appendix covers the following topics:

- How to Choose the Database Character Set for Oracle Content Services

- How to Make Sure Documents Are Properly Indexed in Oracle Content Services

- Globalization and the Oracle Content Services Protocols

- Character Sets Supported in Oracle Content Services

- Document Languages Supported in Oracle Content Services

How to Choose the Database Character Set for Oracle Content Services

In the repository, all metadata strings, such as the name of the document or the description, are stored in the VARCHAR2 data type of the Oracle database. Strings stored in this data type are encoded in the database character set specified when a database is created. The document itself, however, is unstructured data and stored in one of the large object data types of the Oracle database, particularly the BLOB data type. The BLOB data type stores content as-is, avoiding any character set conversion on document content. The LONG and CLOB data types store content in the database character set, which requires character set conversion. Conversions can compromise the data integrity and have the potential to convert incorrectly or lose characters.

The full-text search index built on the document content is encoded in the database character set. When a document's content is indexed, the BLOB data is converted from the content's character set to the database character set for creation of the index text tokens. If the content's character set is not a subset of the database character set, the conversion will yield garbage tokens. For example, a database character set of ISO-8859-1 (Western European languages) will not be able to index correctly a Shift-JIS (Japanese) document. To be able to search content effectively, the character set of the

documents stored by the users should be considered when selecting the database character set.

If your Oracle Content Services instance will contain multilingual documents, UTF8 is the recommended database character set. UTF8 supports characters defined in the Unicode standard. The Unicode standard solves the problem of many different languages in the same application or database. Unicode is a single, global character set which contains all major living scripts and conforms to international standards. Unicode provides a unique code value for every character, regardless of the platform, program, or language. UTF8 is the 8-bit encoding of Unicode. It is a variable-width encoding and a strict superset of ASCII. One Unicode character can be 1 byte, 2 bytes, 3 bytes, or 4 bytes in UTF8 encoding. Characters from the European scripts are represented in either 1 or 2 bytes. Characters from most Asian scripts are represented in 3 bytes. Supplementary characters are represented in 4 bytes. By using a Unicode-based file system, document content and metadata of different languages can be shared by users with different language preferences in one system.

The Oracle9*i* database introduces the new character set, AL32UTF-8. In Release 1, AL32UTF-8 was the default character set for Unicode 3.0 deployment. In Release 2, AL32UTF-8 is compliant to the latest Unicode 3.1 standard, which contains the supplementary characters, particularly additional Chinese, Japanese, and Korean ideographs. AL32UTF-8 is the default character set of an Oracle9*i* database installation.

> **Note:** Oracle Content Services does not support an AL32UTF-8 database because Oracle Text does not support Chinese, Japanese, and Korean lexers on an AL32UTF-8 database. UTF8 is the recommended database character set for an Unicode-based file system. If Oracle Content Services is installed in an AL32UTF-8 database, Chinese, Japanese, and Korean documents will not get indexed and, thus, will not be searchable.
>
> Oracle Content Services configuration will fail in a Chinese, Japanese, or Korean locale against an AL32UTF-8 database. This is because Oracle Text behaves differently when the database session language is initialized to an Asian language as opposed to American. JDBC initializes the database session language according to the locale of the running application, which in this case is the configuration tool.

How to Make Sure Documents Are Properly Indexed in Oracle Content Services

To support documents in different character sets and languages in a single file system, the repository associates two globalization attributes with each document. They are the character set and language attributes.

Character Set

The character set of a document is used in several situations. When the document content is rendered to a file, the character set of the document is used as the character encoding of the file. When the document is displayed in the browser, the character set of the document is set in the HTTP content-type header. Finally, when a full-text search is built on a text document, Oracle Text uses the character set of the document to convert the data into the database character set before building the index. When a character set is updated, the content is reindexed.

If no character set is specified upon insertion of a document, the repository determines a default character set as follows: the character set of the user's LibrarySession stored in the Localizer object is first used. This is obtained from the user's PrimaryUserProfile information at initialization of the user's LibrarySession.

Language

The language of a document is used as a criterion to limit the search for documents of a particular language. It is also used to build a full-text search index on the document with Oracle Text. Oracle Text's multilexer feature uses the language to identify the specific lexer to parse the document for searchable words. The language-specific lexers need to be defined and associated with a language before the index is built. They are defined as follows:

Table G–1   Language-Specific Lexers

Language	Lexer	Lexer Option
Brazilian Portuguese	BASIC_LEXER	BASE LETTER
Canadian French	BASIC_LEXER	BASE LETTER INDEX THEME
Danish	BASIC_LEXER	BASE LETTER DANISH ALTERNATE SPELLING
Dutch	BASIC_LEXER	BASE LETTER
Finnish	BASIC_LEXER	BASE LETTER
French	BASIC_LEXER	BASE LETTER INDEX THEME THEME LANGUAGE=FRENCH
German	BASIC_LEXER	BASE LETTER GERMAN ALTERNATE SPELLING
Italian	BASIC_LEXER	BASE LETTER
Japanese	JAPANESE_VGRAM_LEXER	N/A
Korean	KOREAN_LEXER	N/A
Latin American	BASIC_LEXER	BASE LETTER
Spanish Portuguese	BASIC_LEXER	BASE LETTER
Simplified Chinese	CHINES_VGRAM_LEXER	N/A
Swedish	BASIC_LEXER	BASE LETTER SWEDISH ALTERNATE SPELLING
Tradition Chinese	CHINESE_VGRAM_LEXER	N/A
Others	BASIC_LEXER	INDEX THEME THEME LANGUAGE=ENGLISH INDEX TEXT

