Oracle® Communications MetaSolv Solution

Security Guide

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Contents

A MSS Secure Deployment Checklist

Preface

This guide provides guidelines and recommendations for setting up Oracle Communications MetaSolv Solution (MSS) in a secure configuration.

Audience

This guide is intended for system administrators, database administrators, developers, and integrators who work with MSS.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

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Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

1

MSS Security Overview

This chapter provides an overview of Oracle Communications MetaSolv Solution (MSS) security.

Basic Security Considerations

The following principles are fundamental to using any application securely:

- **Keep software up to date.** This includes the latest product release and any patches that apply to it.
- **Limit privileges as much as possible.** Users should be given only the access necessary to perform their work. User privileges should be reviewed periodically to determine relevance to current work requirements.
- **Monitor system activity.** Establish who should access which system components, how often they should be accessed, and who should monitor those components.
- **Install software securely.** For example, use firewalls, secure protocols (such as SSL), and secure passwords. See "Performing a Secure MSS Installation" for more information.
- **Learn about and use MSS security features.** See "Implementing MSS Security" for more information.
- **Use secure development practices.** For example, take advantage of existing database security functionality instead of creating your own application security. See "Security Considerations for Developers" for more information.
- **Keep up to date on security information.** Oracle regularly issues security-related patch updates and security alerts. You must install all security patches as soon as possible. See “Critical Patch Updates, Security Alerts and Bulletins " on the Oracle website:

  https://www.oracle.com/security-alerts/

Overview of MSS Security

Security for MSS focuses on a few key areas:

- Limiting use of MSS and accessory applications to authorized users
- Controlling access to functionality in the application with security windows and checkpoints
- Protecting access to CORBA APIs, EJB APIs, and Web Service APIs

Understanding the MSS Environment

When planning your MSS implementation, consider the following:

- **Which resources need to be protected?**
  - You must protect customer data.

  - You must protect internal data, such as proprietary source code.
  - You must protect system components from being disabled by external attacks or intentional system overloads.

- **Who are you protecting data from?**

  For example, you need to protect your subscribers' data from other subscribers, but someone in your organization might need to access that data to manage it. You can analyze your workflows to determine who needs access to the data; for example, possibly a system administrator can manage your system components without needing to access the system data.

- **What will happen if protections on a strategic resources fail?**

  In some cases, a fault in your security scheme is nothing more than an inconvenience. In other cases, a fault might cause great damage to you or your customers. Understanding the security ramifications of each resource will help you protect it properly.

Recommended Deployment Configurations

Oracle recommends installing MSS in a clustered redundant environment with the application tier isolated by firewalls, as shown in Figure 1-1.

Figure 1-1 Recommended MSS Deployment with Redundancy and Isolated Application Tier

The database and application servers are protected from potential attacks by two layers of firewall. Both firewalls can be configured to block known illegal traffic types. The two layers of firewall provide intrusion containment. Although there are a greater number of components to secure, and more ports have to be opened to allow secure communication between the tiers, the attack surface is spread out.

Operating System Security

See the following documents for information about securing your operating system:

- Windows Security Checklist on the Microsoft website
- Guide to the Secure Configuration of Red Hat Enterprise Linux
- Hardening Tips for the Red Hat Enterprise Linux
- Oracle Solaris Security for System Administrators

Oracle Database Security

This section lists the MSS-specific security configurations for the Oracle Database.

For more information about securing Oracle Database, see *Oracle Database Security Guide* and *Oracle Database Advanced Security Administrator's Guide*.

Data Encryption

If your database connection is not configured to use data encryption, data is sent across the network in a format that is designed for fast transmission. Given some time and effort, unencrypted data can be intercepted and decoded.

It is also possible (but not recommended) to encrypt the MSS tablespace and schemas at the expense of system performance. Encrypting the schema and tablespace is not necessary, because the database is sufficiently secure without the encryption.

See *Oracle Database Advanced Security Administrator's Guide* for more information.

Secure Database Connections

Encrypting network data is a critical security measure that ensures that data traveling over the network is difficult to intercept and access. Secure network connections to the Oracle Database using the Oracle Advanced Security feature. You can configure the Oracle Database with either Network Data Encryption or SSL authentication, as both ensure that the data is secure while traveling over the network.

The Oracle Advanced Security feature also provides security against the following types of attacks:

- Data modification attack, where an unauthorized party intercepts data in transit over the network, alters it, and transmits the altered data to the database.
- Replay attack, where an unauthorized party repeatedly transmits entire sets of valid data.

Oracle WebLogic Server Security

See the discussion about securing WebLogic Server in *Oracle Fusion Middleware Securing a Production Environment for Oracle WebLogic Server*.

Specifically, consider the following security features:

- SSL cipher suites and performance: For information on supported security standards, FIPS standards, and cipher suites, see *Oracle Fusion Middleware Administering Security for Oracle WebLogic Server*, from the Oracle Help Center website:

  `https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/12.2.1.4/secmg/standards.html`
- Enable Secure Auditing: This optional feature can collect, store, and distribute information about operating requests and the outcome of those requests.
- Enable Host name verification: This feature helps to avoid man-in-the-middle attacks.

