## Contents

1. **Introduction** ................................................................. 1
   1.1 Audience .................................................................. 1
   1.2 Overview .................................................................. 1
   1.3 Related documentation .............................................. 1

2. **Prerequisites** ................................................................. 2
   2.1 Oracle ...................................................................... 2
      2.1.1 SID and Oracle home directory ......................... 2
      2.1.2 Basic tuning ..................................................... 2
      2.1.3 SQL*Net .......................................................... 3
      2.1.4 Oracle Text ...................................................... 3
   2.2 Perl .......................................................................... 3
   2.3 Java Development Kit ............................................... 3
   2.4 Proxy server ............................................................ 4

3. **Environment** .............................................................. 4
   3.1 User account ........................................................... 4
   3.2 Environment variables .............................................. 4
   3.3 Installation directory ............................................... 5
   3.4 Directory structure .................................................. 5
   3.5 Package installation .................................................. 7
   3.6 Binaries .................................................................... 7
   3.7 Configuration files .................................................... 8
   3.8 Library files ............................................................ 9
   3.9 Log file directories ................................................... 10
   3.10 Process ID / lock files ............................................... 10

4. **Oracle environment** ..................................................... 10
   4.1 Oracle scripts ........................................................ 10
      4.1.1 SQL core scripts ............................................. 11
      4.1.2 SQL distribution server scripts ......................... 13
      4.1.3 SQL gateway scripts ....................................... 15
      4.1.4 SQL knowledge module scripts ....................... 15
      4.1.5 SQL locale scripts ........................................... 16
      4.1.6 SQL Realsserver module scripts ..................... 17
      4.1.7 External Search module scripts ....................... 17
   4.2 Oracle tablespaces ................................................... 17
   4.3 Oracle user ............................................................. 18
      4.3.1 Creating an Oracle user ................................. 18
4.3.2 Removing an Oracle user

4.4 Exporting and importing an Oracle database
  4.4.1 Exporting an instance
  4.4.2 Building the target user
  4.4.3 Importing the instance

4.5 Oracle Text indexes
  4.5.1 Creating search objects
  4.5.2 Dropping search objects
  4.5.3 Adding Oracle Text preferences
  4.5.4 Removing Oracle Text preferences
  4.5.5 Adding Oracle Text indexes
  4.5.6 Removing Oracle Text indexes

4.6 Additional tasks
  4.6.1 Locale and Multi Language Support
  4.6.2 Rebuild Oracle Text indexes
  4.6.3 Database performance statistics
  4.6.4 Free-search maintenance
  4.6.5 Maintaining transient data
  4.6.6 Managing the Distribution Server
  4.6.7 Managing the Content Gateway
  4.6.8 Managing the Knowledge Module - Classification component
  4.6.9 Managing the Knowledge Module - Theme component
  4.6.10 Creating a site group
  4.6.11 Updating an existing site group

5 Configuration
  5.1 Setting a license key
  5.2 Core configuration
    5.2.1 ms.properties
    5.2.2 Java Service Wrapper configuration files
  5.3 Additional configuration
    5.3.1 Content Importer
    5.3.2 Distribution module
    5.3.3 The Dreamweaver servlet
    5.3.4 Content Application Engine
  5.4 Apache
    5.4.1 Forwarding requests

6 Operation
  6.1 Controlling the services
1 Introduction

This guide explains how to configure and maintain an Alterian Content Manager (ACM) installation on the UNIX platform. This guide does not describe how to install a new instance of ACM. For this refer to the Installation Guide for UNIX.

The guide explains the environment layout of an ACM server; some common tasks involved in configuring it; and how to monitor its operation.

1.1 Audience

This document is intended to be used by technical staff responsible for the configuration and maintenance of ACM installations.

1.2 Overview

This document is split into the following sections:

- Prerequisites
  This section outlines the prerequisites for an ACM installation on the UNIX platform.
- Environment
  This section details the environment that ACM operates in.
- Configuration
  This section details the configuration of ACM.
- Operation
  This section details the operation of ACM.
- Monitoring
  This section details the monitoring of ACM.

1.3 Related documentation

For additional details of setting up and maintaining a server installation refer to the following documents:

- Installation Guide for UNIX
- Collaboration Service Administration Guide
- Knowledge Module Administration Guide

The latest versions of all the documentation is available on the Alterian support site at:

http://supportal.alterian.com
# 2 Prerequisites

This section outlines the prerequisites for an ACM installation on the UNIX platform. Please refer to the Supported Architectures document for details of the supported platforms and the Prerequisites Guide document for full details of the particular system prerequisites.

> **Note**

The automated Installer will ask for confirmation that all prerequisites have been met before performing an installation. Refer to the Installation Guide for UNIX for further details of the installer.

## 2.1 Oracle

An installation of ACM requires an Oracle Server to operate. The Enterprise Edition is recommended for those sites with higher performance requirements as it contains a number of optimizations over the Standard Edition. The Content Application Engine (CAe) and Reporting module additionally require the Oracle Text option (in previous versions of Oracle, this product was known as Oracle InterMedia Text) to enable free text searches to be carried out on your content. Please see the Prerequisites Guide and the Supported Architectures document for further information about which specific versions of Oracle are currently supported.

> **Note**

ACM is only supported with Standard Edition options; Oracle Enterprise options such as Partitioning are not supported.

### 2.1.1 SID and Oracle home directory

ACM assumes a default system identifier (SID) for the database instance of `sid1`, and Oracle’s UNIX home directory to be the `/usr/local/oracle` directory. Note that the `ORACLE_HOME` environment variable is set to `/usr/local/oracle/product/10.2.0.2/db_1` (or for Oracle 11g Release 2, set this to `/usr/local/oracle/app/product/11.2.0/dbhome_1` for Oracle 11g Release 2). Each of these settings can be modified if required.

The configuration file `/etc/oracle.conf` is used by ACM to determine the location of Oracle. If a non-standard Oracle installation has been performed, amend the `ORACLE_BASE`, `ORACLE_HOME` and `ORACLE_SID` settings in this file appropriately. Changes will also need to be made to the environment variable settings in the `~/.profile` files for the `root` and `ms` users.

### 2.1.2 Basic tuning

A database block size of 8K is recommended. This will ensure that one row from any of the core tables within ACM will fit into one database block, giving improved performance.

ACM makes extensive use of pre-prepared queries for maximum efficiency. In order to support this number of simultaneous Oracle cursors, it is necessary to increase the maximum number of open cursors available for each connection. This can be done by ensuring that the following line is present in the `$ORACLE_BASE/admin/$ORACLE_SID/pfile/init<oracle_sid>.ora` file:

```
open_cursors = 500
```
The other settings in the default Oracle init<oracle_sid>.ora file will need to be tailored according to installation size. For further information, consult the Oracle Manuals on database administration and tuning.

2.1.3 SQL*Net

SQL*Net with the TCP/IP adapter will need to be configured so that the various services and the Rules Console can connect to Oracle.

ACM assumes a default SQL*Net port of 1521. This can be changed by editing the appropriate ms.properties file on the server and, if a firewall is in use, through settings in the rulesconsole.properties file for the Rules Console. You also have to modify the Oracle Network files (listener.ora and tnsnames.ora in $ORACLE_HOME/network/admin) will need updating to reflect change.

2.1.4 Oracle Text

The Installer automatically sets up Oracle Text index management jobs. For non-standard installations, Oracle Text will need to be configured to support an appropriate number of background jobs. The default number of jobs is defined by the job_queue_processes parameter in the file:

```
$ORACLE_BASE/admin/$ORACLE_SID/pfile/init<oracle_sid>.ora
```

2.2 Perl

Perl must be installed in order to install and license the product. Please see the Prerequisites Guide for the currently supported Perl versions and the required Perl modules. The modules are all available on the Support CD for supported platforms. Alternatively you can download the latest versions from the Comprehensive Perl Archive Network (CPAN). The Installer automatically installs and configures the Perl modules for the installation platform. See the Installation Guide for UNIX for further details.

ACM expects Perl to be located in /usr/local/bin/perl. If it is installed in any other location then it will be necessary to edit the first line of each of the Perl scripts in the bin directory to reflect this or, better still add a symbolic link to the expected location.

2.3 Java Development Kit

A Java JDK is required on the installation server for the Task, Reporting, CAe, Distribution and Content Gateway services. Please see the Supported Architectures guide for the currently supported Java versions.

By default, the Java executable is expected to be in /usr/local/jre/bin/java and the standard Java classes in /usr/local/jre/lib/rt.jar. Typically there will be a symlink from /usr/local/jre to the current JAVA_HOME. This can be changed by editing the file /etc/ms.conf and the lines for JAVA_EXEC and JAVA_CLASS set correctly for the database.
Linux

Linux comes with GNU Java pre-installed. However, this is not suitable for use with ACM. A Sun JDK will need to be installed - the currently supported versions are listed in the Supported Architectures document.

Solaris

Solaris is typically supplied with a compatible version of Java. However, this may need to be upgraded to the latest version specified in the Supported Architectures document.

2.4 Proxy server

It is recommended that any Java delivered sites are placed behind a caching proxy server. Any proxy server that allows the mapping of another HTTP server into its URL space can be used for this task.

We recommend the use of Apache with its mod_proxy module, or for clients making use of PDF files on their web sites (which currently do not cache correctly in Apache 2.2), Squid 2.6 is a suitable caching server.

3 Environment

This section covers the environment that ACM operates in and the directories and configuration files that are shipped with the product.

3.1 User account

ACM is typically installed as the root user (see the Installation Guide for UNIX for full details). Note that an additional user account is also created during installation. This is not a necessity, but does provide a standard account and home directory for managing a server. Normally this user will be called ms, this name is not included in any programs shipped with the product and does not affect any ownership of files.

3.2 Environment variables

The ms and root accounts should set up the environment variables needed for Oracle. For a sh, ksh or bash shell this would typically be through adding the following line to the .profile shell script:

```
. /etc/ms.conf
```

The /etc/ms.conf and associated /etc/oracle.conf files are installed and configured automatically by the Installer. See the Installation Guide for UNIX for further details.
3.3 Installation directory

By default, ACM will be installed into the following directory:

```
/usr/local/acm/X.Y.Z
```

Where X.Y.Z is the release number of the product. A symbolic link to this directory will also be made from `/usr/local/acm/X.Y.Z` to `/usr/local/acm/X.Y`.

3.4 Directory structure

The directory structure for the server installation is as follows:

<table>
<thead>
<tr>
<th>Directory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/acm</td>
<td>Installation directory</td>
</tr>
<tr>
<td>/bin</td>
<td>Binaries and support scripts</td>
</tr>
<tr>
<td>/native</td>
<td>Native Java Service Wrapper binaries</td>
</tr>
<tr>
<td>/client</td>
<td>Client installation programs</td>
</tr>
<tr>
<td>/rules_console</td>
<td>Rules Console installer</td>
</tr>
<tr>
<td>/docs</td>
<td>Java API and taglib reference documentation</td>
</tr>
<tr>
<td>/etc</td>
<td>Configuration files</td>
</tr>
<tr>
<td>/dods</td>
<td>Workflow engine data object persistence configuration</td>
</tr>
<tr>
<td>/gateway</td>
<td>Gateway configuration files</td>
</tr>
<tr>
<td>/service.template</td>
<td>Java Service Wrapper template configuration files</td>
</tr>
<tr>
<td>/plugins</td>
<td>Content Application engine (CAe) plugin template files</td>
</tr>
<tr>
<td>/lib</td>
<td>Library files</td>
</tr>
<tr>
<td>/checker</td>
<td>Accessibility checker libraries</td>
</tr>
<tr>
<td>/classes</td>
<td>Java classes &amp; JARs</td>
</tr>
<tr>
<td>/km</td>
<td>Knowledge Module libraries</td>
</tr>
<tr>
<td>/model</td>
<td></td>
</tr>
<tr>
<td>/schemas</td>
<td></td>
</tr>
<tr>
<td>/library</td>
<td>XML Schemas – library elements</td>
</tr>
<tr>
<td>/1.0</td>
<td></td>
</tr>
<tr>
<td>/mediasurface</td>
<td>XML Schemas</td>
</tr>
<tr>
<td>/1.0</td>
<td></td>
</tr>
<tr>
<td>/&lt;ms_user&gt;</td>
<td>XML Schemas for <code>&lt;ms_user&gt;</code></td>
</tr>
<tr>
<td>/1.0</td>
<td></td>
</tr>
<tr>
<td>/native</td>
<td>Native Java Service Wrapper libraries</td>
</tr>
<tr>
<td>Directory</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>/servlets</td>
<td>Servlets</td>
</tr>
<tr>
<td>/wsdl</td>
<td>WSDL files describing SOAP services</td>
</tr>
<tr>
<td>/1.0</td>
<td>WSDL files describing SOAP services</td>
</tr>
<tr>
<td>/lock</td>
<td>Lock / process ID files, symlink to /var/lock/acm/5.9</td>
</tr>
<tr>
<td>/logs</td>
<td>Log files from all services, symlinked to /var/log/acm/5.9</td>
</tr>
<tr>
<td>/&lt;ms_user&gt;</td>
<td>Log files for user &lt;ms_user&gt;</td>
</tr>
<tr>
<td>/repository</td>
<td>Repository directory</td>
</tr>
<tr>
<td>/content</td>
<td>Side Definition Format (SDF) directory</td>
</tr>
<tr>
<td>/sitegroups</td>
<td>SDF site group files</td>
</tr>
<tr>
<td>/templates</td>
<td>SDF template files</td>
</tr>
<tr>
<td>/schema</td>
<td>Schema definition files</td>
</tr>
<tr>
<td>/install</td>
<td>Base schema installation definitions</td>
</tr>
<tr>
<td>/instance</td>
<td>Instance management definitions</td>
</tr>
<tr>
<td>/latest</td>
<td>Latest schema package and trigger definitions</td>
</tr>
<tr>
<td>/uninstall</td>
<td>Instance uninstall definitions</td>
</tr>
<tr>
<td>/update</td>
<td>Schema update definitions</td>
</tr>
<tr>
<td>/resources</td>
<td>External resources</td>
</tr>
<tr>
<td>/wysiwyg</td>
<td>Wysiwyg resources</td>
</tr>
<tr>
<td>/ewebeditpro</td>
<td>Setup configuration files.</td>
</tr>
<tr>
<td>/clientinstall</td>
<td>Instant Site™ site packs (if installed)</td>
</tr>
<tr>
<td>/mozilla</td>
<td>Legacy SQL files (not to be used unless directed by Alterian)</td>
</tr>
<tr>
<td>/toolbar</td>
<td>Temporary files, symlink to /var/tmp/acm</td>
</tr>
<tr>
<td>/images</td>
<td>Java web applications</td>
</tr>
<tr>
<td>/setup</td>
<td>Template for Java webapp</td>
</tr>
<tr>
<td>/sitepacks</td>
<td>Page Studio files</td>
</tr>
<tr>
<td>/sql</td>
<td>Web Client files</td>
</tr>
<tr>
<td>/tmp</td>
<td>Web Client files</td>
</tr>
</tbody>
</table>
3.5 Package installation

The installer automatically installs the supplied release of ACM from the installation CD. Please refer to the *Installation Guide for UNIX* for information regarding installation of the product.

3.6 Binaries

The `bin` directory contains scripts for managing and updating various parts of ACM.

<table>
<thead>
<tr>
<th>Binary</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>cleanlive</code></td>
<td>Clean old search results, session data and user data</td>
</tr>
<tr>
<td><code>create_site_shell</code></td>
<td>Creates a site shell for use with Instant Site™</td>
</tr>
<tr>
<td><code>licencekey</code></td>
<td>Set a temporary or permanent licence key</td>
</tr>
<tr>
<td><code>listsites</code></td>
<td>List all the site groups</td>
</tr>
<tr>
<td><code>msctl</code></td>
<td>Start up, shut down or restart services</td>
</tr>
<tr>
<td><code>msdaemon</code></td>
<td>Daemon startup script</td>
</tr>
<tr>
<td><code>mstomcat</code></td>
<td>Start up, shut down Tomcat</td>
</tr>
<tr>
<td><code>msdaemon</code></td>
<td>Starts up basic processes as daemon processes</td>
</tr>
<tr>
<td><code>parseLDAP</code></td>
<td>Utility to parse and modify LDAP directory entries</td>
</tr>
<tr>
<td><code>rebuildtextindexes</code></td>
<td>Rebuild and optimise Oracle Text indexes</td>
</tr>
<tr>
<td><code>RouteParser</code></td>
<td>Create Content Gateway route configuration file</td>
</tr>
<tr>
<td><code>synclocales</code></td>
<td>Updates the <code>lang</code> column on all the relevant tables</td>
</tr>
<tr>
<td><code>updatedbstats</code></td>
<td>Update database statistics for Oracle optimization</td>
</tr>
<tr>
<td><code>updatefreesearch</code></td>
<td>Update search <code>freesearch</code> table</td>
</tr>
<tr>
<td><code>updatehosts</code></td>
<td>Update hosts for a database</td>
</tr>
<tr>
<td><code>updatemessages.pl</code></td>
<td>Update messages within a JAR file</td>
</tr>
<tr>
<td><code>writemail</code></td>
<td>Write a mail message into a Content Importer directory</td>
</tr>
</tbody>
</table>

Not all the files in this directory are designed for end-user operation. Some are started by other programs or run automatically.

3.7 Configuration files

The `etc` directory contains sample configuration files for the server-side ACM components:

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>build.xml</code></td>
<td>Configuration Manager support script</td>
</tr>
<tr>
<td><code>cae-jobs.xml.template</code></td>
<td>Template configuration file for controlling jobs in the CAe</td>
</tr>
<tr>
<td><code>cae.policy.template</code></td>
<td>Template Java policy file for running the CAe</td>
</tr>
<tr>
<td>File</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------</td>
</tr>
<tr>
<td>crontab.ms.template</td>
<td>Template crontab file</td>
</tr>
<tr>
<td>distd.email.template</td>
<td>Template Distribution Service e-mail notification file</td>
</tr>
<tr>
<td>gsa-listener.config.template</td>
<td>Template Google Search Appliance configuration file</td>
</tr>
<tr>
<td>ldapparse.rules.template</td>
<td>Template configuration file for the LDAP directory parser</td>
</tr>
<tr>
<td>log4j.xml.template</td>
<td>Template file for the CAe’s log4j logging mechanism</td>
</tr>
<tr>
<td>ms.properties.template</td>
<td>Template properties file for controlling the services</td>
</tr>
<tr>
<td>ms.sitepack.shell.template</td>
<td>Template site shell configuration file for use with Instant Site™</td>
</tr>
<tr>
<td>servlet.msextend.initargs.template</td>
<td>Template configuration for a web server to run the Dreamweaver Design Module servlet</td>
</tr>
<tr>
<td>servlet.msupload.initargs.template</td>
<td>Template configurations for a web server to run the Integration Module HTTP drop servlet</td>
</tr>
<tr>
<td>shark.conf.template</td>
<td>Workflow engine configuration file template</td>
</tr>
<tr>
<td>sitewizard.properties</td>
<td>Site Build Wizard configuration</td>
</tr>
<tr>
<td>syncusers.xml.template</td>
<td>LDAP user synchronization DTD</td>
</tr>
</tbody>
</table>

The `etc/gateway` directory contains sample files for configuring the gateway functionality:

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>jms_bea.conf</td>
<td>Sample configuration file for BEA weblogic</td>
</tr>
<tr>
<td>jms_jboss.conf</td>
<td>Sample configuration file for JBoss</td>
</tr>
<tr>
<td>jms_openjms.conf</td>
<td>Sample configuration file for OpenJMS</td>
</tr>
<tr>
<td>jms_swiftmq.conf</td>
<td>Sample configuration file for SwiftJQ</td>
</tr>
</tbody>
</table>

The `etc/service.template` directory contains sample configuration files for the Java Service Wrapper:

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cae.conf</td>
<td>Sample configuration file for the Content Application Engine service</td>
</tr>
<tr>
<td>collab.conf</td>
<td>Sample configuration for the Collaboration service</td>
</tr>
<tr>
<td>distd.conf</td>
<td>Sample configuration file for Distribution service</td>
</tr>
<tr>
<td>gated.conf</td>
<td>Sample configuration file for the Gateway service</td>
</tr>
<tr>
<td>integrator.conf</td>
<td>Sample configuration file for the Content Importer service</td>
</tr>
<tr>
<td>lockmanager.conf</td>
<td>Sample configuration file for the Lock Manager service</td>
</tr>
</tbody>
</table>
### Environment

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>naming.conf</td>
<td>Sample configuration file for the Naming service</td>
</tr>
<tr>
<td>reporter.conf</td>
<td>Sample configuration file for the Reporting service</td>
</tr>
<tr>
<td>syncd.conf</td>
<td>Sample configuration file for the Synchronisation service</td>
</tr>
<tr>
<td>syncusers.conf</td>
<td>Sample configuration file for the LDAP user synchronisation service</td>
</tr>
<tr>
<td>updatelinks.conf</td>
<td>Sample configuration file for the Update links service</td>
</tr>
</tbody>
</table>

The **etc/dods** directory contains configuration files for the workflow engine data object persistence mechanism:

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dodsConf.xml</td>
<td>Workflow engine configuration file</td>
</tr>
<tr>
<td>MSQLConf.xml</td>
<td>Workflow engine SQL Server data mapping configuration file</td>
</tr>
<tr>
<td>OracleConf.xml</td>
<td>Workflow engine Oracle data mapping configuration file</td>
</tr>
</tbody>
</table>

The **etc/service.template/plugins** directory contains sample configuration files for the CAe plug-in modules:

<table>
<thead>
<tr>
<th>File</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>aspects-config.xml</td>
<td>Sample configuration file for the “aspect” related beans</td>
</tr>
<tr>
<td>cache-config.xml</td>
<td>Sample configuration file for the cache plug-in beans</td>
</tr>
<tr>
<td>cae-context.xml</td>
<td>Sample Spring configuration file for the CAe plug-in</td>
</tr>
<tr>
<td>jboss-cache-service.xml</td>
<td>Sample configuration file for the JBoss cache instance</td>
</tr>
<tr>
<td>proxy-config.xml</td>
<td>Sample configuration file for the local proxy beans</td>
</tr>
<tr>
<td>remote-proxy-config.xml</td>
<td>Sample configuration file for the delegate beans</td>
</tr>
</tbody>
</table>

### 3.8 Library files

The **lib** directory contains libraries used by the ACM product and supporting software.

The **classes** sub-directory contains JAR files of the classes used by the Java services.

This directory also contains both XML Schema and WSDL files required by the SOAP interface. More information on these can be found in the **SOAP User Guide**.

### 3.9 Log file directories

Each service process writes to its own log file into the **logs** directory. This directory has a symlink to */var/log/acm/X.Y* directory. In addition, the Java Service Wrapper will write its own logs to the same directory. These logs will have **.service** in the name, for example:
Within the logs directory there must be a sub-directory with the same name as the Oracle schema user. This sub-directory must be writable by the same owner or group that the application services run under.

Log files, particularly the access logs from the CAe, should preferably be written to a separate disk than the Oracle data files, otherwise file system contention could result. You can modify the directory that the log files are written to by editing the `logsdir` property within the `ms.properties` file.

### 3.10 Process ID / lock files

Each service process writes its process ID to a lock file in the `lock` directory. This directory has a symlink to `/var/lock/acm/X.Y` directory. The information stored in these files is used by the `msctl` service control script and Java Service Wrappers for subsequently shutting down a service.

### 4 Oracle

#### 4.1 Legacy database scripts

**Warning** You should not call any of these scripts directly unless instructed to do so by Alterian support. They are provided purely to support the upgrade of legacy instances.

The scripts can be run using SQL*Plus. Note that several of these scripts require additional parameters in order to run. See individual files for more details.

From within the `sql` directory, one would typically type:

```
sqlplus <ms_user>/<ms_password>@<oracle_sid> @script_name.sql [parameters]
```

Replace the `username`, `password`, `oracle_sid`, `script_name` and any parameters as appropriate.