The BASIC_LEXER is used for single-byte languages using white space as a word separator. Asian language lexers cannot use white space as word separators. Instead, they use a V-gram algorithm to parse the documents for searchable keys. Languages that have not been supported by Oracle Text are parsed as English. Oracle Content Services uses the multilexer feature of Oracle Text. It is a global lexer containing German, Danish, Swedish, Japanese, Simplified Chinese, Traditional Chinese, and Korean sublexers.

If no language is specified upon insertion of a document, the repository determines a default language as follows.

1. If the character set has been set, the language can most likely be obtained from a 'best-guess' algorithm based on the character set value. For example, a document with a character set of Shift-JIS will most likely be in Japanese.

2. The default language is obtained from the Localizer of the user's LibrarySession. During initialization of the LibrarySession, the default language is obtained from the user's PrimaryUserProfile.

3. The defaults for both language and character set is specified by the Subscriber Administrator when a new user is created.

Oracle Content Services identifies languages using Oracle Globalization Support language abbreviations. See "Document Languages Supported in Oracle Content Services" on page G-8 for a list of Oracle Content Services-supported languages.

Service Configuration Properties

There are two service configuration properties that hold default character set and language values for Oracle Content Services Subscribers. The properties are:

- `IFS.SERVICE.DefaultCharacterSet`
- `IFS.SERVICE.DefaultLanguage`

These two properties are initialized during Oracle Content Services configuration and can later be modified through the Oracle Collaboration Suite Control. The Oracle Content Services default character set should be the same or a subset of the database character set. The character set should be specified in accordance with the IANA standard naming convention. The language should be specified in accordance with Oracle naming for languages. See "Character Sets Supported in Oracle Content Services" on page G-6 and "Document Languages Supported in Oracle Content Services" on page G-8 for a list of Oracle Content Services-supported character sets and languages.

Globalization and the Oracle Content Services Protocols

Some protocols do not support multibyte user names. Access through WebDAV and HTTP is not available for user names that contain multibyte characters. FTP allows multibyte user names. In addition, some protocols require that user passwords be in ASCII.

You can use a protocol command character set that is different from the default document character set. A *protocol command character set* is the character set you use to type commands in FTP or other protocols.

FTP

Oracle Content Services provides the following server configuration properties to specify the default FTP command character set:

- `IFS.SERVER.PROTOCOL.FTP.DefaultCommandCharacterSet`
- `IFS.SERVER.PROTOCOL.FTP.CommandCharacterSetIsUserCharacterSet`

The following precedence model determines a session's FTP command character encoding:

1. Explicitly specified (using `quote setcommandcharacterset`).

2. If `IFS.SERVER.PROTOCOL.FTP.CommandCharacterSetIsUser CharacterSet` is true, use the **Default Character Set** specified by the user in Globalization Preferences.

3. If `IFS.SERVER.PROTOCOL.FTP.CommandCharacterSetIsUser CharacterSet` is false, use the value of `IFS.SERVER.PROTOCOL.FTP. DefaultCommandCharacterSet`.

4. If no character set is found, use the service wide default, `IFS.SERVICE. DefaultCharacterSet`.

The standard FTP protocol does not define the character set of the file names or directory names that are usually passed as arguments of FTP commands. The FTP server is responsible for interpreting the byte sequence of the FTP commands. To allow users to access documents of different character sets and languages, and to allow users to set and view the protocol command character set, the Oracle Content Services FTP server provides the following QUOTE commands:

- **`Ftp> quote setcommandcharacterset:`** Allows users to specify the command character set for the FTP session. This character set specifies the character encoding to be used in subsequent FTP commands. The FTP protocol server converts FTP commands from this character encoding to Java String and vice versa. When the FTP session is first created, the FTP server uses the default character set of the session. The IANA naming standards should be used to specify the character set.

- **`Ftp> quote setcharacterset:`** Allows users to specify the character set of the documents to be uploaded. Called `setcharencoding` in previous releases of Oracle Content Services. The IANA naming standards should be used to specify the character set.

- **`Ftp> quote showcharacterset:`** Displays both the current command character set and the current document character set of the FTP session. Called `showcharencoding` in previous releases of Oracle Content Services. The character set is displayed in the IANA naming standards.

- **`Ftp> quote setlanguage:`** Allows users to specify the language for the FTP session. The language of a FTP session is then associated with the documents that are uploaded. Oracle Text uses the language information to determine the appropriate lexer to use to index the document. When the FTP session is first created, the FTP server uses the default language of the session. Oracle language names should be used.