2
Performing a Secure MSS Installation

This chapter presents planning information for your Oracle Communications MetaSolv Solution (MSS) system and describes recommended installation scenarios that enhance security.

Installing MSS Securely

By default, the MSS installer selects SSL mode for installation. Oracle recommends that you install and run MSS over SSL. Running the installer in SSL mode does add a little overhead with the encryption of transmitted data. You can choose to perform a less secure SSL install if needed.

For secure installation of MSS, do the following:

- When creating the WebLogic Server domain for MSS:
  - Make sure that SSL ports are being used on the Administration server and all Managed servers.
  - If installing MSS on a cluster of servers, configure the cluster addresses to use SSL ports.
  - After you have created the WebLogic Server domain for MSS, start the Administration server. Then, use t3s to start the Managed servers. For example:

    ```
    startManagedServer.sh/cmd ManagedServer_1 t3s://host_name
    ```

    where *ManagedServer_1* is the name of the first Managed server, and *host_name* is the host name of the Administration server.
- Using the WebLogic Server Administration Console, configure Certificate Identity and trust store to use SSL. Do not use the default demonstration certificate that comes with WebLogic Server. See the WebLogic administrator's documentation for more information.
- Run the MSS installer with the default SSL configuration enabled.

For more information about installing MSS, see *MSS Installation Guide*.

3
Implementing MSS Security

This chapter explains the security features of Oracle Communications MetaSolv Solution (MSS).

Securing the Application

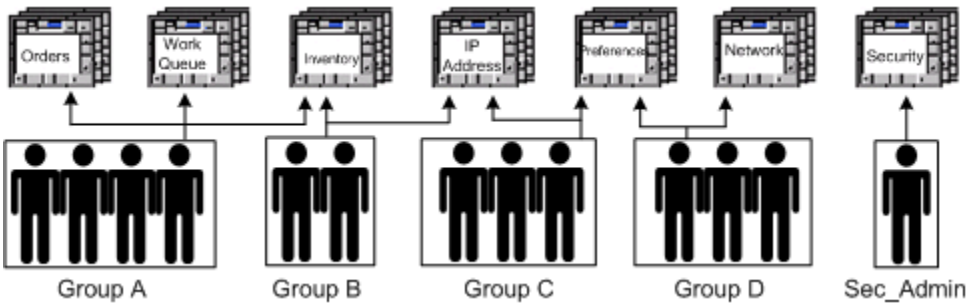
MSS application security consists of two processes: authentication and authorization. Authentication is the process of identifying a user with a user ID and password combination. See *MSS Installation Guide* for authentication details. This chapter provides details about authorization, the process of granting or denying access to application functions.

Planning Application Authorization

MSS security provides controlled, group-based access to specified parts of the MSS application and data. Users can be associated with groups, and users and groups can be restricted from specific areas of the software.

Figure 3-1 shows an example of group-based security.

Figure 3-1 Group-Based Security



Security is active when the application is installed. It cannot be deactivated. Only one user, the security administrator, has authorization to sign on. Only three groups are active at installation: **DEFAULT**, **READ-ONLY**, and **SEC_ADMIN** (security).

> **Note:**
>
> The group name READ-ONLY can be modified, if you already have READ-ONLY security group in MSS. See Knowledge Article 2472324.1 - *New READ-ONLY Security Group Feature Available in Patch 27753924: MSS_6_3_0_B772* on the My Oracle Support website: https://support.oracle.com/epmos/faces/DocumentDisplay?id=2472324.1.

Every layer of the architecture has predefined superusers. A superuser has full control of all functions of the architecture layer. For MSS, the superuser is **ASAP**, the only user with security permissions (the only initial member of **SEC_ADMIN**).

Learning How the Application Works

Before planning the security model and creating users and groups, learn how MSS works at a high level so that you understand the main functions of the product. Next, meet with representatives from each department to define areas of the product they will be using. You will assign access to the users and groups you create based on this information.

Pre-Implementation Checklist

Gather the following information before beginning to set up security for MSS:

- Person/group responsible for setting up new user IDs, maintaining general security features/permissions
- Network user ID naming conventions
- Company-wide standard on password change intervals
- Policy for establishing temporary user IDs
- Any existing group structure in legacy systems that might be leveraged for this implementation

Designing the Security Model

A security plan must be implemented after the product is installed and before it can be used. This section describes how to make decisions about the security model and provides tools for planning the security implementation.

Designing the security model for MSS involves:

- Identifying the most logical groups of users
- Creating matrixes for listing relevant users, groups, and processes
- Completing the security planning matrixes

Use planning matrixes like the one shown in Figure 3-2. These matrixes give you a view of groups and permissions. Patterns become obvious and adjustments can be made before implementation.

Identifying MSS Users

When planning security, begin by listing all MSS users in the left-most column of an Employee/Group matrix. Include those users who may never enter data and only need to find information. The user name should match the Oracle user ID.

Understanding Groups and Permissions

When the users are added, they are automatically members of the group that is set in the system preference **Default Security Group** in the **Security** folder. The preference defaults to the **DEFAULT** security group and their security permissions are **Not Set**. This permission allows all users to access to all objects except security. Therefore, it is

important to assign users to groups with restrictions and permissions. You can change the default value of the preference to other security groups. You can set the preference to **READ-ONLY** security group to limit all the newly added users to have read-only access throughout the application, by default.