#### 4.1.1 SQL core scripts

The following scripts are located in the `$MS_HOME/sql` directory:

<table>
<thead>
<tr>
<th>Script</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>access.pkh</td>
<td>Access package header</td>
</tr>
<tr>
<td>access.plb</td>
<td>Access package body</td>
</tr>
<tr>
<td>adjust_dates.sql</td>
<td>Script to universally modify all database dates to a different</td>
</tr>
<tr>
<td>Script</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>create_access_pkg.sql</td>
<td>Create access package</td>
</tr>
<tr>
<td>create_am_directories.sql</td>
<td>Create the Rich Media Extensions directory objects</td>
</tr>
<tr>
<td>create_context.sql</td>
<td>Create the Oracle Text indexes</td>
</tr>
<tr>
<td>create_freesearch_update.sql</td>
<td>Create search triggers used to record items that have been updated</td>
</tr>
<tr>
<td>create_functions.sql</td>
<td>Create the functions used by the Content Application Engine</td>
</tr>
<tr>
<td>create_indexes.sql</td>
<td>Create the indexes for core tables</td>
</tr>
<tr>
<td>create_item_pkg.sql</td>
<td>Create the item package</td>
</tr>
<tr>
<td>create_java_permissions.sql</td>
<td>Grant the Java schema object load policy permissions</td>
</tr>
<tr>
<td>create_java_url_permissions.sql</td>
<td>Grant the Java schema object URL connect and resource policy permissions</td>
</tr>
<tr>
<td>create_linguistic_indexes.sql</td>
<td>Create the Oracle Text linguistic indexes</td>
</tr>
<tr>
<td>create_media_pkg.sql</td>
<td>Create the Rich Media Extensions mediatype package</td>
</tr>
<tr>
<td>create_msuser.sql</td>
<td>Create the instance user in Oracle. This file requires four parameters passing to it.</td>
</tr>
<tr>
<td>create_multi_context.sql</td>
<td>Create the multi-language Oracle Text indexes</td>
</tr>
<tr>
<td>create_multi_preferences.sql</td>
<td>Create the multi-language Oracle Text preferences</td>
</tr>
<tr>
<td>create_preferences.sql</td>
<td>Creates the preferences that are required for Oracle Text</td>
</tr>
<tr>
<td>create_procedures.sql</td>
<td>Create core procedures</td>
</tr>
<tr>
<td>create_schema_pkg.sql</td>
<td>Create the schema package</td>
</tr>
<tr>
<td>create_search_procs.sql</td>
<td>Procedure used to populate freesearch table</td>
</tr>
<tr>
<td>create_search_tables.sql</td>
<td>Create tables used for searching</td>
</tr>
<tr>
<td>create_search_triggers.sql</td>
<td>Triggers used to populate search table using stored procedure</td>
</tr>
<tr>
<td>create_sequences.sql</td>
<td>Create sequences for core tables</td>
</tr>
<tr>
<td>create_site.sql</td>
<td>Create a new site group for use with the Smart Client</td>
</tr>
<tr>
<td>create_text_sync_job.sql</td>
<td>Submit Oracle Text index DBMS jobs</td>
</tr>
<tr>
<td>create_triggers.sql</td>
<td>Create core triggers</td>
</tr>
<tr>
<td>describe_primary_keys.sql</td>
<td>Output the schema primary keys. This is used by create_distribution_triggers.pl.</td>
</tr>
<tr>
<td>drop_access_pkg.sql</td>
<td>Drop the access package</td>
</tr>
<tr>
<td>drop_am_directories.sql</td>
<td>Drop the Rich Media Extensions directory objects</td>
</tr>
<tr>
<td>drop_context.sql</td>
<td>Drop the Oracle Text indexes</td>
</tr>
<tr>
<td>drop_freesearch_update.sql</td>
<td>Drop the searching triggers used to record items that have been updated</td>
</tr>
<tr>
<td>Script</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>drop_functions.sql</td>
<td>Drop the functions used by the Content Application Engine</td>
</tr>
<tr>
<td>drop_indexes.sql</td>
<td>Drop indexes for core tables</td>
</tr>
<tr>
<td>drop_item_pkg.sql</td>
<td>Drop the item package</td>
</tr>
<tr>
<td>drop_java_permissions.sql</td>
<td>Drop the Java schema object permissions</td>
</tr>
<tr>
<td>drop_linguistic_indexes.sql</td>
<td>Drop the Oracle Text linguistic indexes</td>
</tr>
<tr>
<td>drop_media_pkg.sql</td>
<td>Drop the Rich Media Extensions mediatype package</td>
</tr>
<tr>
<td>drop_msuser.sql</td>
<td>Drop the instance user</td>
</tr>
<tr>
<td>drop_multi_context.sql</td>
<td>Drop the multi-language Oracle Text indexes</td>
</tr>
<tr>
<td>drop_multi_preferences.sql</td>
<td>Drop the multi-language Oracle Text preferences</td>
</tr>
<tr>
<td>drop_preferences.sql</td>
<td>Drop the Oracle Text preferences</td>
</tr>
<tr>
<td>drop_procedures.sql</td>
<td>Drop core procedures</td>
</tr>
<tr>
<td>drop_schema_pkg.sql</td>
<td>Drop the schema package</td>
</tr>
<tr>
<td>drop_search_procs.sql</td>
<td>Drop procedure used to populate freesearch table</td>
</tr>
<tr>
<td>drop_search_tables.sql</td>
<td>Drop tables used for searching</td>
</tr>
<tr>
<td>drop_search_triggers.sql</td>
<td>Drop triggers used to populate search table using stored procedure</td>
</tr>
<tr>
<td>drop_sequences.sql</td>
<td>Drop sequences for core tables</td>
</tr>
<tr>
<td>drop_text_sync_job.sql</td>
<td>Remove Oracle Text index DBMS jobs</td>
</tr>
<tr>
<td>drop_triggers.sql</td>
<td>Drop core triggers</td>
</tr>
<tr>
<td>generate_compile_object.sql</td>
<td>Generate script used to recompile invalid database objects</td>
</tr>
<tr>
<td>generate_enable_disable.sql</td>
<td>Generate script used during upgrades and imports to enable/disable and drop any constraints</td>
</tr>
<tr>
<td>generate_rebuild_indexes.sql</td>
<td>Generates rebuild indexes script</td>
</tr>
<tr>
<td>get_xml_version.sql</td>
<td>Displays the version of the XML Parser database package</td>
</tr>
<tr>
<td>grant_search_procs.sql</td>
<td>Grants access permissions to use the custom search indexing procedure</td>
</tr>
<tr>
<td>insert_core_data.sql</td>
<td>Inserts core data into a blank instance</td>
</tr>
<tr>
<td>insert_generic_site_data.sql</td>
<td>Inserts generic site data into an existing blank site group</td>
</tr>
<tr>
<td>item.pkh</td>
<td>Item package header</td>
</tr>
<tr>
<td>item.plb</td>
<td>Item package body</td>
</tr>
</tbody>
</table>
### Description

**list_link-roster_usage.sql**
- Lists where link roster entries are used in the supplied site group. Takes two parameters - the first is the directory location to write the resulting `link-roster_usage.txt` file to; the second is the site name. For example:
  
  ```sql
  sqlplus cm/alterian @ list_link-roster_usage /var/tmp Default
  ```

**rebuild_invalid_objects.sql**
- Rebuild invalid Oracle schema objects

**rebuild_text_indexes.sql**
- Rebuild Text indexes for Oracle Standard install

**reset_page_studio_layouts.sql**
- Resets the page studio layouts to the default values for the given site

**reset_type_group_permissions.sql**
- Resets the group access permissions for all system types

**resync_cr_obj.sql**
- Resynchronise `cr_obj` table

**schema.pkh**
- Schema package header

**schema.plb**
- Schema package body

**table_constraints.sql**
- Applies all the constraints to the database

**update_access_permissions.sql**
- Updates user and group access permissions for use with the Smart Client

**update_site.sql**
- Update an existing pre-5.0 site for use with the Smart Client

**utf8_diff.sql**
- Script to compare differences for UTF-8 encoded data

**verify_java_objects.sql**
- Script to validate the installed Java schema objects

---

### 4.1.2 SQL distribution server scripts

The following scripts are located in the `SMS_HOME/sql/distrib` directory:

<table>
<thead>
<tr>
<th>Script</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>create_distribution_indexes.sql</strong></td>
<td>Create the distribution indexes required for the new distribution tables</td>
</tr>
<tr>
<td><strong>create_distribution_mirror_tables.pl</strong></td>
<td>Create mirror tables on staging server used by the Distribution Service. You need to pass the username and password to this script.</td>
</tr>
<tr>
<td><strong>create_distribution_procs.sql</strong></td>
<td>Created the distribution procedures for the master user</td>
</tr>
<tr>
<td><strong>create_distribution_sequences.sql</strong></td>
<td>Create sequences on staging server used by the Distribution Service</td>
</tr>
<tr>
<td><strong>create_distribution_tables.sql</strong></td>
<td>Create tables on staging server used by the Distribution Service</td>
</tr>
<tr>
<td>Script</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>create_distribution_triggers.pl</td>
<td>Create triggers on staging server used by Distribution Service. The username and password needs to be passed to this file.</td>
</tr>
<tr>
<td>create_sibling_obj_triggers.sql</td>
<td>Create Sibling Object triggers</td>
</tr>
<tr>
<td>create_sibling_template_triggers.sql</td>
<td>Create Sibling Template triggers</td>
</tr>
<tr>
<td>create_slave_constraints.sql</td>
<td>Create the slave constraints for slave server used by the Distribution Service</td>
</tr>
<tr>
<td>create_slave_pkg.sql</td>
<td>Create the slave procedures for slave server used by the Distribution Service</td>
</tr>
<tr>
<td>create_slave_tables.sql</td>
<td>Create the slave tables for slave server used by the Distribution Service</td>
</tr>
<tr>
<td>create_slave_triggers.sql</td>
<td>Create the slave triggers for slave server used by the Distribution Service</td>
</tr>
<tr>
<td>create_staging_sequences.sql</td>
<td>Creates the sequences based on existing data</td>
</tr>
<tr>
<td>distribution_table.tbl</td>
<td>List of tables to be distributed by the Distribution Service</td>
</tr>
<tr>
<td>distribution_table_constraints.sql</td>
<td>Applies constraints on the staging server needed by the Distribution Service</td>
</tr>
<tr>
<td>drop_distribution_indexes.sql</td>
<td>Drop indexes on the staging server used by the Distribution Service</td>
</tr>
<tr>
<td>drop_distribution_procs.sql</td>
<td>Drop the distribution procedures</td>
</tr>
<tr>
<td>drop_distribution_sequences.sql</td>
<td>Drop sequences on the staging server used by the Distribution Service</td>
</tr>
<tr>
<td>drop_distribution_tables.sql</td>
<td>Drop tables on the staging server used by the Distribution Service</td>
</tr>
<tr>
<td>drop_distribution_triggers.sql</td>
<td>Drop the staging server distribution module row and statement based triggers</td>
</tr>
<tr>
<td>drop_sibling_obj_triggers.sql</td>
<td>Drop Sibling Object triggers</td>
</tr>
<tr>
<td>drop_sibling_template_triggers.sql</td>
<td>Drop Sibling Template triggers</td>
</tr>
<tr>
<td>drop_slave_constraints.sql</td>
<td>Drop the constraints from the slave server for the Distribution Service</td>
</tr>
<tr>
<td>drop_slave_pkg.sql</td>
<td>Drop the procedures from the slave server for the Distribution Service</td>
</tr>
<tr>
<td>drop_slave_tables.sql</td>
<td>Drop the tables from the slave server for the Distribution Service</td>
</tr>
<tr>
<td>drop_slave_triggers.sql</td>
<td>Drop the triggers from the slave server for the Distribution Service</td>
</tr>
<tr>
<td>drop_staging_sequences.sql</td>
<td>Drop the sequences that aren’t required on the staging server</td>
</tr>
</tbody>
</table>
### 4.1.3 SQL gateway scripts

The following scripts are located in the `$MS_HOME/sql/gateway` directory:

<table>
<thead>
<tr>
<th>Script</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>create_gateway_mirror_tables.sql</code></td>
<td>Create mirror tables used by the gateway module</td>
</tr>
<tr>
<td><code>create_gateway_procs.sql</code></td>
<td>Create procedures required for the gateway module</td>
</tr>
<tr>
<td><code>create_gateway_sequences.sql</code></td>
<td>Create the sequences used by the gateway module</td>
</tr>
<tr>
<td><code>create_gateway_tables.sql</code></td>
<td>Create tables used by the gateway module</td>
</tr>
<tr>
<td><code>create_gateway_triggers.sql</code></td>
<td>Create triggers used by the gateway module</td>
</tr>
<tr>
<td><code>drop_gateway_mirror_tables.sql</code></td>
<td>Drop mirror tables used by the gateway module</td>
</tr>
<tr>
<td><code>drop_gateway_procs.sql</code></td>
<td>Drop procedures required for the gateway module</td>
</tr>
<tr>
<td><code>drop_gateway_sequences.sql</code></td>
<td>Drop the sequences used by the gateway module</td>
</tr>
<tr>
<td><code>drop_gateway_tables.sql</code></td>
<td>Drop tables used by the gateway module</td>
</tr>
<tr>
<td><code>drop_gateway_triggers.sql</code></td>
<td>Drop triggers used by the gateway module</td>
</tr>
<tr>
<td><code>gateway_table_constraints.sql</code></td>
<td>Applies constraints needed by the gateway module</td>
</tr>
</tbody>
</table>

### 4.1.4 SQL knowledge module scripts

The following scripts are located in the `$MS_HOME/sql/km` directory:

<table>
<thead>
<tr>
<th>Script</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>create_km_class.sql</code></td>
<td>Create the classification schema objects</td>
</tr>
<tr>
<td><code>create_km_class_constraints.sql</code></td>
<td>Create the classification table constraints</td>
</tr>
<tr>
<td><code>create_km_class_pkg.sql</code></td>
<td>Create the classification package</td>
</tr>
<tr>
<td><code>create_km_class_policies.sql</code></td>
<td>Create the classification Oracle Text policies</td>
</tr>
<tr>
<td><code>create_km_class_sync_job.sql</code></td>
<td>Create the classification DBMS_JOBS to periodically resync the Oracle Text indexes</td>
</tr>
<tr>
<td><code>create_km_class_tables.sql</code></td>
<td>Create the classification tables</td>
</tr>
<tr>
<td>Script</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>create_km_class_types.sql</td>
<td>Create the classification object types</td>
</tr>
<tr>
<td>create_km_theme.sql</td>
<td>Create the theme schema objects</td>
</tr>
<tr>
<td>create_km_theme_constraints.sql</td>
<td>Create the theme table constraints</td>
</tr>
<tr>
<td>create_km_theme_pkg.sql</td>
<td>Create the theme package</td>
</tr>
<tr>
<td>create_km_theme_policies.sql</td>
<td>Create the theme policies</td>
</tr>
<tr>
<td>create_km_theme_sync_job.sql</td>
<td>Create the theme DBMS_JOBS to periodically resync the Oracle Text indexes</td>
</tr>
<tr>
<td>create_km_theme_tables.sql</td>
<td>Create the theme tables</td>
</tr>
<tr>
<td>create_km_theme_types.sql</td>
<td>Create the theme object types</td>
</tr>
<tr>
<td>drop_km_class.sql</td>
<td>Drop the classification schema objects</td>
</tr>
<tr>
<td>drop_km_class_pkg.sql</td>
<td>Drop the classification package</td>
</tr>
<tr>
<td>drop_km_class_policies.sql</td>
<td>Drop the classification Oracle Text policies</td>
</tr>
<tr>
<td>drop_km_class_sync_job.sql</td>
<td>Drops the classification DBMS_JOBS to periodically resync the Oracle Text indexes</td>
</tr>
<tr>
<td>drop_km_class_tables.sql</td>
<td>Drop the classification tables</td>
</tr>
<tr>
<td>drop_km_class_types.sql</td>
<td>Drop the classification object types</td>
</tr>
<tr>
<td>drop_km_theme.sql</td>
<td>Drop the theme schema objects</td>
</tr>
<tr>
<td>drop_km_theme_pkg.sql</td>
<td>Drop the theme package</td>
</tr>
<tr>
<td>drop_km_theme_policies.sql</td>
<td>Drop the theme policies</td>
</tr>
<tr>
<td>drop_km_theme_sync_job.sql</td>
<td>Drops the theme DBMS_JOBS to periodically resync the Oracle Text indexes</td>
</tr>
<tr>
<td>drop_km_theme_tables.sql</td>
<td>Drop the theme tables</td>
</tr>
<tr>
<td>drop_km_theme_types.sql</td>
<td>Drop the theme object types</td>
</tr>
<tr>
<td>drop_thesaurus.sql</td>
<td>Drop a thesaurus</td>
</tr>
<tr>
<td>kmclass.pkh</td>
<td>Classification package header</td>
</tr>
<tr>
<td>kmclass.plb</td>
<td>Classification package body</td>
</tr>
<tr>
<td>kmtheme.pkh</td>
<td>Theme package header</td>
</tr>
<tr>
<td>kmtheme.plb</td>
<td>Theme package body</td>
</tr>
</tbody>
</table>

### 4.1.5 SQL locale scripts

There are a number of locale scripts located in the `$SMS_HOME/sql/locales` directory. For further information on the locale scripts refer to the Locale and Multi Language Support section.

### 4.1.6 SQL Realserver module scripts

The following scripts are located in the `$SMS_HOME/sql/realserver` directory:
### External Search module scripts

The following scripts are located in the $SMS_HOME/sql/ultrasearch directory:

<table>
<thead>
<tr>
<th>Script</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>create_us_user.sql</code></td>
<td>Create the External Search user</td>
</tr>
<tr>
<td><code>drop_us_user.sql</code></td>
<td>Drop the External Search user</td>
</tr>
</tbody>
</table>

### Oracle tablespaces

ACM uses the following Oracle tablespaces:

<table>
<thead>
<tr>
<th>Tablespace</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSAUDIO</td>
<td>Multimedia items having audio mimetype</td>
</tr>
<tr>
<td>MSBINARY</td>
<td>Multimedia non binary data</td>
</tr>
<tr>
<td>MSCORE</td>
<td>Core item data</td>
</tr>
<tr>
<td>MSDOC</td>
<td>Multimedia incoming data</td>
</tr>
<tr>
<td>MSFIELDS</td>
<td>Content from item fields</td>
</tr>
<tr>
<td>MSIMAGE</td>
<td>Multimedia items having image mimetype</td>
</tr>
<tr>
<td>MSLIVE</td>
<td>Search, session data and user data tables</td>
</tr>
<tr>
<td>MSLOBDATA</td>
<td>Reserved for future enhancement</td>
</tr>
<tr>
<td>MSINDEXES</td>
<td>Index storage space</td>
</tr>
<tr>
<td>MSTASK</td>
<td>Tasks for the content gateway and distribution service</td>
</tr>
<tr>
<td>MTEXT</td>
<td>Text indexes</td>
</tr>
<tr>
<td>MSULTRA</td>
<td>External Search content (Oracle 10g only)</td>
</tr>
<tr>
<td>MSVIDEO</td>
<td>Multimedia items having video mimetype</td>
</tr>
<tr>
<td>MSWORKFLOW</td>
<td>Workflow engine data</td>
</tr>
<tr>
<td>MSXML</td>
<td>Multimedia items having xml mimetype</td>
</tr>
<tr>
<td>SYSAUX</td>
<td>Oracle Text system specific tables and indexes</td>
</tr>
</tbody>
</table>

On a slave server or an implementation where only a single server is used, the MSTASKS tablespace will not
be required.

Each of these tablespaces will need to exist with their own datafiles of an appropriate size for your data needs. You will see some benefit in having `MSCORE` on one disk, `MSINDEXES` on a second, multimedia tablespaces (positioning these on separate disks will also improve performance) on a third and `MSFIELDS` on a fourth. `MSLIVE` should also preferably be on its own disk.

Note that if you have multiple instances on a machine, each with their own Oracle user, they will all use the same set of tablespaces.

4.3 Oracle user

There is one Oracle user for each instance of ACM. In most applications there will just be one instance running under the default Oracle username, `ms`. If multiple instances are used, it is recommended that they are prefixed `ms` to avoid confusion with other users and services. Refer to the `create_msuser.sql` script for full permissions required.

The user must be given specific privileges in order to function correctly. The installer will set up the default user with the correct permissions. For non-standard installs, the following Oracle roles can be used as a guide: `CONNECT`, `RESOURCE` and `CTXAPP`. The `CTXAPP` role identifies the user as being able to use the Oracle Text cartridge.

4.3.1 Creating an Oracle user

You can use `create_msuser.sql` in the `sql` directory as the UNIX oracle user as a basis for creating the Oracle instance user. The full user should be created via the install program, see the Installation Guide for UNIX for more details:

```
sqlplus "sys/<sys_password>@<oracle_sid> as sysdba" @create_msuser.sql
<new_username> <new_password> <ctx_username> <ctx_password> <oracle_sid>
```

This script will assign default and temporary tablespaces. No tables or other database objects will be created.

4.3.2 Removing an Oracle user

If a user is being removed from a system, the `drop_msuser.sql` script can be used:

```
sqlplus system/<system_password> @drop_msuser.sql <username_to_drop>
```

4.4 Exporting and importing an Oracle database

There are occasions when it is necessary to export an Oracle ACM instance in order to create a copy of an instance; to create a backup; or to populate or re-synchronize a Slave instance. This section describes the procedures that should be followed for the export and subsequent import into a new instance.

This section is split into the following subsections:
Exporting an instance

Building the target user

Importing the instance

4.4.1 Exporting an instance

The process of exporting an instance involves a number of steps to prepare the instance for export. It is important to understand that by creating an export of an instance you are creating a copy of the data and schema, including any errors contained within it.

The steps to perform an export are outlined below.

1. Shutdown all running ACM instance services:
   ```
   cd $MS_HOME/bin
   ./msctl -a stop
   ```

2. The Oracle Text indexes are maintained by a database job that should be stopped while an index is exported. This ensures that all such database jobs owned by different instances have unique job IDs. The jobs are stopped as follows:
   ```
   cd $MS_HOME/sql
   sqlplus <username>/<password> @ drop_text_sync_job.sql
   ```

3. If the Knowledge Module has been installed, then you should also stop its Oracle Text jobs:
   ```
   cd $MS_HOME/sql/km
   sqlplus <username>/<password> @ drop_km_class_sync_job.sql
   sqlplus <username>/<password> @ drop_km_theme_sync_job.sql
   ```

4. Create a temporary version of the `storedsearch` table which uses Oracle’s XML type:
sqlplus <username>/<password>
SQL> CREATE TABLE storedsearch_temp (  
    searchid INTEGER,  
    userid INTEGER,  
    siteid INTEGER,  
    folderid INTEGER,  
    updatedate DATE,  
    global NUMBER(1),  
    name VARCHAR2(128),  
    description VARCHAR2(512),  
    xmlsearch CLOB,  
    CONSTRAINT pk_storedsrchtmp_searchid  
    PRIMARY KEY (searchid)  
    USING INDEX TABLESPACE msindexes  
    STORAGE (  
        INITIAL 8k NEXT 8k  
        MINEXTENTS 1 MAXEXTENTS UNLIMITED  
        PCTINCREASE 0  
    )  
)  
TABLESPACE mscore  
PCTFREE 10  
PCTUSED 40  
STORAGE (  
    INITIAL 512K NEXT 512K  
    MINEXTENTS 1 MAXEXTENTS 500  
    PCTINCREASE 0  
);  
SQL> exit;

5. Create a copy of the storedsearch table:

sqlplus <username>/<password>
SQL> INSERT INTO storedsearch_temp  
SELECT searchid, userid, siteid, folderid, updatedate, global, name,  
description, SYS.XMLTYPE.getClobVal(xmlsearch)  
FROM storedsearch;  
SQL> exit;

7. Create a copy of the mediaxml table which uses Oracle’s XML type:
sqlplus <username>/<password>
SQL> CREATE TABLE mediaxml_temp (
  objectid INTEGER,
  blobsize INTEGER,
  blobdata CLOB,
  lang VARCHAR2(3),
  CONSTRAINT pk_mediaxmltemp_objectid
  PRIMARY KEY (objectid)
  USING INDEX TABLESPACE msindexes
  STORAGE ( INITIAL 1M NEXT 256k
            MINEXTENTS 1 MAXEXTENTS UNLIMITED
            PCTINCREASE 0 )
)
TABLESPACE msxml
PCTFREE 10 PCTUSED 40
STORAGE ( INITIAL 64M NEXT 32M
          MINEXTENTS 1 MAXEXTENTS 500
          PCTINCREASE 0 )
);
SQL> exit;

8. Create a copy of the mediaxml table:

sqlplus <username>/<password>
SQL> INSERT INTO mediaxml_temp
SELECT objectid, blobsize, SYS.XMLTYPE.getClobVal(blobdata), lang
FROM mediaxml;
SQL> exit;

9. Perform the database export using Oracle’s exp command. Note that the consistent=Y switch has been used as we haven’t restricted access to the database:

cd $MS_HOME/tmp
exp system/<system_password> owner=<username> buffer=10000000
file=<username>.dmp log=exp_<username>.log consistent=Y

To increase the speed of the export you may add statistics=none to the export command above. If you do this then you must run updatedbstats after you have imported the exported file into the new user.