- **`Ftp> quote showlanguage:`** Displays the current language of the FTP session. The language is displayed with the Oracle naming standard.

When a quote command is issued to change the character set or language of the FTP session, the FTP server actually updates the settings in the Localizer object of the current LibrarySession. Subsequently, since quote commands cannot be issued until a FTP session is established, only user names in the character set or subset of the FTP server's default character set can be used to log in to the FTP server. Appendix F, "FTP Quote Command Reference" for more information about quote commands.

Users can specify the character sets and languages of their environments using standard command-line FTP clients. Browser-based FTP clients, such as Internet Explorer or Netscape, do not allow issuance of quote commands. FtpSession defaults will be used.

WebDAV

Oracle Content Services provides the following server configuration properties to specify the default WebDAV command character set:

- `IFS.SERVER.PROTOCOL.DAV.Webfolders.DefaultCommandCharacterSet`
- `IFS.SERVER.PROTOCOL.DAV.Webfolders.CommandCharacterSetIsUser CharacterSet`

The following precedence model determines a session's WebDAV command character encoding:

1. If `IFS.SERVER.PROTOCOL.DAV.Webfolders.CommandCharacterSetIs UserCharacterSet` is true, use the **Default Character Set** specified by the user in Globalization Preferences.

2. If `IFS.SERVER.PROTOCOL.DAV.Webfolders.CommandCharacterSetIs UserCharacterSet` is false, use the value of `IFS.SERVER.PROTOCOL.DAV. Webfolders.DefaultCommandCharacterSet`.

3. If no character set is found, use the service wide default, `IFS.SERVICE. DefaultCharacterSet`.

Character Sets Supported in Oracle Content Services

The following table summarizes the character sets supported in Oracle Content Services.

Table G–2   Character Sets Supported in Oracle Content Services

Language	IANA Preferred MIME Charset	IANA Additional Aliases	Java Encodings	Oracle Charset
Arabic (ISO)	iso-8859-6	ISO_8859-6:1987, iso-ir-127, ISO_8859-6, ECMA-114, ASMO-708, arabic, csISOLatinArabic	ISO8859_6	AR8ISO8859P6
Arabic (Windows)	windows-1256	none	Cp1256	AR8MSWIN1256
Baltic (ISO)	iso-8859-4	csISOLatin4, iso-ir-110, ISO_8859-4, ISO_8859-4:1988, l4, latin4	ISO8859_4	NEE8ISO8859P4
Baltic (Windows)	windows-1257	none	Cp1257	BLT8MSWIN1257
Central European (DOS)	ibm852	cp852, 852, csPcp852	Cp852	EE8PC852
Central European (ISO)	iso-8859-2	csISOLatin2, iso-ir-101, iso8859-2, iso_8859-2, iso_8859-2:1987, l2, latin2	ISO8859_2	EE8ISO8859P2
Central European (Windows)	windows-1250	x-cp1250	Cp1250	EE8MSWIN1250
Chinese	iso-2022-cn It is not defined in IANA, but use in MIME documents.	csISO2022CN	ISO2022CN	ISO2022-CN
Chinese Simplified (GB2312)	gb2312	chinese, csGB2312, csISO58GB231280, GB2312, GB_2312-80, iso-ir-58	EUC_CN	ZHS16CGB231280

Table G–2 (Cont.) Character Sets Supported in Oracle Content Services

Language	IANA Preferred MIME Charset	IANA Additional Aliases	Java Encodings	Oracle Charset
Chinese Simplified (GB18030)	GB18030	none	GB18030	ZHS32GB18030
Chinese Simplified (Windows)	GBK	windows-936	GBK	ZHS16GBK
Chinese Traditional	big5	csbig5, x-x-big5	Big5	ZHT16BIG5
Chinese Traditional	windows-950	none	MS950	ZHT16MSWIN950
Chinese Traditional (EUC-TW)	EUC-TW	none	EUC_TW	ZHT32EUC
Chinese Traditional (Big5-HKSCS)	Big5-HKSCS	none	Big5_HKSCS	ZHT16HKSCS
Cyrillic (DOS)	ibm866	cp866, 866, csIBM866	Cp866	RU8PC866
Cyrillic (ISO)	iso-8859-5	csISOLatinCyrillic, cyrillic, iso-ir-144, ISO_8859-5, ISO_8859-5:1988	ISO8859_5	CL8ISO8859P5
Cyrillic (KOI8-R)	koi8-r	csKOI8R, koi	KOI8_R	CL8KOI8R
Cyrillic Alphabet (Windows)	windows-1251	x-cp1251	Cp1251	CL8MSWIN1251
Greek (ISO)	iso-8859-7	csISOLatinGreek, ECMA-118, ELOT_928, greek, greek8, iso-ir-126, ISO_8859-7, ISO_8859-7:1987, csISOLatinGreek	ISO8859_7	EL8ISO8859P7
Greek (Windows)	windows-1253	none	Cp1253	EL8MSWIN1253
Hebrew (ISO)	iso-8859-8	csISOLatinHebrew, hebrew, iso-ir-138, ISO_8859-8, visual, ISO-8859-8 Visual, ISO_8859-8:1988	ISO8859_8	IW8ISO8859P8
Hebrew (Windows)	windows-1255	none	Cp1255	IW8MSWIN1255
Japanese (JIS)	iso-2022-jp	csISO2022JP	ISO2022JP	ISO2022-JP
Japanese (EUC)	euc-jp	csEUCPkdFmtJapanese, Extended_UNIX_Code_Packed_Format_for_Japanese, x-euc, x-euc-jp	EUC_JP	JA16EUC
Japanese (Shift-JIS)	shift_jis	csShiftJIS, csWindows31J, ms_Kanji, shift-jis, x-ms-cp932, x-sjis	MS932	JA16SJIS
Korean	ks_c_5601-1987	csKSC56011987, korean, ks_c_5601, euc-kr, csEUCKR	EUC_KR	KO16KSC5601
Korean (ISO)	iso-2022-kr	csISO2022KR	ISO2022KR	ISO2022-KR
Korean (Windows)	windows-949	none	MS949	KO16MSWIN949
South European (ISO)	iso-8859-3	ISO_8859-3, ISO_8859-3:1988, iso-ir-109, latin3, l3, csISOLatin3	ISO8859_3	SE8ISO8859P3