Organizing users into groups eases security maintenance by reducing the number of permissions for individual users. For example, you might set up a Provisioner group, an Ordering group, and a Marketing group. If every user fits into one of those three groups, you need to set and maintain permissions for only three groups instead of for many individuals.

You can assign the MSS users to one or more groups. The groups are given permissions to access different aspects of the product.

When a user belongs to a group, the user receives all the permissions of the group. If a user belongs to multiple groups, the least restrictive group permissions apply. A permission that is directly granted to a user overrides any group permission levels. Therefore, some users can have more or less restrictive permissions than other users in the same group if they are also restricted as individuals.

Oracle recommends always using groups to set permissions, even if it means a group might have only one member for a period of time. If your groups are well planned, other users will also be added. To routinely set permissions without using groups would require extensive setup time for implementation and ongoing maintenance for each individual. If you do not use groups, setting individual security may also require scanning too many windows and controls into the database. If you must scan objects into the database for each user, the number of records increases, increasing the possibility of negative performance impacts. This will be explained in more detail later in this chapter.

Identifying Logical Groups of Users

A quick way to designate groups within MSS is to identify the departments that use the product, and use those departments as the highest-level group names. If your departments are large or have diverse responsibilities, you can identify subsets of those departments as groups.

Another way to designate groups is:

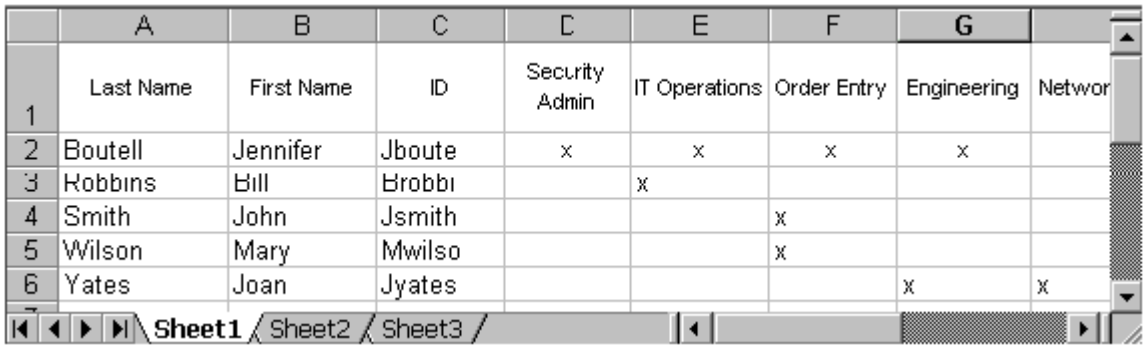
- Identify processes
- Group processes into like functions
- Map users to those groups

After determining the basic groups at your company, list them across the top of the Employee/Group matrix you used to list all user names.

Associating Users with Groups

With each user listed down the left side and each group listed across the top, fill in the matrix, associating each user with at least one group, as shown in Figure 3-2.

Figure 3-2 Security Matrix, Users and Groups



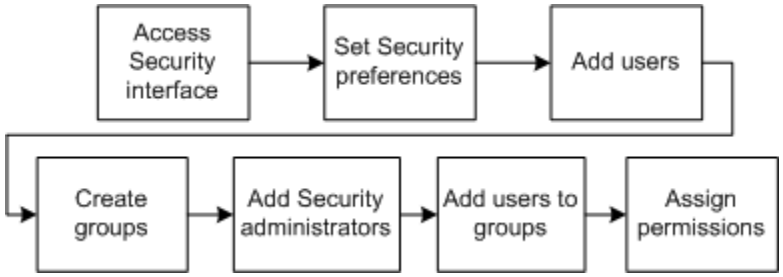
	A	B	C	D	E	F	G	
1	Last Name	First Name	ID	Security Admin	IT Operations	Order Entry	Engineering	Networ
2	Boutell	Jennifer	Jboute	x	x	x	x	
3	Robbins	Bill	Brobbi		x			
4	Smith	John	Jsmith			x		
5	Wilson	Mary	Mwilso			x		
6	Yates	Joan	Jyates				x	x

Sheet1 Sheet2 Sheet3

Implementing Application Security

When planning is complete, the initial process for establishing security is straightforward and sequential, as shown in Figure 3-3.

Figure 3-3 First Security Implementation Process



Before you begin implementing security in MSS, be sure you have completed the following tasks:

- Make sure there are no user restrictions on the servers where MSS resides.
- Make sure the MSS server names are in the **gateway.ini** file using gateway parameters. See the discussion about gateway parameters in *MSS System Administrator's Guide* for more information.
- Assign users read-only access to the network folders containing the application files.

To access MSS security:

1. Log in to MSS.
2. Click **Administration** on the navigation bar.

   You can now add users, assign MSS permissions, and maintain groups. The rest of this chapter and the online Help provide details about procedures and descriptions of window and fields.

Adding New Users and Groups

All users are initially members of the security group that is set in the system preference **Default Security Group** and can remain in that group even when assigned to other groups.

