

Automated Sign-on for Mainframe Administrator Guide

12.5.1

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Automated Sign-on for Mainframe

Automated Sign-on for Mainframe enables an end user to automatically log on to a host application on a z/OS mainframe by using a terminal emulation client.

Automated Sign-On for Mainframe is an add-on to Host Access Management and Security Server and requires a separate license.

In this guide:

- ◆ [How Automated Sign-on for Mainframe Works](#)
- ◆ [Configuration Workflow](#)
- ◆ Configuration steps:
 - [Initial Setup](#)
 - [Simple Test](#)
 - [Production](#)
- ◆ [Task List for Administrators](#)

1 Introduction

Automated Sign-on for Mainframe enables users to automatically — and securely — log on to IBM 3270 applications without the need for eight-character passwords.

To implement Automated Sign-On for Mainframe, configurations are required on:

- ♦ **Management and Security Server (MSS)** — to secure connections, create and assign automated sign-on sessions
 - ♦ **the terminal emulation client** — to create a logon macro and configure the client
 - ♦ **z/OS** — to support PassTickets
-

Before you begin

Become acquainted with how Automated Sign-on works and the setup requirements.

- ♦ [How Automated Sign-on for Mainframe Works](#)
- ♦ [System Requirements and Prerequisites](#)
- ♦ [Terms](#)

Note the [Configuration Workflow](#), and then use this guide to perform the tasks.

- 1 Set up the initial configuration.
- 2 Run a simple test.
- 3 Prepare for production.

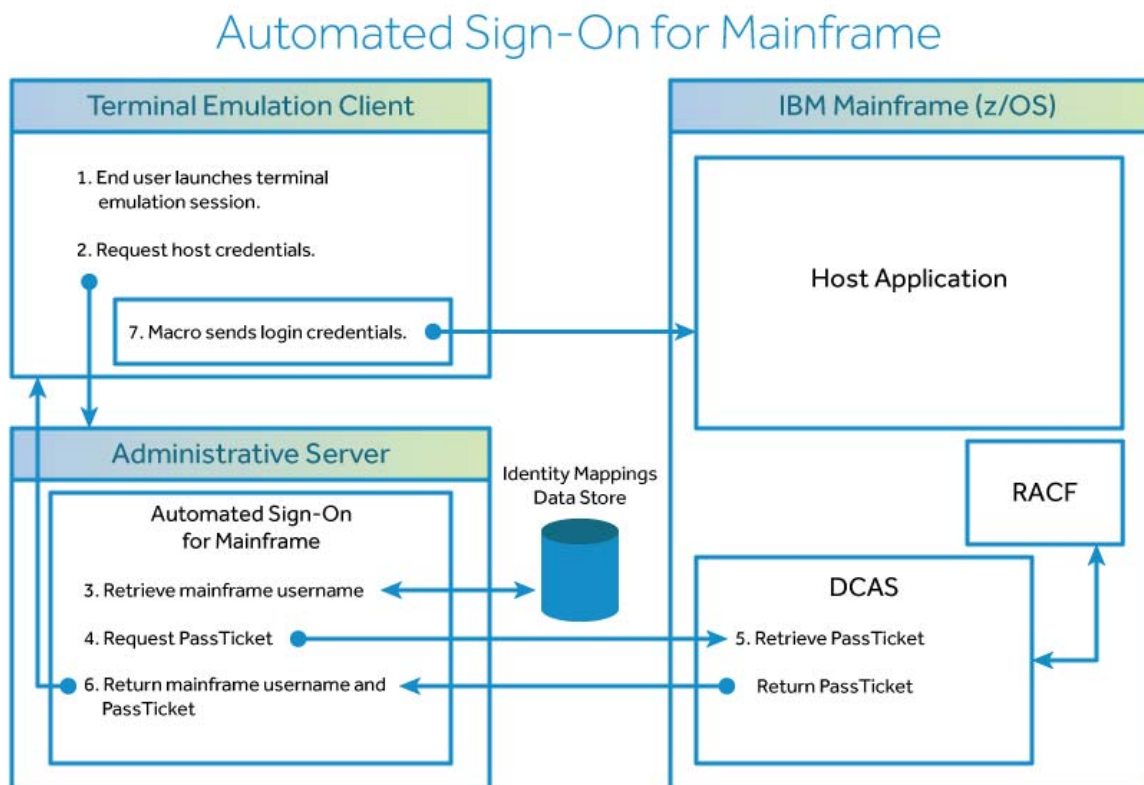
See the [Task List for Administrators](#) to distribute the configuration tasks among administrators.