Table G–2   (Cont.) Character Sets Supported in Oracle Content Services

Language	IANA Preferred MIME Charset	IANA Additional Aliases	Java Encodings	Oracle Charset
Thai	TIS-620	windows-874	TIS620	TH8TISASCII
Turkish (Windows)	windows-1254	none	Cp1254	TR8MSWIN1254
Turkish (ISO)	iso-8859-9	latin5, l5, csISOLatin5, ISO_8859-9, iso-ir-148, ISO_8859-9:1989	ISO8859_9	WE8ISO8859P9
Universal (UTF-8)	utf-8	unicode-1-1-utf-8, unicode-2-0-utf-8, x-unicode-2-0-utf-8	UTF8	UTF8
Unicode (UTF-16BE)	UTF-16BE	none	UTF-16BE	AL16UTF16
Unicode (UTF-16LE)	UTF16LE	none	UTF-16LE	AL16UTF16LE
Vietnamese (Windows)	windows-1258	none	Cp1258	VN8MSWIN1258
Western Alphabet	iso-8859-1	cp819, ibm819, iso-ir-100, iso8859-1, iso_8859-1, iso_8859-1:1987, latin1, l1, csISOLatin1	ISO8859_1	WE8ISO8859P1
Western Alphabet (DOS)	ibm850	cp850, 850, csIBM850	Cp850	WE38PC850
Western Alphabet (Windows)	windows-1252	x-ansi	Cp1252	WE8MSWIN1252

Document Languages Supported in Oracle Content Services

The following table summarizes the document languages supported in Oracle Content Services. Note that the supported document languages are different from the languages supported in the Oracle Content Services application.

Table G–3   Document Languages Supported in Oracle Content Services

Oracle Language Name	Java Locale	ISO Locale
Arabic	ar	ar
Bengali	bn	bn
Brazilian Portuguese	pt_BR	pt-br
Bulgarian	bg	bg
Canadian French	fr_CA	fr-CA
Catalan	ca	ca
Croatian	hr	hr
Czech	cs	cs
Danish	da	da
Dutch	nl	nl
Egyptian	ar_EG	ar-eg
American	en	en
English	en_GB	en-gb

Table G–3   (Cont.) Document Languages Supported in Oracle Content Services

Oracle Language Name	Java Locale	ISO Locale
Estonian	et	et
Finnish	fi	fi
French	fr	fr
German	de	de
Greek	el	el
Hebrew	he	he
Hungarian	hu	hu
Icelandic	is	is
Indonesian	id	in
Italian	it	it
Japanese	ja	ja
Korean	ko	ko
Latin American Spanish	es	es
Latvian	lv	lv
Lithuanian	lt	lv
Malay	ms	ms
Mexican Spanish	es_MX	es-mx
Norwegian	no	no
Polish	pl	pl
Portuguese	pt	pt
Romanian	ro	ro
Russian	ru	ru
Simplified Chinese	zh_CN	zh-cn
Slovak	sk	sk
Slovenian	sl	sl
Spanish	es_ES	es-es
Swedish	sv	sv
Thai	th	th
Traditional Chinese	zh_TW	zh-tw
Turkish	tr	tr
Ukrainian	uk	uk
Vietnamese	vi	vi

Glossary

administrator

One of two types of administrators in Oracle Content Services: **system administrators**, or **application administrators**.

Administration Mode

Provides access to Oracle Content Services application administration functions such as allocating quota and assigning roles.