Both users and groups can be members of groups. A user or a group can be unassigned from any group with which it is associated. Make sure that the unassigned user or group does not need the permissions being removed when it is disassociated from the parent group.

To add users or groups:

1. Log in to MSS.
2. On the navigation bar, select **Administration**, and then click **Security Users and Groups**.

   The Security Users and Groups window is displayed.
3. In the right pane, do one of the following:
   - Right-click and select **New**, and then select **User** or **Group**.

     The Add User or Add Group window is displayed, which enables you to add a new user or a group.
   - Double-click the **Users** or **Groups** folder, right-click a user or a group, and then select **New From**.

     The New / From User or New / From Group window is displayed, which enables you to add a new user or a group from an existing user or group.
4. Enter the required information in the fields.
5. Click **OK**.

> **Note:**
>
> See "Adding New Users That Use a Non-Oracle Authentication Solution" for adding new users that use a non-Oracle authentication solution.

Adding New Users That Use a Non-Oracle Authentication Solution

This section provides instructions for adding new users that use a non-Oracle authentication solution.

Adding Users Using the New Option for a Non-Oracle Authentication Solution

To add users using the **New** option for a non-Oracle authentication solution:

1. Log in to MSS.
2. On the navigation bar, select **Administration**, and then click **Security Users and Groups**.

   The Security Users and Groups window is displayed.
3. In the right pane, right-click and select **New**, and then select **User**.

The Add User window is displayed.

4. (Optional) Select the **Create Database User For Access To MSS Utilities** check box.

   You must select this check box only if you need access to MSS utilities. If you opt to not select this check box, you will be able to access only the MSS application and not the MSS Utilities.

> **Note:**
>
> The **Password Expires On**, **Password**, and **Confirm** fields become active in the Add User window only after you select the **Create Database User For Access To MSS Utilities** check box.

5. Enter the required information in the **User ID**, **Description**, **Password Expires On**, **Password**, and **Confirm** fields.
6. Click **OK**.

   The application creates the new user in both SECURITY_USERS table and Oracle database, thus enabling the user to access both the MSS application and MSS Utilities.

Adding Users Using the New From Option for a Non-Oracle Authentication Solution

To add users using the **New From** option for a non-Oracle authentication solution:

1. Log in to MSS.
2. On the navigation bar, select **Administration**, and then click **Security Users and Groups**.

   The Security Users and Groups window is displayed.
3. In the left pane, select **Users**.
4. In the right pane, right-click a user and then select **New From**.

   The New / From User window is displayed.

> **Note:**
>
> When creating users using the **New From** option for a non-Oracle authentication solution, the **Password** and **Confirm Password** fields are not displayed in the New / From User window.

5. Enter the required information in the **New User Id** and **New User Description** fields.
6. Click **OK**.

   The application creates the new user only in the SECURITY_USERS table and does not create the new user in the Oracle database, and therefore the newly

created user can access only the MSS application and cannot access MSS Utilities.

To enable the user created using the **New From** option to also access MSS Utilities for a non-Oracle authentication solution, see "Enabling Users Created Using the New From Option to Access MSS Utilities for a Non-Oracle Authentication Solution".

Enabling Users Created Using the New From Option to Access MSS Utilities for a Non-Oracle Authentication Solution

To enable the user created using the **New From** option to also access MSS Utilities for a non-Oracle authentication solution:

1. Log in to MSS.
2. On the navigation bar, select **Administration**, and then click **Security Users and Groups**.

   The Security Users and Groups window is displayed.
3. In the left pane, select **Users**.
4. In the right pane, right-click the user and select **Edit**.

   The Edit User window is displayed.
5. Select the **Create Database User For Access To MSS Utilities** check box.
6. Enter the required information in the **Password Expires On**, **Password**, and **Confirm Password** fields.

   The **User ID** field is non-editable because the MSS application already created the new user in the SECURITY_USERS table when you performed the tasks mentioned in "Adding Users Using the New From Option for a Non-Oracle Authentication Solution".
7. Click **OK**.

   The new user is created in the Oracle database and this user can now access MSS Utilities.

> **Note:**
>
> If the user already exists in the Oracle database, the **Create Database User For Access To MSS Utilities** check box is not displayed in the Edit User window. In this situation, the **Password** button becomes active in the Edit User window. Clicking the **Password** button displays the Password Administration window, which enables you to modify the password for the existing user.

Authorizing System Administrators

Table 3-1 lists the administrator privileges and provides information on how to assign each privilege to authorize users.

Table 3-1 How to Assign Administrator Privileges

Authorization	How to Authorize
DBA identification	Scripts are run during installation that provide the **ASAP** user with DBA authority. Use the **ASAP** user ID to perform MSS DBA tasks.
Security administrator	Add the user's ID to the **Sec_Admin** group or to another group that has some or all security permissions. See "Creating Additional Security Administrators".
Access to configuration files	Master configuration files reside on the Oracle WebLogic server. These files can be edited by any user unless password-protected by the IT department. When distributed to client computers, configuration changes can be made.
Customize default desktop	Log on with the ID specified in the **DefaultPortalId** parameter of **gateway.ini** file.
Customize the navigation bar (Navbar)	The user identified in the **User** parameter of the **gateway.ini** in the JNDI section can set the **Allow Users to Customize My Desktop** preference in MSS. This default determines whether users can customize the desktop Navbar, according to the instructions in the Help.
Set system and global preferences	A user can be assigned permission within application security to set these preferences that affect user setup in the MSS database. Instructions are in the online Help.
Manage Oracle WebLogic Server	See the Oracle WebLogic Server documentation for information on authorizing administrators.