If the database initialization parameter OPTIMIZER_MODE is set to FIRST_ROWS, then the export program will take a considerable amount of time. To resolve this Oracle issue – restart the database, temporarily setting OPTIMIZER_MODE=CHOOSE. You should reset it back to its previous setting afterwards.

10. Check the resulting exp_<username>.log file for any error messages.

11. Restart the text synchronisation job as follows:

cd $MS_HOME/sql
sqlplus <username>/<password> @ create_text_sync_job.sql

12. If the Knowledge Module has been installed, recreate the jobs for this module:
cd $MS_HOME/sql/km
sqlplus <username>/<password> @ create_km_class_sync_job.sql
sqlplus <username>/<password> @ create_km_theme_sync_job.sql

This completes the steps required to export an instance. Refer to the Oracle documentation for further information on using the exp utility.

4.4.2 Building the target user

If you wish to import a previously exported database instance, it is necessary to create a skeletal target user. The steps involved are detailed below:

1. Create a new instance using the product installer:
   
   ```
   cd /msinst.tmp
   ./install -c -u <username>
   ```

   This ensures that all of the relevant configuration files and folders are created to support this instance. It also installs the default ACM instance into the new Oracle user. We will need to replace this user with an empty one before performing the import.

2. Log on as the Oracle operating system user:
   
   ```
   su - oracle
   ```

3. Drop the existing user:
   
   ```
   cd $MS_HOME/sql
   sqlplus "sys/<sys_password> as sysdba" @ drop_ms_user <username>
   ```

4. Create the new user:
   
   ```
   cd $MS_HOME/sql
   sqlplus "sys/<sys_password> as sysdba" @ create_msuser.sql <username> <password> ctxsys <ctxsys_password> <oracle_sid>
   ```

5. Create the Oracle Text search indexes:
   
   ```
   cd $MS_HOME/sql
   sqlplus <username>/<password> @ create_search_procs.sql <username>
   sqlplus <username>/<password> @ create_preferences.sql <username> MSTEXT
   ```

6. (Optional) If you are creating the new user on the same database as the existing user, then you will experience a conflict on import of Oracle custom data types that share the same ID. To resolve this it is necessary to identify the data types, and recreate them manually in the new schema prior to import. The existing types can be identified as follows:

   ```
   sqlplus <username>/<password>
   SQL> SELECT type_name FROM user_types;
   ```

   To recreate the T_MEDIA type run:
To recreate the `ATTACHTYPE` and `KMCLASS` types run:

```bash
cd $MS_HOME/sql/km
sqlplus <username>/<password> @ create_km_class_types.sql
```

To recreate the `KMGIST` and `KMTHEME` types run:

```bash
cd $MS_HOME/sql/km
sqlplus <username>/<password> @ create_km_theme_types.sql
```

To recreate the `ATTACHTYPE` and `KMCLASS` types run:

```bash
cd $MS_HOME/sql
sqlplus <username>/<password> @ create_media_package.sql
```

To recreate the `KMGIST` and `KMTHEME` types run:

```bash
cd $MS_HOME/sql/km
sqlplus <username>/<password> @ create_km_theme_types.sql
```

7. Create the `mediaxml` and `storedsearch` tables. Refer to the `$MS_HOME/sql/create_tables.sql` script for details of these tables. These tables would otherwise fail on import.

---

**4.4.3 Importing the instance**

The task of importing the existing instance into a prepared user involves the following steps:

1. Run Oracle's `imp` command as follows:

```bash
cd $MS_HOME/tmp
imp system/<system_password> buffer=10000000 file=<username>.dmp
log=imp_<username>.log consistent=Y ignore=Y fromuser=<old_username>
touser=<new_username>
```

The use of the `ignore=Y` switch will ensure that the import does not fail when it tries to create the user defined data types that already exist.

2. Examine the log file created by the import. The only errors or warnings should relate to the user defined data types and any XML tables.

3. If the import fails on the `storedsearch` or `mediaxml` tables, then the following must be carried out for the appropriate tables. If the import does not fail on either of these tables then this step can be ignored:

```sql
sqlplus <username>/<password>
SQL> INSERT INTO storedsearch
SELECT searchid, userid, siteid, folderid, updatedate, global, name,
description, SYS.XMLTYPE.createXML(xmlsearch)
FROM storedsearch_temp;
SQL> INSERT INTO mediaxml
SELECT objectid, blobsize, SYS.XMLTYPE.createXML(blobdata), lang
FROM mediaxml_temp;
SQL> exit;
```

4. Drop the temporary tables:

```sql
sqlplus <username>/<password>
SQL> DROP TABLE storedsearch_temp;
SQL> DROP TABLE mediaxml_temp;
SQL> exit;
```
5. Rebuild the database statistics using the provided script:

```bash
cd $MS_HOME/bin
./update_db_stats <username>/<password>
```

6. Rebuild the embedded Java packages:

```sql
cd $MS_HOME/sql
sqlplus "sys/<sys_password> as sysdba"
SQL> @drop_java_permissions.sql <username> $MS_HOME/lib/classes/-
SQL> @drop_java_permissions.sql <username> $MS_HOME/lib/model/schemas/-
SQL> @create_java_permissions.sql <username> $MS_HOME/lib/classes/-
SQL> @create_java_permissions.sql <username> $MS_HOME/lib/model/schemas/-
SQL> @create_java_url_permissions.sql <username> '*:80'
SQL> exit;
dropjava -v -stdout -user <username>/<password> $MS_HOME/lib/classes/ms-oracle.jar
dropjava -v -stdout -user <username>/<password> $MS_HOME/lib/classes/xmlparserv2.jar
loadjava -v -r -stdout -user <username>/<password> $MS_HOME/lib/classes/xmlparserv2.jar
loadjava -v -r -stdout -user <username>/<password> $MS_HOME/lib/classes/ms-oracle.jar
```

7. Rebuild the Oracle directory objects:

```sql
cd $MS_HOME/sql
sqlplus <username>/<password> @drop_am_directories.sql <username>
sqlplus <username>/<password> @create_am_directories.sql <username>
$MS_HOME/tmp
```

8. Rebuild any invalid Oracle objects:

```sql
cd $MS_HOME/sql
sqlplus <username>/<password> @rebuild_invalid_objects.sql
```

9. Confirm that your ACM instance configuration files are appropriate for the imported instance.

This completes the steps required to import an instance.

### 4.5 Oracle Text indexes

The Oracle Text preferences and indexes are enabled during the install process.

Once the data components for an existing database have been imported into Oracle, the main Text indexes need to be enabled. The indexes tell Oracle Text which tables to index. Oracle Text then starts the indexing of any initial data. This is carried out by default during the installation. The rest of this section details how to manage the text indexes manually.
4.5.1 Creating search objects

The Oracle preferences and indexes rely on a number of database objects being created before the preferences and text indexes are added, the scripts to do this can be run as follows:

```
sqlplus <ms_user>/<ms_password> @create_search_tables.sql
sqlplus <ms_user>/<ms_password> @create_search_procs.sql <ms_user>
sqlplus <ms_user>/<ms_password> @create_search_triggers.sql
```

4.5.2 Dropping search objects

The scripts to remove the search objects required for the indexes and preferences are as follows:

```
sqlplus <ms_user>/<ms_password> @drop_search_tables.sql
sqlplus <ms_user>/<ms_password> @drop_search_procs.sql <ms_user>
sqlplus <ms_user>/<ms_password> @drop_search_triggers.sql
```

4.5.3 Adding Oracle Text preferences

To create Oracle Text preferences for a database, for example after moving it from another server, the `create_preferences.sql` script is run under the ACM operating system user:

```
sqlplus <ms_user>/<ms_password> @create_preferences.sql <ms_user> <Oracle_Text_Tablespace_name>
```

Note that searching on a large database using a broad search could cause an Oracle Text exception (DRG-51030). This can be handled by catching the exception and using a narrower search expression or by adjusting the `create_preferences.sql` script (create_multi_preferences.sql for non-English indexes). The script has a number of parameters for creating the word list:

- **PREFIX_INDEX** – set this to true to enable prefix indexing (increases index size)
- **PREFIX_MIN_LENGTH** – lower this value to decrease the minimum token size allowed
- **PREFIX_MAX_LENGTH** – raise this value to increase the maximum token size allowed
- **SUBSTRING_INDEX** – set this to true to enable substring indexing
- **WILDCARD_MAXTERMS** – Increase this value to increase maximum number of terms when performing a wildcard expansion (higher values require more memory when performing a search)

The indexes will need to be rebuilt before any changes take affect. For more information see the Oracle Text Reference.

4.5.4 Removing Oracle Text preferences

To remove Oracle Text preferences from a database, for example before moving it to another server, the `drop_preferences.sql` script is run under the ACM operating system user:
4.5.5 Adding Oracle Text indexes

Once the data components or an existing database have been imported into Oracle, the main Text indexes need to be enabled. The indexes tell Oracle Text which tables to index. Oracle Text then starts the indexing of any initial data. This is carried out by default during the installation but can be executed using the create_context.sql script, run under the ACM operating system user:

```
sqlplus <ms_user>/<ms_password> @create_context.sql <ms_user> <other_index_index_memory_size> <ctx_item_index_memory_size>
```

**Note** If you have a large amount of content present when you run this script it may take a considerable period of time before it is all indexed.

4.5.6 Removing Oracle Text indexes

To remove Oracle Text indexes from a database, for example before moving it to another server, the drop_context.sql script can be run under the ACM operating system user:

```
sqlplus <ms_user>/<ms_password> @drop_context.sql
```

4.6 Additional tasks

4.6.1 Locale and Multi Language Support

To configure Oracle correctly for the use of content in multiple languages, a series of SQL scripts will need to be run. These are outlined below.

**Linguistic Indexes**

In order to allow the sorting of content in multiple languages, it is necessary to add two new indexes to the schema. To carry this out the following script must be run:

```
cd $MS_HOME/sql
sqlplus <ms_user>/<ms_password> @create Linguistic indexes.sql
```

**Oracle Text indexes**

In order to allow the searching of content in multiple languages, it is necessary to use a different configuration for Oracle Text. For each language to be used it is also necessary to add a sub-lexer to Oracle Text for that language.

The steps to be taken in configuring Oracle Text are as follows:

1. Change directory to the directory containing the Oracle scripts:
The existing Oracle Text indexes and preferences must be dropped:
```
cd $MS_HOME/sql
sqlplus <ms_user>/<ms_password>
@drop_context.sql
@drop_preferences.sql <ms_user>
```

The Oracle Text multi-language preference must be created:
```
sqlplus <ms_user>/<ms_password> @create_multi_preferences.sql <ms_user> <Oracle_Text_Tablespace_name>
```

For each required language, a sub-lexer must be added. The list of available languages and
the corresponding file to be run is listed in the appendix. To add the Dutch lexer you would
use the following:
```
sqlplus <ms_user>/<ms_password> @locales/add_locale_dut.sql
```

The Oracle Text indexes must now be built:
```
sqlplus <ms_user>/<ms_password> @create_multi_context.sql <ms_user> <other_index_index_memory_size> <ctx_item_index_memory_size>
```

If new languages need to be added after the initial index has been built, it will be necessary to
drop the existing indexes using the `drop_multi_context.sql`, add the new languages
using the appropriate `add_locale_xxx.sql` script and then re-run the `create_multi_context.sql` script.