Advanced Queuing (AQ)

Provides an infrastructure for distributed applications to communicate asynchronously using messages. Advanced Queuing is built into the Oracle database and supports sophisticated queuing features, including subscriptions, inter-queue message propagation, message latency, message expiration, structured payloads, and exception queues. Full name: Oracle Streams Advanced Queueing.

agents

Processes that perform operations periodically (time-based) or in response to events generated by other Oracle Content Services servers or processes (event-based). An agent is a type of Oracle Content Services **server**.

application administrators

Administrators who are responsible for tasks related to a particular **Site**, such as managing users, quotas, categories, and content. There are a variety of application administration roles, including User Administrator, Category Administrator, Container Administrator, Content Administrator, and Quota Administrator. See *Oracle Content Services Application Administrator's Guide* for more information about application administration roles and tasks.

Applications tier

The tier of Oracle Collaboration Suite that runs the server applications that provide specific functionality to end users. The term "Applications tier" replaces the term "middle tier" that was used in previous releases. Each Applications tier corresponds to an instance of Oracle Application Server. See also **Oracle Collaboration Suite Applications**.

Archive

Location where items are stored that have been deleted from user or Library trash. Each **Site** contains an Archive folder. Depending on how the Site has been configured, items in the Archive may be automatically deleted after a specified period of time. Files and folders in the Archive can be restored by the Site's Content Administrator.

BFILE

A read-only Oracle data type consisting of a directory object and a filename. Oracle Content Services provides transparent access to content stored as either a **BLOB** (online storage) or a BFILE (near-line storage). If BFILEs are enabled for your Oracle Content Services **domain**, you can configure content archiving or content aging.

BLOB

A type of Large Object (**LOB**) provided by the database. All documents in Oracle Content Services are stored as BLOBs. Full name: Binary Large Object.

BPEL

An XML-based markup language for composing a set of discrete Web services into an end-to-end process flow. Full name: Business Process Execution Language. See also **Oracle BPEL Process Manager**.

Client tier

The tier of Oracle Collaboration Suite that consists of the end-user applications that reside on client devices, such as desktops, laptops, wireless phones, and PDAs. See also **Oracle Collaboration Suite Applications**.

Committed Data Cache

Provides caching of the attribute values of frequently used objects without a database request, greatly improving performance and scalability.

custom workflow

A customized workflow process created in the BPEL Designer (a component of **Oracle BPEL Process Manager**. Custom workflows must be registered with Oracle Content Services before they can be used.

domain

A logical grouping of Oracle Content Services **nodes**, and an Oracle Database instance (called the **Oracle Collaboration Suite Database**) that contains the Oracle Content Services data.

domain properties

Settings that apply to the entire Oracle Content Services **domain**. For example, the domain property IFS.DOMAIN.SEARCH.AttemptContextSearchRewrite determines whether or not Oracle Content Services should attempt to generate fast-response SQL for text searches.

EMC Centera

A partner solution that provides retention hardware support. You can integrate Oracle Content Services with EMC Centera to provide retention storage for **Oracle Records Management**.

formats

Attributes that indicate document file type (for example, .doc or .zip). The format of a document determines how its content is indexed. Also known as MIME types.

FTP

One of three **protocols** supported by Oracle Content Services, used for file transfers across Wide Area Networks such as the Internet. **FTPS** is also supported. Full name: File Transfer Protocol.

FTPS

FTP over SSL. FTPS defines a mechanism to implement the FTP Security Extensions based on the TLS protocol. There are two types of FTPS are supported by Oracle Content Services:

- Implicit FTPS secures the channel on connection.

- Explicit FTPS secures the connection when the client issues an AUTH command. An Explicit FTPS connection starts out as a regular FTP connection; the connection becomes secure only after the client issues an AUTH command.

FTPS should not be confused with SFTP, a service of the Secure Shell that is not related to FTP.

Group tool

One of the **Oracle Content Services command-line tools**. Allows you to create and update groups.

HTTP

One of three **protocols** supported by Oracle Content Services, used for Web browser-based access. HTTP has been extended with **WebDAV**, a protocol designed for Wide Area Networks such as the Internet. Full name: Hypertext Transfer Protocol.

HTTP nodes

One of two types of Oracle Content Services **nodes**. The Oracle Content Services HTTP node runs as part of an **OC4J** process called OC4J_Content. The **Oracle Records Management** HTTP node runs as part of an OC4J process called OC4J_RM. Through servlets that are configured to work with OC4J, the HTTP nodes provide the following support:

- The Oracle Content Services HTTP node supports the Oracle Content Services application, portlet, and **WebDAV**.

- The Oracle Records Management HTTP node supports the Oracle Records Management application and WebDAV.

identity management

The process by which various components in an identity management system manage the security life cycle for network entities in an organization. Most commonly refers to the management of an organization's application users. See also **Oracle Identity Management**.

Infrastructure tier

The tier of Oracle Collaboration Suite that consists of the components that provide services, such as identity management and metadata storage, for the **Applications tier**. Components of the Infrastructure tier include **Oracle Collaboration Suite Database** and **Oracle Identity Management**. See also **Oracle Collaboration Suite Infrastructure**.

Libraries

Configurable folders for storing and sharing content with an allocated quota. Libraries were known as Workspaces in previous releases.

Library tool

One of the **Oracle Content Services command-line tools**. Allows you to create or update Libraries.