Validating API Logons

Some MSS API servers, such as PSR, LSR, and Work Management, have security features that are enabled by default.

The security validation for CORBA APIs works only if you are sending a ConnectReq CORBA object to the WDIRootImpl object. This does not apply to all APIs, because some, such as the LSR API, do their own transaction management.

Refer to the *CORBA API Developer's Reference* for details about coding the APIs. See the discussion about OrbProperties parameter in *MSS System Administrator's Guide* for information about setting up API logon validation.

Adding Registered Users to MSSRole for Accessing EJB Methods Externally

The MSS application implements security for EJB methods. You must add a registered user to the Global Role MSSRole to access the EJB methods externally.

To add a registered user to MSSRole:

1. Log on to the Oracle WebLogic Server Administration Console by entering the following URL in your browser:

   `http://host:port/console`

   where:

   - *host* is the name of the administration server computer.

- *port* is the administration server port number.

2. Create a user with the registered user name. See the WebLogic Server documentation for detailed information on creating users.
3. Add the registered user name to MSSRole. See the WebLogic Server documentation for detailed information on adding users to roles.

Adding Registered Users to Access External JMS Queues

The MSS application implements security for external JMS queues. You must add a registered user to the Integration Administrators group to access the external JMS queues.

To add a registered user to the Integration Administrators group:

1. Log in to the Oracle WebLogic Server Administration Console by entering the following URL in your browser:

   `http://host:port/console`

   where:

   - *host* is the name of the administration server computer.
   - *port* is the administration server port number.

2. Create a user with the registered user name. See the WebLogic Server documentation for detailed information on creating users.
3. Add the registered user name to the Integration Administrators group. See the WebLogic Server documentation for detailed information on adding users to groups.

Adding APPJMSUser User for JMS Messaging Through Gateway Events

The following entries govern the processing of the gateway events messaging in the **gateway.ini** file:

```
APPJMSUser=app_jms
APPJMSPwd=
```

MetaSolv Solution uses the WebLogic user mentioned in the **APPJMSUser** field to do the following:

- Establish a connection with the application server for processing the gateway events messaging
- Put the message in the mss.external.event.queue. The mss.external.event.queue is a secured JMS queue and only a valid user who belongs to the Integration Administrators group can access it.

You can create or change the encrypted password for the APPJMSUser user by using the Encrypt Passwords Security option in MetaSolv Solution Utilities.

After you create a new AES encrypted password for the APPJMSUser user, you must copy the encrypted password in the **gateway.ini** file. See the discussion about copying encrypted passwords to the **gateway.ini** file in the *MSS System Administrator's Guide*.

During MSS installation, the APP_JMS user is created by default and updated in the **gateway.ini**. If required, you can change the APPJMSUser and APPJMSPwd parameters in the **gateway.ini** file.

Accessing MSS Web Services Using a WebLogic User

The MSS Web Service operations are secured using WS-Security. You must be a registered WebLogic user to access the web service operations externally.

To create a valid WebLogic user:

1. Log on to the Oracle WebLogic Server Administration Console by entering the following URL in your browser:

   ```
   http://host:port/console
   ```

   where:

   - *host* is the name of the administration server computer.
   - *port* is the administration server port number.

2. Create a user with the registered user name. See the WebLogic Server documentation for detailed information on creating users.

Refer to the *MSS Web Services Developer's Guide* for more information on securing web services.

Tracking Logons

The appserver audit log file **appserver_auditlog.xml** (for 6.3.1.452 or earlier) or **appserver_audit.log** (for 6.3.1.558 or later) can tell you when users log on and off and when there are failed attempts. This capability can be used to identify unauthorized access attempts. See the discussion about managing MSS log files in *MSS System Administrator's Guide* for information about **loggingconfig.xml** parameters.

The following example shows the different types of audit messages recorded in this log file for logon/logout actions from a fictitious user ID named SCHINTAL.

- Authentication failure

  Message**:**

  ```
  Login attempt failed for SCHINTAL. Exception: ORA-01017: invalid username/
  password; logon denied
  ```

  Cause: Invalid user name or incorrect password.

  Action: Please supply a correct username and password combination.

- Authenticated (successful)

  Message:

  ```
  Login detected for SCHINTAL.
  ```

  Cause: User has signed on.

  Action**:** None.

- User has signed off

  Message:

  ```
  Logout detected for SCHINTAL.
  ```

Cause: Logout by user or Client disconnected.

Action: None.

Managing Application Passwords

The security administrator manages the following application password tasks:

- Setting the password preference
- Specifying password expiration dates
- Resetting passwords
- With Oracle authentication, creating a new Oracle user ID for APIs to use when accessing the database

Setting the Password Preference

To set the password preference:

1. Log in to MSS.
2. Click **Administration.**
3. Click **Preferences.**
4. Double-click the **Security** folder.
5. Double-click the **Change password upon initial logon** preference.
6. (Optional) To require a password change at the first logon, select **Change password upon initial logon**.