### Synchronize the Locale

If a user updates the 3 character Oracle language identifier of an existing Locale, the
`synclocale` script must be run against both the staging server and any live servers that exist.
This script will ensure that all media details are updated so they are searchable in the native locale
e.g.
```
/usr/local/acm/X.Y/bin/synclocales <ms_user>/<ms_password>
```

### 4.6.2 Rebuild Oracle Text indexes

In order to maintain efficient Oracle Text indexes, it is necessary to periodically run a script which
will optimize and compact the existing indexes. The `rebuildtextindexes` script performs this
operation. This can either be run manually or from within a `cron` job.

**Note**
This process can take a considerable amount of time for a heavily
fragmented text index – so ideally should be run during off-peak hours.

For rebuilding Oracle Text indexes under Oracle Enterprise Edition, use the `rebuildtextindexes` script. The format of the command is:
```
/usr/local/acm/X.Y/bin/rebuildtextindexes <ms_user>/<ms_password>
```
For rebuilding Oracle Text indexes for either Oracle Standard or Oracle Enterprise installs, use the `rebuild_text_indexes.sql` script.

The format of the command is:

```
sqlplus <ms_user>/<ms_password> @rebuild_text_indexes.sql
```

### 4.6.3 Database performance statistics

In order for the database to optimize its queries, a process must run regularly to consolidate statistics about its operation. This script will need to be regularly run out of `cron` under the ACM operating system user. For operation, once a week on Sunday the `crontab` entry would need to be:

```
10,4,*,*,0 /usr/local/acm/X.Y/bin/updatedbstats <ms_user>/<ms_password>
```

### 4.6.4 Free-search maintenance

For performance reasons, a separate table is used to hold all the searchable text for an item. A set of triggers have been created to maintain this table, these triggers are contained within the script `$MS_HOME/sql/create_search_triggers.sql`.

Alternatively it is possible to use the `updatefreesearch` script in the `bin` directory. This takes up to two arguments, the standard `username` and `password` combination, plus an optional switch, `–r` to rebuild the whole `freesearch` table or `–u` to update the changed items. If the triggers aren’t being used, this script will need to be regularly run out of `cron` under the ACM operating system user.

The triggers for this are located in the `$MS_HOME/sql/create_freesearch_update.sql` file. For operation hourly to update and insert new items into the `freesearch` table, the `crontab` entry would need to be:

```
59,* * * * * /usr/local/acm/5.x/bin/updatefreesearch <ms_user>/<ms_password>
```

### 4.6.5 Maintaining transient data

Whenever a search is carried out, pointers to the results are stored. Old information may be cleared out using the `cleanlive` script in the `bin` directory. This takes three arguments. First is the standard `username` and `password` combination, then how many search results back to go before being removed and how many sessions back to go before being removed. If an argument is supplied as `0` then no cleaning will take place of that table.

This script will typically be run out of `cron` under the ACM operating system user. For operation overnight, retaining 100 previous searches and 10,000 previous sessions, the `crontab` entry would be:

```
10 3 * * * /usr/local/acm/X.Y/bin/cleanlive <ms_user>/<ms_password> 100 10000
```
4.6.6 Managing the Distribution Server

Installing the Distribution server components is done using the `config_distrib.pl` script located in `$MS_HOME/sql/admin/bin` directory.

Typical tasks include:

**Staging / Master / Development install**

```
./config_distrib.pl -msuser <ms_user>
```

**Staging / Master / Development uninstall**

```
./config_distrib.pl -msuser <ms_user> -u
```

**Live / Slave install**

```
./config_distrib.pl -msuser <ms_user> -slave
```

**Live / Slave uninstall**

```
./config_distrib.pl -msuser <ms_user> -slave -u
```

For other options see the command line syntax using:

```
./config_distrib -help
```

4.6.7 Managing the Content Gateway

Installing the Content Gateway components is done using the `config_gateway.pl` script located in `$MS_HOME/sql/admin/bin` directory.

Typical tasks include:

**Install**

```
./config_gateway.pl -msuser <ms_user>
```

**Uninstall**

```
./config_gateway.pl -msuser <ms_user> -u
```

For other options see the command line syntax using:

```
./config_gateway.pl -help
```
4.6.8 Managing the Knowledge Module - Classification component

Installing the Knowledge Module - Classification components is done using the `config_km_class.pl` script located in `$MS_HOME/sql/admin/bin` directory.

Typical tasks include:

Install

```
./config_km_class.pl -msuser <ms_user>
```

Uninstall

```
./config_km_class.pl -msuser <ms_user> -u
```

For other options see the command line syntax using:

```
./config_km_class.pl -help
```

See the Knowledge Module Administration Guide and Knowledge Module User Guide for more information.

4.6.9 Managing the Knowledge Module - Theme component

Installing the Knowledge Module - Theme components is done using the `config_km_theme.pl` script located in `$MS_HOME/sql/admin/bin` directory.

Typical tasks include:

Install

```
./config_km_theme.pl -msuser <ms_user>
```

Uninstall

```
./config_km_theme.pl -msuser <ms_user> -u
```

For other options see the command line syntax using:

```
./config_km_theme.pl -help
```

See the Knowledge Module Administration Guide and Knowledge Module User Guide for more information.
5 Configuration

This section details the configuration of ACM. This includes the main configuration needed on an installation and additional configuration through the Rules Console for certain key tasks.

5.1 Setting a license key

Before the ACM services can be started, a valid license key must be entered into the system. Initially a temporary license key will be issued, which will run on the server for 30 days. This is entered using the licensekey command. It takes as arguments the Oracle username and password in standard slash separated form followed by the license key.

```
licensekey <ms_user>/<ms_password> 'aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa

The license key is 44 characters long. Please check the key carefully when entering it to ensure no characters are omitted and the case of characters is correct.

Following the initial installation, a permanent license key must be installed through the Rules Console. From the Global menu choose the Registration menu item. You will need to contact Alterian support with the registration key to obtain the permanent license key. The registration key is a series of four numbers with each number separated by a period. The new key should be entered through the Registration dialog in the Rules Console and the ACM services then restarted.

5.2 Core configuration

5.2.1 ms.properties

The core configuration settings for all services are set in the ms.properties file in the etc directory. If the user in Oracle is named other than ms then the file will instead be named msusername.properties, where msusername is the Oracle username. This allows you to maintain multiple instances within the same Oracle database.

A sample ms.properties.template file is supplied. The installer replaces the settings within this template file with appropriate values. Most of the default settings produced in the resultant ms.properties file should be suitable for getting ACM up and running initially. The properties for each of the services are described in the ms.properties.template file.

5.2.2 Java Service Wrapper configuration files

The individual ACM services are started using the Tanuki Software's Java Service Wrapper (http://wrapper.tanukisoftware.org). They are configured using a set of files within the etc/service.template directory. The installer will create a directory named etc/ms (or etc/msusername) that contains the appropriately configured files. The available properties are defined within the configuration files.
5.3 Additional configuration

5.3.1 Content Importer

Content Importer directories

The Content Importer scans a set of directories for new items to be created within ACM. A different directory is needed for each item type.

For security reasons, the Content Importer directories should be owned by a different user or users to the ACM operating system user. People submitting content in this way should not have access to directories that hold the ACM software. Permissions will need to be set so that the directories allow read / write access by the Task services. This will allow the Content Importer to rename files once their contents have been imported. It may be desirable to have the Task services run under a different user or group than the default ms so that doing this does not open any security risks with other system services running under this user.

Mail integration

A simple Perl script, writemail, is supplied in the bin directory, that can be used to write out a message from the UNIX mail system into a Content Importer directory. Using sendmail, you would add a line in /etc/mail/aliases like:

```
integrator: "|/usr/local/acm/X.Y/bin/writemail <directory>"
```

The directory argument for writemail will need to be changed for each different Content Importer directory. This directory will normally need to have write privileges by the mail system.

5.3.2 Distribution module

Master (staging) server

The master server will need to be configured with triggers to push the appropriate database tables to the slave server. For more information, refer to the Modules Guide.

Slave (live) server

Each slave server that is being pushed to will need to be configured by selecting the Distribution Server entry under the Rules Console Modules menu. This process is described in the Modules Guide. Each slave has the following properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNS name</td>
<td>The name used to create a link to the slave database (usually the remote database instance name)</td>
</tr>
<tr>
<td>Username</td>
<td>The Oracle username on the slave database</td>
</tr>
<tr>
<td>Password</td>
<td>The Oracle password on the slave database</td>
</tr>
</tbody>
</table>
### 5.3.3 The Dreamweaver servlet

The Dreamweaver servlet can be run using any Java enabled web server. The `msextend.jar` is the main file required to run the Dreamweaver servlet. Additionally, Oracle’s JDBC files are needed for the servlet to function.

In general, many servlet engines require that the `CLASSPATH` environment variable be set to include all the necessary files for the servlet to run. For the `MSExtend` servlet, the locations of the `msextend.jar` and `ojdbc14.jar` files must be in the `CLASSPATH` environment variable. The `msextend.jar` file is found under the `lib/servlets` directory of the ACM home directory. The `ojdbc14.jar` file can be found under the `lib/classes` directory.

The Dreamweaver servlet requires several properties to be set so that it can communicate with the Synchronisation service. These properties are described in the next section. An alias from which the servlet can be invoked needs to be defined. As an example, in Apache Jserv, this is done by adding the line:

```
servlet.MSExtend.code=webdev.ms.extendservlet.MSExtendServlet
```

to the `zone.properties` file. This means that entering the url `servlet/MSExtend` will invoke the class `webdev.ms.extendservlet.MSExtendServlet`.

Once the properties have been set, start the servlet as described in your web server documentation.

The appropriate license key must also be purchased from Alterian to enable the servlet.

#### User configuration settings

Users of Dreamweaver will need to be informed of the following settings to connect to the servlet:

- **Host** The host the servlet is running on
- **Port** The port the web server is listening on
- **URL** The URL the servlet is running on

#### Servlet properties

The following properties apply to the Dreamweaver servlet:

### Configuration

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Restriction</strong></td>
<td>An SQL expression that determines which items are to be passed through to the slave. Those that do not pass this criterion will not be available on the slave server, and will be flagged as deleted. If left blank, then all items will be sent to the slave.</td>
</tr>
<tr>
<td><strong>Active</strong></td>
<td>Whether items are currently being pushed to this slave</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>url</td>
<td>ms://username:password@host:port</td>
</tr>
<tr>
<td></td>
<td>Username and password are the ACM administrator’s username and password. Host and port are the those that the synchronisation service is running on. This setting is mandatory.</td>
</tr>
<tr>
<td>Timeout</td>
<td>1800</td>
</tr>
<tr>
<td></td>
<td>The number of seconds of inactivity that is permitted before a client session is logged out. Default is 1800 (30 minutes).</td>
</tr>
<tr>
<td>Verbose</td>
<td>true or false</td>
</tr>
<tr>
<td></td>
<td>Print additional information about the program operation. The default is false.</td>
</tr>
<tr>
<td>Log</td>
<td>Name of log file</td>
</tr>
<tr>
<td>log.rotationFormat</td>
<td>.yyyyMM</td>
</tr>
<tr>
<td></td>
<td>Log rotation format. If set, this will be evaluated and appended to the log name above to generate the name of the log file that should be currently written. This is in Java Simple Date format: use yyyy for the year, MM for the month, dd for the day in the month, ww for the week in the year and EE for the day in the week.</td>
</tr>
<tr>
<td>log.checkpointingMinutes</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Number of minutes between checkpoints in logs. If 0, no checkpointing is carried out.</td>
</tr>
</tbody>
</table>

### 5.3.4 Content Application Engine

The Content Application Engine requires a Java security policy file that is readable by the user specified by the mae.unixuser property. This is described in detail in the Content Application Engine Reference Guide for information regarding additional configuration of this component.

### 5.4 Apache

Apache is typically used as the front-end web server on a staging server. The installer provides the option to install Apache. If you choose to use Apache, the following points should be noted.
5.4.1 Forwarding requests

A cache directory will need to be created. This should be on a separate disk from the Oracle datafiles, such as /var. The user or group that Apache runs as, typically ms, will need read, write and execute access to this directory.

```
cd /var
mkdir mscache
chown ms:ms mscache
chmod 770 mscache
```

Each host in ACM will need its own virtual host setting in Apache’s `httpd.conf` configuration file.