LDAP

An Internet protocol that applications use to look up contact information from a server, such as a central directory. LDAP servers index all the data in their entries, and "filters" may be used to select just the person or group you want, and return just the information you want. Full name: Lightweight Directory Access Protocol.

LOB

The majority of data stored in Oracle Content Services is stored as LOBs in database tablespaces. Full name: Large Object.

loggers

Functional areas with configurable logging levels for each **node**. For example, you can specify a more detailed level of logging for a particular protocol server or agent logger in which you are interested.

Network Appliance SnapLock

A partner solution that provides retention hardware support. You can integrate Oracle Content Services with Network Appliance SnapLock to provide retention storage for Oracle Records Management.

nodes

The application software that comprises the product, along with the underlying Java Virtual Machine (JVM) required to support the software at runtime. There are two types of nodes: **regular nodes**, and **HTTP nodes**. Each node is based on a particular **node configuration**.

node configuration

A configuration object that specifies the runtime behavior of a particular **node**. Each node has its own corresponding node configuration. If you want to make permanent changes to a node, such as changing **servers** or **services**, modify the node configuration for the node. If you want to make temporary (runtime) changes to a node, modify the node itself. Changes made at runtime are lost when the node is restarted. You cannot create a node directly; instead, you must first create an active node configuration, and then a corresponding node will be created automatically.

node manager

The actual process that gets started when a **node** is started. It is responsible for starting the default **service** and **servers** for this node. It also provides an administrative API for the node that lets you to find out information about node log levels, locale information, available free memory, and the node's Oracle home.

OC4J

A complete set of J2EE containers written entirely in Java that execute on the Java Virtual Machine (JVM) of the standard Java Development Kit (JDK). OC4J supplies the following J2EE containers: a servlet container that complies with the servlet 2.3 specification, and a JSP container that complies with the Sun JSP 1.2 specification. Full name: Oracle Application Server Containers for J2EE.

OmniPortlet

A declarative portlet-building tool that enables you to build portlets against a variety of data sources, including XML files, comma-delimited value files (for example, spreadsheets), Web Services, databases, Web pages, and SAP data sources. OmniPortlet users can also choose a pre-built layout for the data. Pre-built layouts

include tabular, news, bullet, form, or chart. You can use the OmniPortlet to build a custom Oracle Content Services portlet. Full name: OracleAS **Portal** OmniPortlet.

OPMN

Manages all the components within an application server instance, including **Oracle HTTP Server**, **OC4J** processes, and OracleAS **Web Cache**. It channels all events from different components to all components interested in receiving them. Use OPMN to manage Oracle Content Services processes like **HTTP nodes** and **regular nodes**. Full name: Oracle Process Manager and Notification Server.

OracleAS Infrastructure

An application server installation type that provides centralized product metadata and security services, configuration information, and data repositories for Oracle Application Server middle tiers and Oracle Collaboration Suite Applications tiers. Oracle Collaboration Suite Applications tiers use the OracleAS Infrastructure for three main services: Product Metadata Service, **Oracle Identity Management** Services, and the Management Service. The OracleAS Infrastructure is part of the **Oracle Collaboration Suite Infrastructure**. Full name: Oracle Application Server Infrastructure.

Oracle BPEL Process Manager

A component of Oracle Application Server. It includes the BPEL Server, the BPEL Console, the BPEL Worklist application for human-centric workflows, and the BPEL Designer. You can use the BPEL Designer, an Oracle JDeveloper-based design tool, to graphically create custom workflows for use in Oracle Content Services. See also **BPEL**.

Oracle Collaboration Suite

An integrated suite of software applications to enable communication, messaging, and content sharing in an enterprise environment. At an architectural level, it includes three tiers: an **Applications tier**, which consists of server applications that provide the basic functionality, a **Client tier**, which consists of applications on desktops, laptops, and wireless devices, and an **Infrastructure tier**, which provides centralized services, such as identity management and metadata storage, for the applications.

Oracle Collaboration Suite Applications

The applications that make up Oracle Collaboration Suite, namely:

- Oracle Calendar
- Oracle Collaboration Suite Search
- Oracle Content Services
- Oracle Discussions
- Oracle Mail
- Oracle Mobile Collaboration
- Oracle Real-Time Collaboration
- Oracle Voicemail & Fax
- Oracle Workspaces

Each of the preceding applications is a component of Oracle Collaboration Suite Applications. These applications rely on the services provided by the **Infrastructure tier**. See also **Applications tier**.

Oracle Collaboration Suite Control

A Web-based management interface used to manage Oracle Collaboration Suite **Applications tier** hosts. Oracle Content Services system administrators can use the Oracle Collaboration Suite Control to operate and monitor system processes associated with the Oracle Content Services **domain** and **nodes**. Full name: Oracle Enterprise Manager 10*g* Application Server Control for Collaboration Suite.

Oracle Collaboration Suite Database

The default database included with Oracle Collaboration Suite to hold application data and metadata. The Oracle Collaboration Suite Database is part of the **Oracle Collaboration Suite Infrastructure**.