Specifying a Password Expiration Date

To specify a password expiration date when adding a user:

1. Log in to MSS
2. Click **Administration**.
3. Click **Security Users and Groups**.
4. Do one of the following:
   - To add a user and accept the 90-day default password expiration date, retain the defaults.
   - Change the default password expiration date based on your business practices.

At any time after a user has been added, you can set a specific password expiration date or specify that the password does not expire.

Maintaining User Passwords

To assign or change a password expiration date for an existing user:

1. Click **Administration**.
2. Click **Security Users and Groups**.
3. Double-click the user whose password expiration date you want to specify.

The Edit User window is displayed.

4. Click the **Password Expires On** field, which displays the current calendar.
5. Do one of the following:
   - Select a date.
   - Clear the field to indicate no expiration date.
6. Click **OK**.

Creating Additional Security Administrators

To create additional administrators:

1. Log in to MSS.
2. Click **Administration**.
3. Click **Security Users and Groups**.
4. Add the user to the **Sec_Admin** group or create a new sub-group for **Sec_Admin**.

   You can create sub-groups with subsets of permissions, such as:
   - Access to the Security Permissions window
   - Access to Security reports
   - Access to the Users and Groups window
   - Access to work management task editing
   - Access to the security system preference
   - Users to change global preferences

Assigning MSS Permissions

Permissions are controlled through the MSS UI. Permissions control what users and groups can access in the application. Permissions (inclusive or restrictive) are assigned as a means of controlling feature access and on-screen displays. Features and windows can be disabled and fields can be made invisible.

To access permissions:

1. Log in to MSS.
2. Click **Administration**.
3. Click **Security Permissions**.

   The Security Permissions window appears.
4. In the left-most pane, expand the menu tree to display a long list of MSS windows.

   The right-most pane displays a list of permissions for the user or group displayed in the User/Group list.
5. Follow directions in the online Help to assign permissions.

Understanding Permissions

Permissions determine what a user can do and which items can be seen within the application. Permissions can be assigned to a group or to a specific user.

The rules for determining access include the following:

- When a user is assigned to multiple groups, the least restrictive group permissions apply.
- **Not Set** allows access to objects as a default.

When an individual user is assigned a permission, it overrides group permissions.

Different objects are associated with different types of permissions. The next sections describe the permissions for each type of object.

Window Permissions

There are four levels of permissions that you can assign to a window:

- **Read Only**: Users can see and access the window but cannot make changes.
- **Enabled**: Users have explicit permission to use the window and make changes.
- **No Access:** Users cannot see or use the window.
- **Not Set**: Users can access the window. It is similar to **Enabled**, but it does not override other permissions when the system determines the least restrictive permissions for a user.

Control Permissions

Objects such as lists, tree view buttons, tabs, columns, check boxes, and fields are known as controls. Control names are not preloaded into the MSS database.

If you want to secure a control and the name does not appear in Security, it does not exist in the MSS database. To add the control to the database, refer to "Scanning Windows and Controls Into the Database".

Controls are associated with the following permissions:

- **Enabled**: Users have explicit permission to access the control and make changes.
- **Disabled**: The control is non-functional.
- **Invisible**: The control is grayed out.
- **Not Set**: Users can access the control. It is similar to **Enabled**, but it does not override other permissions when the system determines the least restrictive permissions for a user.

Pop-Up Menu Permissions

You can secure an entire pop-up menu or a specific item on a pop-up menu. Pop-up menus are preloaded into Security and cannot be added or customized other than setting permissions.

Pop-up menus are associated with the following permissions:

- **Enabled**: Users have explicit permission to use the pop-up menu and make changes.

- **Disabled**: The pop-up menu is non-functional.
- **Invisible**: The pop-up menu does not appear.
- **Not Set**: Users can access the pop-up menu. It is similar to **Enabled**, but it does not override other permissions when the system determines the least restrictive permissions for a user.

Check Point Permissions

Check points secure certain logical functions in MSS that do not correspond to window objects. Because these functions can have far-reaching impacts, check points are preloaded into Security and cannot be added or customized. The Sec_Admin group can access all security check points.

The following processes are protected by check points:

- MSAG Override settings
- Cascade Reconcile
- Mass DLR Reconcile
- IP Addresses - External
- Reset Supp Type
- Order Management: w_row_in_use
- PSR External Service Key
- Security Permissions
- Security Users and Groups
- Users and Groups
- Security Reports
- Partition Groups
- Assign Permissions
- Preferences
- Software Options
- Password Policy
- PBDatabaseTrace
- Shared Views
- Exception Queue Access
- View All Work Queues
- Edit Tasks
- System Queue Access
- Encrypt Passwords

> **Note:**
>
> At installation, only the security administrator can change a completion date on the Work Management Work Queue Manager window - **Task Detail** tab. The security administrator can assign that access to groups or users using the **Edit Tasks** check point.