Configuration topics:

- ♦ [Configuration Workflow](#)
- ♦ [Initial Setup](#)
- ♦ [Simple Test](#)
- ♦ [Production](#)
- ♦ [Task List for Administrators](#)

How Automated Sign-on for Mainframe Works

Follow the flow of activity from the end user's terminal logon through the automated sign-on to the mainframe application.



- 1 Launch the emulation client (such as Reflection or InfoConnect Desktop, Reflection ZFE, or Rumba+), and authenticate to the MSS Administrative Server. The client connects to the host, which prompts for the user's credentials.
- 2 The Client requests the user's host credentials from the MSS Administrative Server.
- 3 The MSS Administrative Server retrieves the user's mainframe user name from the data store of mapped mainframe user names.
- 4 The MSS Administrative Server passes the host application ID and the end user's mainframe user name to Digital Certificate Access Server (DCAS) on the z/OS mainframe, and requests a PassTicket.
- 5 DCAS exchanges information with RACF and retrieves a PassTicket, which is then returned to the MSS Administrative Server.
- 6 The MSS Administrative Server returns the user's mainframe user name and the PassTicket to the emulation client.
- 7 The terminal emulation client's login macro sends the user's mainframe user name and PassTicket to the host application. The user is automatically logged on.

[System Requirements and Prerequisites](#)

[Configuration Workflow](#)

System Requirements and Prerequisites

Before installing or configuring Automated Sign-On for Mainframe, the following products and systems must be in place.

Table 1-1 System Requirements and Prerequisites for Automated Sign-on for Mainframe

Requirement	Comment
Host Access Management and Security Server version 12.5 or higher	installed on the designated server See the Installation Guide for Administrative Server system requirements
Automated Sign-On for Mainframe Add-On product	activation file installed on the MSS server
LDAP directory	for user authorization
Micro Focus terminal emulation software <ul style="list-style-type: none"> ◆ Reflection or InfoConnect Desktop 16 or higher <i>Workspace Automated Sign-on</i> sessions require Reflection or InfoConnect Desktop version 16.2 or higher ◆ Reflection ZFE 2.0 or higher ◆ Reflection for the Web 12.3 SP1 or higher The version must be compatible with Management and Security Server. See the Reflection for the Web Release Notes. ◆ Rumba+ Desktop 9.4.1 or higher 	on the client and administrator workstations <i>Note:</i> The emulator client must have the API functionality that enables Automated Sign-On for Mainframe.
z/OS with DCAS installed	See Appendix A. Configuring DCAS and RACF on z/OS
TLS connection (default is TLSv1.2) *	from the MSS Administrative Server to DCAS

* If the mainframe does not support — or cannot be updated to — TLSv1.2, add this setting on the MSS server to enable TLSv1 or TLSv1.1:

1. In `\MSSData\properties`, open `server.properties` in a text editor.
2. Add this line to enable the TLS protocol versions. (Syntax matters. `TLSv1.0` does not work.)
`server.asm.protocols=TLSv1, TLSv1.1, TLSv1.2`
Note: If the property is not specified or is empty, the default value is `TLSv1.2`.
3. Save the file.

Related topics

- ◆ [Terms](#)
- ◆ [Configuration Workflow](#)

Terms

This list includes brief definitions of terms used in this document.