```
<VirtualHost host1.alterian.com>
    ServerName host1.alterian.com
    ProxyRequests off
    CacheRoot /var/mscache
    CacheSize 16384
    CacheGcInterval 24
    CacheMaxExpire 12
    ProxyPass / http://host1.alterian.com:8080/
    ErrorLog /var/log/acm/X.Y/ms/httpd-host1-error.log
    TransferLog /var/log/acm/X.Y/httpd-host1-access.log
</VirtualHost>
```

6 Operation

This section covers controlling the operation of the ACM services.

6.1 Controlling the services

For all of the following commands either ensure `$MS_HOME/bin` is in the PATH or ensure you are running the commands from within `$MS_HOME/bin` and prepend `. /` to the command.

6.1.1 Starting the services

To start the Synchronisation Service, Task Services and Content Application Engine, the following command is run as `root`

```
msctl start
```

If a different Oracle username to the default `ms` is required then the following command is used:

```
msctl start <ms_user>
```

Where `<ms_user>` is the Oracle username.
To start only one module, use the \texttt{-m} option. This takes an argument of core (the Synchronisation Service, Task Services and Content Application Engine only), distrib (the Distribution Service), gateway (the Content Gateway), delivery (the Content Application Engine), collab (Collaboration Service) or tomcat (Tomcat). For example, to start the Content Gateway use:

\begin{verbatim}
msctl -m gateway start <ms_user>
\end{verbatim}

There is an additional option of \texttt{-d} to start the services in debugging mode, though this should not be necessary for normal use and will result in reduced performance.

For more information on \texttt{msctl} refer to the following commands:

\begin{verbatim}
msctl -help
msctl -listmodules
\end{verbatim}

\begin{quote}
\textit{Note}

If you are running on a 64-bit platform and wish to run ACM against a 64-bit JVM, you should pass in the \texttt{-64} option to msctl. You must ensure that you have installed a 64-bit JVM and updated the \texttt{JAVA_HOME} and \texttt{JAVA_EXEC} environment variables in /etc/ms.conf prior to using this switch. Alternatively you can set these in /msinst.tmp/etc/base.vars prior to installing ACM.
\end{quote}

\section*{6.1.2 Stopping the services}

To stop all services for a particular instance, the following command is run as root:

\begin{verbatim}
msctl stop
\end{verbatim}

If a different Oracle username to the default ms is required then the following command is used:

\begin{verbatim}
msctl stop <ms_user>
\end{verbatim}

where \texttt{<ms_user>} is the Oracle username.

To stop all the ACM services for every running instance, the following command is run as root:

\begin{verbatim}
msctl -a stop
\end{verbatim}

To stop only one module use the \texttt{-m} option. This takes an argument of distrib (the Distribution Service), gateway (the Content Gateway), or delivery (Content Application Engine). For example, to stop the Distribution Service use:

\begin{verbatim}
msctl -m distrib stop <ms_user>
\end{verbatim}

If a serious problem has occurred with a service then the \texttt{-f} option can be used to force a shutdown. If a service does not close within 60 seconds then it will be forcibly killed.

If the Synchronisation Service is shut down then any users that are currently connected using the Rules Console or the Content Application Engine will be informed of the shutdown and will then
have to exit.

For more information on `msctl` refer to the following commands:

```
msctl -help
msctl -listmodules
```

### 6.1.3 Restarting the services

To restart the Synchronisation Service, Task Services and Content Application Engine, the following command is run as root:

```
msctl restart
```

If the Distribution Server or Content Gateway is also running, they will be shut down but not restarted. They must be restarted separately.

If a different Oracle username to the default `ms` is required then the following command is used:

```
msctl restart <ms_user>
```

where `<ms_user>` is the Oracle username.

To restart only one module use the `–m` option. This takes an argument of `core` (the Synchronisation Service, Task Services and Content Application Engine only), `distrib` (the Distribution Service), `gateway` (the Content Gateway), or `delivery` (the Content Application Engine). If `core` is used then if the Distribution Service or Content Gateway is also running then they will be shut down but not restarted. They must be restarted separately. For example, to restart the Distribution Service use:

```
msctl –m distrib restart <ms_user>
```

If the Synchronisation Service is restarted then any users that are currently connected using the Rules Console or Content Application Engine will be informed of the shutdown and will then have to exit. They will be able to reconnect once the restart is complete.

For more information on `msctl` refer to the following commands:

```
msctl -help
```

### 6.1.4 Obtaining the status of the services

To obtain the status of the Synchronisation Service, Task Services and Content Application Engine, the following command is run as root:

```
msctl list
```

If a different Oracle username to the default `ms` is required then the following command is used:
msctl list <ms_user>

where <ms_user> is the Oracle username.

To obtain the status of all running instances, the following command is run as root:

msctl -a list

To obtain the status of only one module use the –m option. This takes an argument of core (the Synchronisation Service, Task Services and Content Application Engine only), distrib (the Distribution Service) or gateway (the Content Gateway). For example, to get the status of the Content Gateway use:

msctl -m gateway status

For more information on msctl refer to the following commands:

msctl -help

6.2 Supporting Programs

The following additional utility is shipped with ACM:

6.2.1 Listing sites on a server

The listsites command will search through all the Oracle users in a database and, if ACM uses them, the sites and hosts they contain and the last time the site was updated. This may be useful when there are a large number of instances installed on a server. It takes as arguments the username and password of the system user in Oracle, separated by a slash:

listsites system/<system_password>

6.3 Basic Oracle operation

Please see the Oracle administration guides for full information about administering Oracle. This section covers very basic operations for the novice database administrator.

Machines will normally be configured to automatically start up and shut down the Oracle database services as part of their startup and shutdown procedures. However, sometimes this may need to be carried out manually, for example when carrying out maintenance or changing tuning parameters.

6.3.1 Starting the Oracle listener

The Oracle listener enables external processes to talk to Oracle over TCP/IP and will therefore need to be running before any services can start. It needs to be started before the Oracle program.
To start the Oracle listener:

1. Log on to the `oracle` UNIX account, either directly or by changing user from `root` by using:
   ```
su – oracle
   ```

2. Start the listener:
   ```
slnrctl start
   ```
   It will respond with information about the configuration followed by `The command completed successfully`.

### 6.3.2 Stopping the Oracle listener

To stop the Oracle listener:

1. Log on to the `oracle` UNIX account, either directly or by changing user from `root` by using:
   ```
su – oracle
   ```

2. Start the listener:
   ```
slnrctl stop
   ```
   It will respond with information about the configuration followed by `The command completed successfully`.

### 6.3.3 Starting Oracle

Oracle will need to be running before ACM services can be started. To start Oracle:

1. Log on to the `oracle` UNIX account using from `root`
   ```
su – oracle
   ```

2. Connect to Oracle with sysdba credentials:
   ```
   sqlplus "sys/<sys_passwd> as sysdba"
   ```
   This will respond with a `SQLPLUS>` prompt.

3. Connect to Oracle:
   ```
   connect internal
   ```

4. Startup Oracle:
   ```
   startup normal
   ```
   If everything is okay, Oracle will respond with `Database opened`. You can leave sqlplus by entering `quit` or `exit`. 

---

```
System Administration Guide for UNIX
```
6.3.4 Stopping Oracle

To stop Oracle:

1. Log on to the oracle UNIX account, either directly or by changing user from root by using:
   ```
   su – oracle
   ```
2. Connect to Oracle with sysdba credentials:
   ```
   sqlplus "sys/<sys_passwd> as sysdba"
   ```
   This will respond with a SQLPLUS> prompt.
3. Connect to to Oracle:
   ```
   connect internal
   ```
4. Shutdown Oracle:
   ```
   shutdown
   ```

If everything is okay, Oracle will respond with ORACLE instance shut down. If there are any other processes connected to Oracle, such as ACM services or the Rules Console then Oracle will wait until they have disconnected. For this reason you must make sure that all the ACM services are shut down before you carry out this command. If for some reason you are unable to do this, shutdown immediate will shutdown Oracle immediately. You can leave sqlplus by entering quit or exit.

Note that doing a shutdown takes longer, however it is the safest method.

6.3.5 Enable Oracle Text jobs

Oracle Text is required for full text searching to function within the product. The full text indexes are maintained by an Oracle Job which periodically resynchronizes the text indexes. This job can be enabled by running the following script:

```
cd $MS_HOME/sql
sqlplus <ms_user>/<ms_password> @create_text_sync_job.sql
```

6.3.6 Disabling Oracle Text jobs

To disable the Oracle Text synchronisation jobs, run the following script:

```
cd $MS_HOME/sql
sqlplus <ms_user>/<ms_password> @drop_text_sync_job.sql
```
7 Monitoring

7.1 Content Application Server

Each service within the Content Application Server (CAS) writes its logs into a subdirectory under the logs directory named after the instance name (by default ms). In addition to the service logs, the Java Service Wrapper writes out logging information to the same directory for each service. These log files have .service in their names.

7.1.1 Synchronisation service

The Synchronisation service writes a log containing both information about the operation of the service, and user accesses to the file syncd.log. If the service has successfully started up then in the log you will see the line:

```
Mon May 10 07:35:19 GMT 2008 13132 info: MessageHandler n started
```

7.1.2 Task services

The Task services are split into five separate processes: an update links process, a signoff item process, a Content Importer (integrator) process, a reporter process and a lock manager. Each process writes a log containing information about the operation of the service daemon to an appropriately named file:

- updatelinks.log
- integrator.log
- reporter.log
- lockmanager.log

If these processes have successfully started up then in the appropriate log you will see the line:

```
```

7.1.3 Distribution service

The Distribution service writes a log containing information about the operation of the service daemon to the file distd.log. If the Distribution service has successfully started up then in the log you will see the line:

```
Thu April 27 14:30:56 GMT 2009 7104 Thu April 27 14:30:56 GMT 2009 info: distd for ms started
```
7.1.4 Content Gateway service

The Content Gateway service writes a log containing information about the operation of the service daemon to the file `gated.log`. If the Content Gateway service has successfully started up then in the log you will see the line:

```
Thu April 27 14:30:56 GMT 2009 7104 Thu April 27 14:30:56 GMT 2009 info: gated for ms started
```

7.1.5 Content Application Engine service

The Content Application Engine service writes a log containing information about its operation to the file specified by the property `mae.log`. If the engine has successfully started up then in the log you will see the line:

```
|Thu April 27 08:16:17 GMT 2009|7105|HiInfo|Server|Server initialised.|
```

When the service shuts down successfully, the following line appears in the log file:

```
|Thu April 27 08:48:52 GMT 2009|7105|HiInfo|Server|Shutdown complete.|
```

7.2 UNIX

The following basic UNIX command may prove some help in isolating the most common operating system related problems.

7.2.1 Disk space

The amount of free disk space can be determined using the `df` command. To list the free space on each partition in kilobytes use

```
df -hkl
```

For performance reasons, there should be at least 10% free disk space available on partitions smaller than 2GB and at least 5% free on partitions larger than 5GB.

7.2.2 Processes

All the currently running processes may be obtained using the `ps` command. This could be a long list so it will probably be advisable to pipe this into more.