Permissions that can be assigned to check points are:

- **Enabled**: Users have explicit permission to pass the check point.
- **Not Set**: Users can access the window. It is similar to **Enabled**, but it does not override other permissions when the system determines the least restrictive permissions for a user.

  No user outside of the Sec_Admin group can pass a check point without the security administrator providing explicit permission to access the protected object or function and providing a special password for the pop-up that appears when trying to access the area. The Sec_Admin group can access all security check points.

Scanning Windows and Controls Into the Database

The list of windows in the Security Permissions window uses development window names and not the names that appear on the UI. The list contains all of the JSP windows in the application and many PowerBuilder windows. Not all PowerBuilder windows are listed. If a window you need is not listed, you can scan the controls on the window into the MSS database and then assign permissions to those controls.

To scan a window:

1. Open the window containing the controls you want to secure.
2. Press **F2**.
3. Make a note of the highlighted window name when the dialog box appears.
4. Assign permissions to the controls on that window using the Assign Permissions window.

Creating MSS Security Reports

Security reports provide information on the aspects of MSS system security, as listed in Table 3-2.

Table 3-2 Security Reports

Report	Description
Individual Detail	Lists controls and statuses for the selected user or group.
Hierarchy Detail	Lists controls and statuses for the Ancestor Hierarchy of the selected user.
Ancestor Hierarchy	Shows the parent groups of the selected group/user, recursively.
Descendant Hierarchy	Shows the groups/users who are assigned to the selected group.
User Exception	Shows users who are not members of the Default group.

See the online Help for detailed instructions on creating security reports.

Managing Utilities Security

A separate authorization is required to access security in the **tbs_util.exe** file, the MSS utilities. Leaving the utilities unsecured allows an authorized user to purge database records. See the online Help for instructions on using the MSS utilities security feature.

Managing File Permissions

On UNIX systems, the newly created files are given a permission of 640. Some files like executable files need additional permissions and they are individually assigned permissions.

Table 3-3 lists the custom permissions that the installer grants for specific file types.

Table 3-3 Custom Permissions

Folder	Owner	Group	Other
config	read and write	read and write	-
ior	read and write	read and write	read and write
gateway	read and write	read and write	-
logs	read and write	read	-
sample	read, write, and execute	read, write, and execute	-
others	read, write, and execute	-	-

> **Note:**
>
> On Windows systems, the system administrator must review the installation folders and restrict file permissions.

Changing Role Passwords

Only the database administrator can change passwords for the roles ADMIN_ROLE and WOTSTWTWWOO by running the following stored procedure:

```
==========pl/sql should be run by dba for changing role's password==========
DECLARE
  C_NAME VARCHAR2(200);
  C_PASSWORD VARCHAR2(200);
BEGIN
  C_NAME := 'role_name'; /*specify the role name, ADMIN_ROLE OR WOTSTWTWWOO*/
  C_PASSWORD := 'password'; /*specify the password*/
  SP_CREDSTORE_CHG_ROLE_PWD(C_NAME, C_PASSWORD);
END;
```

4

Security Considerations for Developers

This chapter provides information for developers about security considerations while integrating with Oracle Communications MetaSolv Solution (MSS).

MSS API Security

MSS provides several ways to integrate the different APIs.

- CORBA APIs

  To access the CORBA APIs, a valid MSS User ID is required. See *MSS CORBA API Developer's Reference* for more information.

- EJB APIs

  MSS EJB APIs are secured using WebLogic Server authentication where access to any EJB requires a user assigned the Security role MSSRole. The MSSRole is created during MSS installation.

- Web Services

  MSS Web Services are secured using the WS-Security feature where access to any MSS Web Service requires valid WebLogic credentials. See *MetaSolv Solution Web Services Developer's Guide* for more information.

5

Enabling MSS with Single Sign-On Functionality

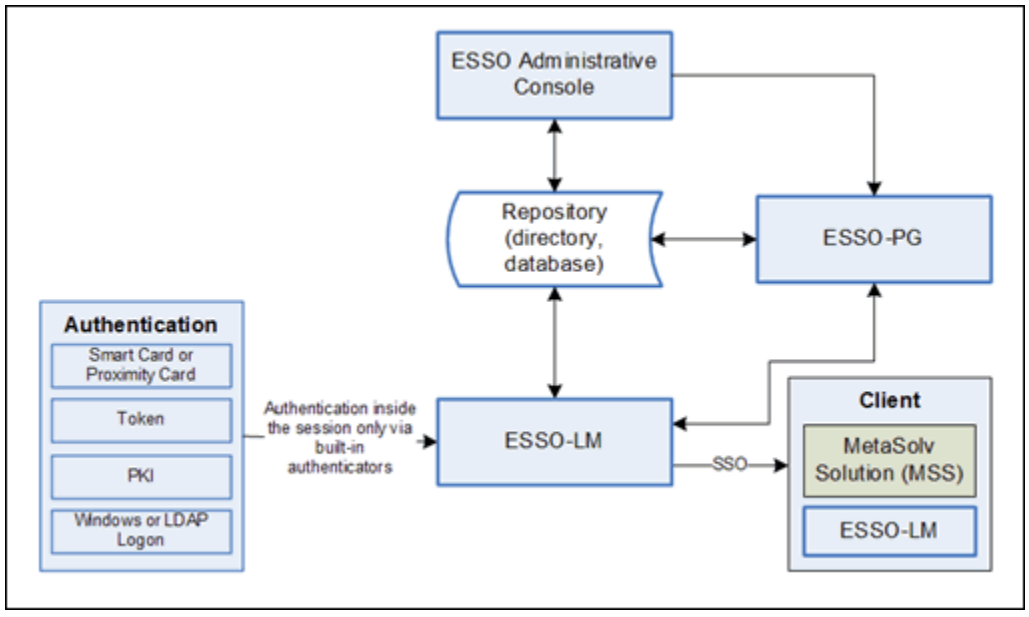
This chapter provides information about optionally enabling single sign-on functionality with Oracle Communications MetaSolv Solution (MSS) utilizing Oracle Enterprise Single Sign-On Suite Plus (ESSO Suite) software.