- ♦ **Administrative Console:** the user interface for the MSS Administrative Server, used to manage and configure terminal sessions.
- ♦ **Administrative Server** (or **MSS Administrative Server**): component installed with Host Access Management and Security Server.
- ♦ **DCAS** (Digital Certificate Access Server): a TCP/IP server application that interfaces with IBM Resource Access Control Facility (RACF) to return PassTickets, which act as passwords in the automated sign-on process.
- ♦ **MSS:** abbreviation for Host Access Management and Security Server.
- ♦ **PassTicket:** a time-limited, encrypted substitute for a user's password. PassTickets are generated per user for a one-time-only use.
- ♦ **RACF:** IBM Resource Access Control Facility. RACF is a security system that provides access control and auditing functionality for the z/OS and z/VM operating systems.
- ♦ **Workspace Automated Sign-on:** a specific session type that can be used with Reflection or InfoConnect Desktop 16.2 or higher.

-
- ♦ [Configuration Workflow](#)
 - ♦ [Initial Setup](#)
 - ♦ [Simple Test](#)
 - ♦ [Production](#)
 - ♦ [Task List for Administrators](#)

2 Configuration Workflow

Automated Sign-on for Mainframe requires configuration to be done in different places, most likely by different people. Some tasks can be done in parallel.

Follow the flow of tasks and note what needs to be configured where. After the **Initial Setup** is configured, you can run a **Simple Test** to prepare for **Production**.

Table 2-1 Configuration tasks to set up Automated Sign-on for Mainframe

Workflow	Configuration task	Where to perform the task
initial Setup	1. Install or Upgrade Management and Security Server	server that meets the System Requirements
	2. Activate the Automated Sign-On for Mainframe Add-On	in MSS
	3. Configure DCAS and RACF on z/OS	on z/OS
	4. Configure Authentication & Authorization	in MSS
	5. Establish trust between the MSS Administrative Server and the DCAS server	in MSS
	<i>Note:</i> Steps 6 and 7 are specific to your emulator (and session type).	in the emulator:
	6. Enable your emulator for automated sign-on	<ul style="list-style-type: none"> ◆ Reflection or InfoConnect Desktop - Workspace Automated Sign-on ◆ Reflection or InfoConnect Desktop - Managed Sessions ◆ Reflection ZFE ◆ Reflection for the Web ◆ Rumba+ Desktop
7. Create an IBM 3270 session with an automated sign-on macro	in MSS, for your emulator type	
Simple Test	8. Assign access to one user for testing	in MSS
	9. Run a test	in MSS
Production	10. Map enterprise IDs to mainframe user names	in the data store
	11. Assign access to the automated sign-on for mainframe sessions	in MSS

Workflow	Configuration task	Where to perform the task
	12. Deploy automated sign-on sessions to users	Use your typical deployment method.

Configuration Tasks:

- ◆ [Initial Setup](#)
- ◆ [Simple Test](#)
- ◆ [Production](#)
- ◆ [Task List for Administrators](#)

3 Initial Setup

The Initial Setup steps ensure that the required products and components are installed. Some basic configuration needs to be done before you configure Automated Sign-on for Mainframe.

The installation requirements are summarized in [System Requirements and Prerequisites](#).

In brief, the administrators will

1. [Install or Upgrade Management and Security Server](#)
2. [Activate the Automated Sign-On for Mainframe Add-On](#)
3. [Configure DCAS and RACF on z/OS](#)
4. [Configure Authentication & Authorization](#)
5. [Establish trust between the MSS Administrative Server and the DCAS server](#)
6. [Enable your emulator for automated sign-on](#)
7. [Create an IBM 3270 session with an automated sign-on macro](#)

See the [Configuration Workflow](#) for an overview of the tasks and where they need to be done.

Use the [Task List for Administrators](#) to distribute the configuration tasks to the appropriate administrator.

[Configuration Workflow](#)

[Task List for Administrators](#)

1. [Install or Upgrade Management and Security Server](#)

1. Install or Upgrade Management and Security Server

Install (or upgrade to) Host Access Management and Security Server (MSS) 12.5 on a server that meets the system requirements.

Refer to the [Installation Guide](#).