```
ps -ef | more
```

It is recommended that the `top` command is installed. This shows a list of the processes ordered by the amount of system resources they are using. This may be useful for tracing problem processes. This command is available from `http://www.unixtop.org/`. 
8 Rules Console

8.1 Installation

The Rules Console (RC) is supplied on the ACM Server CD in the client directory. It is packaged as an InstallShield installer for the platforms listed below.

8.1.1 Microsoft Windows

Run the self-extracting executable from the rules_console directory to begin installation.

You will next be prompted to accept the license agreement and once done to select the installation directory, normally only required if you wish to run multiple versions of the RC on the same machine.

Finally, you will need to enter the hostname of the CAe service and the port that it operates on. If you are accessing the server through a firewall, see the section below.

To uninstall the Rules Console, use the Add / remove programs Windows control panel applet.

8.2 Use with a firewall

The Rules Console supports working through an application-level firewall.

Using a firewall may require the RC to over-ride the hostname and port sent by the Synchronisation service. This can be done when installing the RC by selecting the Use Firewall option on the final form and entering the hostname of the firewall, the database system identifier and the SQL*Net port number.

Some firewalls will require the use of the Oracle OCI driver in place of the Java thin driver that ACM uses as standard. When this is the case, the Oracle Client Libraries will need to be installed on the same machine, and the jdbc-url property in the rulesconsole.properties file will need to be changed as described below.

8.3 Changing the properties

Rules Console properties can be changed by editing the rulesconsole.properties file, which is located in the directory where this software was installed. The settings and their defaults are as follows:

<table>
<thead>
<tr>
<th>Setting</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>mae.naming.providerUrl</td>
<td>//username:password@cae_hostname:cae_port</td>
</tr>
</tbody>
</table>

The URL of the CAe Server. This takes the form // followed by the CAe hostname, then a colon, then and the CAe port number. You can also specify a username and password.
### Setting | Details
--- | ---
jdbc.url | (None)
The JDBC driver URL. The default is to leave this blank to use the URL sent by the Synchronisation service.

The first alternative is to explicitly specify the thin (Java) driver, `jdbc:oracle:thin:@hostname:1521:sid1`, for example when used with a firewall. The last three arguments, separated by colons, are the domain name of the slave database host, the SQL*Net port number and the SID.

The second alternative is to explicitly specify the Oracle OCI driver, `jdbc:oracle:oci:@sid1`, for example when used with a firewall that requires this. It requires the Oracle client software to be installed if this is not on the same machine as Oracle. The final part of the URL is the name of the database from Oracle Naming.

package | sql
Persistence strategy. This should never require changing.

jdbc.driver | oracle.jdbc.driver.OracleDriver
The JDBC driver name. This should never require changing.

browser | Internet Explorer (NT)="C:\Program Files\Plus!\Microsoft Internet\Iexplore.exe"
\$;Internet Explorer (Win9x)="C:\Program Files\Internet Explorer\iexplore.exe"
\$;HotJava (Unix)=/usr/local/hotjava/bin/hotjava $;Netscape (Unix)=/usr/local/netscape/netscape $
The browsers that have been registered for this machine. This is a semicolon-separated list of key-value pairs. The key is the name of the browser; the value is the full pathname. The dollar character $ is replaced with the URL that is required.

color.black | (None)
Used for user text and user items; sparingly in drawing. Value is either the RGB value in decimal as $RRR,GGG,BBB$ or in hex as #RRGGBB.

color.white | (None)
Used for highlights in 3D effects, and user text entry areas. Value is either the RGB value in decimal as $RRR,GGG,BBB$ or in hex as #RRGGBB.

color.primary1 | (None)
Active window borders, shadows, and system text (e.g. labels). Value is either the RGB value in decimal as $RRR,GGG,BBB$ or in hex as #RRGGBB.

color.primary2 | (None)
<table>
<thead>
<tr>
<th>Setting</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>color.primary3</td>
<td>Large coloured areas (e.g. active title bar); text selection. Value is either the RGB value in decimal as ( RRR, GGG, BBB ) or in hex as #RRGGBB.</td>
</tr>
<tr>
<td>color.secondary1</td>
<td>Inactive window borders; “channel” for flush 3D effect. Value is either the RGB value in decimal as ( RRR, GGG, BBB ) or in hex as #RRGGBB.</td>
</tr>
<tr>
<td>color.secondary2</td>
<td>Secondary shadows; disabled system text. Value is either the RGB value in decimal as ( RRR, GGG, BBB ) or in hex as #RRGGBB.</td>
</tr>
<tr>
<td>color.secondary3</td>
<td>Canvas colour; inactive title bar. Value is either the RGB value in decimal as ( RRR, GGG, BBB ) or in hex as #RRGGBB.</td>
</tr>
<tr>
<td>color.highlight</td>
<td>Background of highlights (selected text, selected list and menu items). Value is either the RGB value in decimal as ( RRR, GGG, BBB ) or in hex as #RRGGBB.</td>
</tr>
<tr>
<td>color.highlightText</td>
<td>Foreground of highlights (selected text, selected list and menu items). Value is either the RGB value in decimal as ( RRR, GGG, BBB ) or in hex as #RRGGBB.</td>
</tr>
<tr>
<td>font.default</td>
<td>Name of the default font, followed by its point size and separated by a comma.</td>
</tr>
<tr>
<td>font.monospaced</td>
<td>Name of the default mono-spaced font, followed by its point size and separated by a comma.</td>
</tr>
<tr>
<td>backgroundImage</td>
<td>The main window background image. This must be present in the ACM classes file, <code>ms.jar</code>. For a default background, use <code>img/background.gif</code>.</td>
</tr>
<tr>
<td>backgroundImage.user</td>
<td>The background image for user areas.</td>
</tr>
<tr>
<td>SMTPServers</td>
<td>SMTP Servers used to send mails to</td>
</tr>
</tbody>
</table>
# 9 Web Client

## 9.1 Installation

The Web Client is a web application that is installed as part of the standard installation or update. It will be installed on the optional tomcat instance at the context `/wc` alongside the standard Delivery Application.

A single Web Client will provide all the necessary administration / management and editing features that are available within the Smart Clients’ site planner and content explorer modes. It will also provide the content editing facilities for content items through the use of the forms contributor for any site. If you wish to use the InContext method of the contributor, a number of additional installation steps must be undertaken.

### 9.1.1 In-Context contribution restrictions

In order to provide in context editing for any site using the Web Client, a number of constraints are present. These constraints are enforced by the use of JavaScript and the security mechanism it has in place when attempting to manipulate the contents of a web page. In order to prevent the malicious use of JavaScript to capture and manipulate web page elements such as usernames, passwords and sensitive information, a number of JavaScript functions are prevented from operating when the target of the operation is an element that is not a part of the requested page that contains the JavaScript attempting the operation. The JavaScript rule disables these operations when the target element is contained in a document element that was requested from a different server name or using a different protocol to that page that contains the JavaScript.

The Web Client makes use of many of these potentially restricted operations when the Contributor page provides the editing functionality to allow in context editing. The contributor page is sourced from the server currently hosting the Web Client and it makes use of an `iframe` element that has its content sourced from the current URL of the edited item.

When the InContext template is not located on the same server as the Web Client, the contributor page will open the item and display the item in context but none of the editing functions will be possible. For similar reasons if the Web Client is on a host which is accessible only via a secured `https` URL, then the in context template used to edit an item must also be available via a secured `https` URL from the same host.

In summary, to enable InContext editing, the Web Client must be available on the same host and utilizing the same delivery protocol (HTTP/HTTPS) as the items for which InContext editing is desired. This may mean that several instances of the Web Client may have to be deployed such that an instance is available on each of the sites for which InContext contribution is required.

### 9.1.2 In-Context contribution setup

In order to enable InContext Contribution, the Web Client has to be available from the same host as the items which are to be edited using the in context templates.

The simplest possible configuration (and not recommended other than for demonstration in this example) would be the deployment of an ACM instance that contained a single site with the public name `www.live.com`. This would have all items available from a web browser as <host name>/<simple name of item>, for example `www.live.com/news/headline1`. This implies...
that a Delivery Framework has been hosted on the server addressed by the host name www.live.com with an InContext template that has been setup within the framework to allow the editing of the item with the simple name /news/headline1.

If the Web Client is deployed on the same host (address: www.live.com/wc/app) then InContext editing of the item with the simple name /news/headline1 will be possible.

**Setup**

Obviously the above situation would imply that any user, including the public user, could potentially see the item /news/headline1 but also may have access to the Web Client at the same address. To prevent this situation - and for the same reasons that workflow and multiple sites (live, development and staging sites) are used as the mechanism to provide better management and control of the publishing of content - it is likely that the editorial users will access and edit content from a different and controlled host.

This is most often facilitated through the use of the Content Server functionality. In our simple example scenario, a localhost (internal.staging.com) would be setup which has restricted access and would be available for use by the editorial users. This localhost would have both Web Client and a Delivery Framework instance (including all templates) deployed and would have both of these web applications configured to be delivered from a new Content Server.

The Rules Console would be used to create a new Content Server named Staging Server, and the Public Host / Content server would be updated to set the delivery of items located on the public host www.live.com were actually delivered with the real host name internal.staging.com. With the server setup complete, both web applications have to be updated to indicate that they are being delivered from instances of the newly created Content Server. This is achieved by editing the web.xml deployment descriptor of both web applications and populating the server-name property with the value Staging Server.

With this configuration, the editorial team now have an Web Client application located at the address http://internal.staging.com/wc/app, with which they can edit InContext the item located at http://internal.staging.com/news/headline1.

**Setup using SSL**

In some cases it may be required to have further control and security in place when using the Web Client and this can be achieved by deploying the Web Client at a host address that is delivered over HTTPS. It is beyond the scope of this document to describe how to enable an application server to deliver content and web applications only through an HTTPS connection. Refer to your application server documentation for more details.

Following the specific application server documentation, in our simple example it is assumed that a new host server is installed at the server address secure.staging.com and has also had both the Web Client and Delivery Framework (with associated templates) web applications deployed.

Again a new Content Server (named Secure Server) needs to be added using the Rules Console with the additional configuration that the port number is set to 443 and the drop down protocol has https selected as the protocol delivery method. Similarly to the previous setup of the Staging Server the Public Host / Content Server has been amended to indicate that all content delivered from the public host www.live.com will be delivered with the real host name secure.staging.com when delivered from the Content Server Secure Server. To complete the configuration the web.xml deployment descriptor of both web applications should be edited to set the server-name property with the value Secure Server.
With this configuration the editorial team now have a Web Client application located at the address https://secure.staging.com/wc/app, with which they can edit InContext the item located at https://secure.staging.com/news/headline1.

9.1.3 The document.domain property

Within the document object that represents the page loaded within a browser, there exists a property called document.domain which specifies the domain name of the server that served a document. By default this property value is set to the host from which the page was served. It is possible through a JavaScript method to set the actual value to be a domain suffix of this initial value and it is possible to make use of this facility to extend the ability of a single Web Client application to provide InContext editing across a number of sites.

The following diagram highlights how this may be used to allow a single Web Client instance to manage the content across a number of sites, sport, news and weather which all share a common sub-domain suffix.

![Diagram of Web Client configuration]

Figure 1 - Using the Web Client to manage multiple sites with a common domain name

The diagram above outlines an example configuration where 6 servers are utilized, a number of content sites (news, sport, weather and lfc) a management server hosting the Web Client and an external repository hosting a number of searchable image assets. Using the document.domain facility it would be possible to make use of the single Web Client instance hosted on the admin server to provide InContext editing of content located on the sites news, sport and weather but not on the lfc site because it does not share a common sub-domain suffix.

In order to facilitate the above configuration the Web Client needs to be configured to use the shared sub-domain suffix and all templates originating from the sites news, sport and weather also have to set their own document.domain property within the template itself. Similarly to make use of the external search repository the page presenting the selectable image assets also has to have its own document.domain property set internally within the search page.

At present this facility is only applicable when using the Microsoft IE browser to display the Web Client.
Setup of the Web Client to use the document.domain property

In our example shown above, the Web Client needs to be configured such that it will make use of a `document.domain` property with the value `content.com`. This is achieved by supplying a property value within the `web.xml` deployment descriptor of the Web Client application.

The parameter is named `ms-document-domain-setting` and the value of the parameter if present will be used to populate the `document.domain` property for the Web Client application.

In our example setup, the following has been added to the Web Client applications `web.xml` file:

```xml
<context-param>
    <param-name>ms-document-domain-setting</param-name>
    <param-value>content.com</param-value>
</context-param>
```

And the templates used within the sites news, sport and weather have had the following Javascript added to the `<head>` element to set the `document.domain` property value in the page when it is delivered.

```html
<head>
    <script type="text/javascript">
        document.domain = "content.com";
    </script>
</head>
```
<table>
<thead>
<tr>
<th>Corporate and European Headquarters</th>
<th>North American Headquarters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alterian Plc</strong>&lt;br&gt;The Spectrum Building&lt;br&gt;Bond Street&lt;br&gt;Bristol&lt;br&gt;BS1 3LG&lt;br&gt;UK&lt;br&gt;T +44 117 970 3200&lt;br&gt;F +44 117 970 3201</td>
<td><strong>Alterian Inc.</strong>&lt;br&gt;35 East Wacker Drive&lt;br&gt;Suite 200&lt;br&gt;Chicago&lt;br&gt;IL 60601&lt;br&gt;USA&lt;br&gt;T +1 312 704 1700&lt;br&gt;T +1 312 704 1701</td>
</tr>
</tbody>
</table>

<table>
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