About Single Sign-On Functionality

Single sign-on functionality provides a unified sign-on and authentication across all enterprise resources. It provides identity management functionality eliminating the need for multiple user names and passwords.

Figure 5-1 shows an overview of the required software components and their relationships. Configuring MSS with the ESSO Suite software and the single sign-on functionality is optional.

Figure 5-1 Single Sign-On Required Component Overview



To enable the single sign-on capability for MSS, you must install and configure the required components which include the following:

- ESSO Administrative Console
- ESSO Logon Manager (ESSO-LM)
- Repository

- ESSO Provisioning Gateway (ESSO-PG)

About the ESSO Administrative Console

The Oracle ESSO Administrative Console enables:

- Administration of the ESSO environment
- Creation of the MSS template

The MSS template describes for the client, the window and fields for the input username and password. The repository stores the templates.

About the ESSO Logon Manager

The ESSO Logon Manager (ESSO-LM) provides the single sign-on functionality. The ESSO-LM component is responsible for items such as the following:

- Detecting requests for credentials
- Analyzing the responses
- Logging events
- Administering settings

The ESSO-LM resides on the server-side and on the client computers. The system administrator performs a setup on the server-side ESSO-LM that then gets pushed to all the client computers.

About the Repository

The repository is the central location for storing:

- User Credentials
- Application Logon Templates
- Password Policies
- ESSO Client Settings

The ESSO Suite supports the following software list for the repository:

- Oracle Database or any SQL Database
- Microsoft Active Directory
- Oracle Directory Services (OID, ODSEE, OUD)
- Most third-party LDAP-compliant directories

About the ESSO Provisioning Gateway

The ESSO Provisioning Gateway (ESSO-PG) provides the ability to remotely add, modify, and delete application credentials from each user's ESSO-LM credential storage. This eliminates the need for local credential capture and grants the user access to the target application.

Integrating MSS with ESSO Overview

The ESSO Suite support numerous types of authenticators and configurations, and this chapter supports the following scenario:

- Users log onto a desktop client using Windows authentication.
- Oracle Unified Directory (OUD) supports an LDAP-compliant solution as the central repository.

You set up this scenario configuration by completing the download, install and setup of the ESSO Suite and Repository software. The following set of tasks is an overview of the required steps:

- Download the Oracle Enterprise Single Sign-On Software.

  Refer to *MSS Planning Guide* for software version information.
- Download the Oracle Unified Directory (OUD) Software, or you can use any supported repository software.

  Refer to *MSS Planning Guide* for software version information.
- Install the repository and setup MSS user names and passwords.
- Install and configure the ESSO Administrative Console.
  - Perform the “Extend the Repository" operation on the ESSO Administrative Console and link it to the OUD repository (or the selected repository).
  - Perform the Authentication Setup (defaults to Windows).
  - Setup the synchronization settings.
  - Update the user experience settings and the security settings.
- Install the ESSO Logon Manager on the MSS AdminServer.
- Create the MSS Template in the ESSO Administrative Console.
- Install and set up the ESSO Provisioning Gateway.
- Package the ESSO Suite software for deployment to user computers.
- Install and setup the ESSO client on user computers.

For more detailed information on the single sign-on software installation and set up, refer to *Oracle Support Document 2226090.1 (Oracle Communications MetaSolv Solution Release 6.2.1 and 6.3 Single Sign-On using Oracle Enterprise Single Sign-On Suite).* You can download the document on My Oracle Support at this website:

https://support.oracle.com/epmos/faces/DocumentDisplay?id=2226090.1

A

MSS Secure Deployment Checklist

The following security checklist lists guidelines to help you secure Oracle Communications MetaSolv Solution (MSS) and its components.

Secure Deployment Checklist

- Lock and expire default user accounts.
- Enforce strong password management.
- Restrict, control, and revisit user privileges and grant only the necessary privileges to each user.
- Restrict network access by doing the following:
  - Use firewalls.
  - Never leave an unnecessary hole in a firewall.
  - Password-protect the Oracle listener against remote access.
  - Monitor listener activity.
  - Monitor who accesses your systems.
  - Restrict system access by IP addresses.
  - Encrypt network traffic.
- Apply all security patches and workarounds.
- Encrypt sensitive information.
- Contact Oracle Security Products if you discover a vulnerability in any Oracle product.