Oracle Collaboration Suite Infrastructure

The underlying components that support Oracle Collaboration Suite and provide centralized product metadata and security services, configuration information, and data repositories for **Oracle Collaboration Suite Applications**. Oracle Collaboration Suite Infrastructure uses and builds on OracleAS Infrastructure. It includes the **Oracle Collaboration Suite Database** and **Oracle Identity Management**. See also **Infrastructure tier**.

Oracle Content Management SDK

A robust development platform for content management applications that was used to build Oracle Content Services. Oracle CM SDK provides a set of Java APIs that expose file system functionality such as file storage and searching, as well as document delete, move, and rename operations. The APIs also provide content management features unique to Oracle CM SDK, such as document versioning, controlling access to documents, and advanced queuing to facilitate communication between applications.

Oracle Content Services command-line tools

Administrative tools that can be used to manage groups and Libraries in Oracle Content Services. There are two tools: the **Group tool** and the **Library tool**. Each tool reads an XML file containing a list of actions, processes the list, and executes the actions. Previously known as the Bulk Tools.

Oracle Enterprise Manager

A systems management software application that enables you to manage and monitor Oracle Application Server instances and other Oracle server products. See also **Oracle Collaboration Suite Control**.

Oracle HTTP Server

The Web server component of Oracle Application Server, based on the Apache HTTP Server, version 1.3.28. This term should not be confused with the Oracle Content Services HTTP protocol server (`EcmHttpServer`).

Oracle Identity Management

An integrated set of components that provide distributed security to Oracle products and make it possible to centrally and securely manage enterprise identities and their access to applications in the enterprise. It includes the following components: **Oracle Internet Directory**, Oracle Directory Integration and Provisioning, Oracle Delegated Administration Services, OracleAS **Single Sign-On**, and Oracle Application Server Certificate Authority.

Oracle Internet Directory

An **LDAP** service that combines Oracle's database technology with the LDAP v3 directory standard. Oracle Internet Directory is a component of **Oracle Identity Management**. It is also tightly integrated with the Oracle Database. All Oracle Collaboration Suite users are created and managed in Oracle Internet Directory.

Oracle Records Management

A new component of Oracle Content Services that provides support for compliance solutions like enforced recordization and retention policies. Records Administrators can use Oracle Records Management to specify file plans and create record categories.

Oracle Text

A full-text retrieval technology built into the Oracle Database for indexing and searching text and documents. Oracle Text supports mixed languages and character sets in the same index. Oracle Content Services uses the text indexing and retrieval features of Oracle Text. In order to enable content-based searching, Oracle Text indexes each file you store in Oracle Content Services.

Oracle Workflow

A system that supports business process definition, automation, and integration. Its technology enables automation and continuous improvement to business processes, by routing information of any type according to user-defined rules. The internal Oracle Content Services workflows, such as Request for Quota, were created in Oracle Workflow, as well as the two default workflow processes (Parallel Vote and Serial Approval).

OUI

The installation wizard through which you can install Oracle products, including the Oracle Database, Oracle Application Server, and Oracle Collaboration Suite. Full name: Oracle Universal Installer.

Portal

A component of Oracle Application Server that is used for the development, deployment, administration, and configuration of enterprise class portals. OracleAS Portal incorporates a portal building framework with self-service publishing features to enable you to create and manage information accessed within your portal. Full name: Oracle Application Server Portal.

protocols

Means by which users can connect to Oracle Content Services. Oracle Content Services supports three protocols: **FTP**, **HTTP**, and **WebDAV**. The Oracle Content Services protocol servers listen for requests from clients on a specific port and respond to requests according to the rules of the protocol specification. Each protocol may interact with Oracle Content Services in a different way. A protocol server is a type of Oracle Content Services **server**.

quote commands

Special FTP commands that you can use with the Oracle Content Services **FTP** server. They include SETCHARACTERSET, SETCOMMANDCHARACTERSET, SETLANGUAGE, SHOWCHARACTERSET, and SHOWLANGUAGE.

RAC

Two or more computers configured to interact to provide the appearance of a single Oracle database. These two or more nodes are linked by an interconnect. The

interconnect serves as the communication path between each node in the cluster database. Each Oracle instance uses the interconnect for the messaging that synchronizes each instance's use of shared resources. Oracle also uses the interconnect to transmit data blocks that are shared by the multiple instances. The datafiles accessed by all the nodes are the primary type of shared resource. RAC requires that all nodes have simultaneous access to the shared disks to give the instances concurrent access to the database. Full name: Oracle Real Application Cluster.

Read-Only Connection Pool

A set of database connections shared by the **sessions** to perform database read operations. A minimum number of connections are created when the **service** is started. Depending on the number of concurrent operations performed by the sessions, and the nature of these operations, additional connections may be added to the pool up to a specified maximum. See also **Writable Connection Pool**.

realms

A collection of identities and associated policies that is typically used when enterprises want to isolate user populations and enforce different identity management policies for each population. Oracle Content Services **Sites** are based on realms. Realms are created and managed in **Oracle Internet Directory**. Also known as identity management realms.

regular nodes

One of two types of Oracle Content Services **nodes**. The regular node supports protocol servers, such as **FTP**, as well as **agents**, such as the Garbage Collection Agent. You can configure additional regular nodes on the same computer or on additional computers.

SAVSE

A partner solution that provides options to verify that content is virus-free and to clean files that are found to be infected. Once antivirus integration has been enabled and configured, files are scanned for viruses whenever they are opened for read access, using the latest available virus definitions. Full name: Symantec AntiVirus Scan Engine.

schema

A collection of database objects, including logical structures such as tables, views, sequences, stored procedures, synonyms, indexes, clusters, and database links. A schema has the name of the database user who controls it. The Oracle Content Services schema is created in an Oracle database during the configuration process. The schema owns all database objects, including metadata about Oracle Content Services and configuration information.

servers

Processes that support protocol access to Oracle Content Services (protocol servers) or that perform important internal functions (**agents**). Each Oracle Content Services **node** can support multiple servers. Each server is based on a particular **server configuration**.

server configuration

A configuration object that holds the default values used when a **server** is started for an Oracle Content Services **node**. In addition to the server type, each server configuration specifies values for parameters relevant to that type. For example, the **FTP** server configuration specifies the FTP port number, whether anonymous FTP

connections are allowed, and the connection time out period. If you want to make permanent changes to a server, modify its server configuration. If you want to make temporary (runtime) changes to a server, modify the server itself. Changes made to servers at runtime are lost when the node is restarted.

services

Processes that manage user **sessions** and that allow those sessions to access data in the Oracle Content Services repository. Each **node** must have at least one active service. A node can support multiple services, but typically you require only one for each node. Each service is based on a particular **service configuration**.

service configuration

A configuration object that holds the default values used when a **service** is started for an Oracle Content Services **node**. There are three default service configurations, named to reflect the size of their data caches: SmallServiceConfiguration, MediumServiceConfiguration, and LargeServiceConfiguration. If you want to make permanent changes to a service, modify its service configuration. If you want to make temporary (runtime) changes to a service, modify the service itself. Changes made to services at runtime are lost when the node is restarted.

sessions

A specific connection of a user to Oracle Content Services through a user process. A session lasts from the time the user logs in until the time the user logs out. Sessions can also time out. User sessions are supported by Oracle Content Services **services**.

Single Sign-On

A component of Oracle Application Server that enables users to log in to all features of Oracle Collaboration Suite using a single user name and password. Oracle Content Services users log in to Oracle Content Services using their **SSO password**. Full name: Oracle Application Server Single Sign-On.

SSO password

The password assigned to each Oracle Collaboration Suite user in **Oracle Internet Directory**. Users provide this password in order to authenticate against the OracleAS **Single Sign-On** server. Oracle Content Services users use the SSO password to sign in to Oracle Content Services. Full name: Single Sign-On password.

Sites

A discrete organizational entity in Oracle Content Services whose users can collaborate on files and folders. Users in one Site do not have access to the content of users in another Site. Oracle Content Services Sites are based on **realms**.

system administrators

Administrators in Oracle Content Services that are typically responsible for the following tasks:

- Installing and configuring Oracle Content Services

- Customizing their Oracle Content Services deployment by enabling virus checking, the FTP server, the OmniPortlet, retention hardware, or other options

- Managing the Oracle Content Services domain, nodes, services, and servers

- Performing system tuning and troubleshooting

- Adding, deleting, and managing Sites

- Registering custom workflows

tablespace

A database storage unit that groups related logical structures together.

Web Folders

The Microsoft operating system extension that supports the **WebDAV** protocol. Using Web Folders, you can drag and drop files into Oracle Content Services and browse your files through Windows Explorer. On Microsoft Windows 2000 and Microsoft Windows XP, Web Folders appears in Network Places.

WebDAV

One of three **protocols** supported by Oracle Content Services. It allows clients to browse and edit files on Oracle Content Services as if they were on the local machine. WebDAV is designed for Wide Area Networks such as the Internet. Currently, the most widespread WebDAV client is the **Web Folders** extension to Windows Explorer, also known as Network Places in Windows 2000/XP. Full name: Web-based Distributed Authoring and Versioning.

Web Cache

A component of Oracle Application Server that improves the performance, scalability, and availability of frequently used Web sites. By storing frequently accessed URLs in memory, OracleAS Web Cache eliminates the need to repeatedly process requests for those URLs on the Web server. OracleAS Web Cache uses invalidation-based caching. Full name: Oracle Application Server Web Cache.

workflow designer

A person with the necessary skills to design a workflow process in Oracle BPEL Process Manager. The workflow designer creates the **custom workflow** process, then the system administrator registers the custom workflow process with Oracle Content Services.

Writable Connection Pool

A set of database connections shared by the **sessions** to perform database read and write operations within a database transaction. A minimum number of connections are created when the **service** is started. Depending on the number of concurrent operations performed by the sessions, and the nature of these operations, additional connections may be added to the pool up to a specified maximum. See also **Read-Only Connection Pool**.

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