Continue with **Initial Setup**:

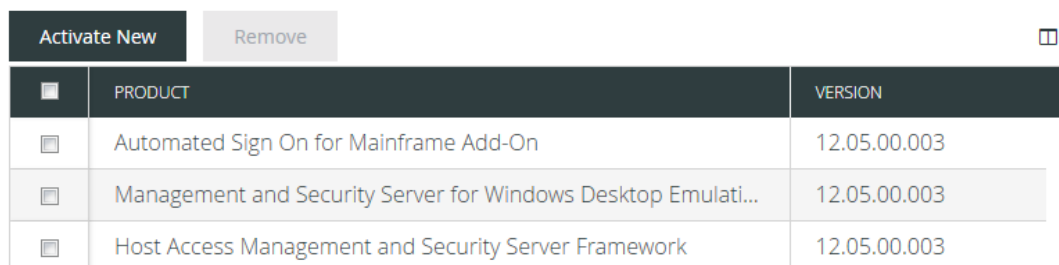
2. [Activate the Automated Sign-On for Mainframe Add-On](#)
3. [Configure DCAS and RACF on z/OS](#)
4. [Configure Authentication & Authorization](#)
5. [Establish trust between the MSS Administrative Server and the DCAS server](#)
6. [Enable your emulator for automated sign-on](#)
7. [Create an IBM 3270 session with an automated sign-on macro](#)

2. Activate the Automated Sign-On for Mainframe Add-On

Automated Sign-On for Mainframe Add-On is provided as an activation file, which must be uploaded and activated in Management and Security Server.

Note: the activation file for your emulator also needs to be uploaded.

- 1 Check to see which activation files are already installed.
 - 1a In the MSS **Administrative Console**, click **About > Activated Products**.
 - 1b In the list of **Currently Installed** activation files, look for
 - ♦ Automated Sign-On for Mainframe Add-On
 - ♦ your terminal emulator client



<input type="checkbox"/>	PRODUCT	VERSION
<input type="checkbox"/>	Automated Sign On for Mainframe Add-On	12.05.00.003
<input type="checkbox"/>	Management and Security Server for Windows Desktop Emulati...	12.05.00.003
<input type="checkbox"/>	Host Access Management and Security Server Framework	12.05.00.003

- 1c For each activation file listed, check the version. To ensure compatibility with the latest features, be sure the `<major>.<minor>` version of each activation file is the same as Host Access Management and Security Server.
- 2 If the activation files for **Automated Sign-On for Mainframe** and your **terminal emulation product** are present for **version 12.05.<nn>**, you are ready to proceed with [4. Configure Authentication & Authorization](#).
If not, you must obtain and activate **version 12.5.<nn>**. Continue with step 3.
- 3 Download and install the 12.5 activation files for Automated Sign-On for Mainframe Add-On and/or the terminal emulator client.
 - 3a Open the Micro Focus Download site where Host Access Management and Security 12.5 was downloaded.
 - 3b In the list of product entitlements, scroll to click **Host Access Management and Security Server--Automated Sign-On for the Mainframe Add-On**.
Click **Download**, and click the automated sign-on activation file:
`activation.automated_signon_for_mainframe-12.5.<n>.jaw`
Accept the terms and click the file to download. Note the download location.
 - 3c Return to the list of product entitlements, and scroll to **Host Access Management and Security Server - Access License**.
Click **Download**, and click the activation file for your terminal emulator, such as
`activation.mss_for_windows_desktop_emulation-12.5<n>.jaw`
Accept the terms and click the file to download. Note the download location.
- 4 In the MSS Administrative Console, open **Configure Settings >Product Activation**.
 - 4a Click **Activate New** to open a list of available files.
 - 4b Browse to the location where the activation files were downloaded.

Click the activation file for automated sign-on:

```
activation.automated_signon_for_mainframe-12.5.0.jaw
```

The list of **Currently Installed** products now includes **Automated Sign-On for Mainframe Add-On** version **12.05.<nn>**.

4c Repeat the **Activate New** steps to activate your terminal emulator client.

4d Restart your browser to ensure that the Administrative Console is fully updated with the new set of activation files. You do not need to restart the MSS Server (service).

Once installed, the MSS Administrative Console displays the settings fields in **Configure Settings > Automated Sign-On**.

[3. Configure DCAS and RACF on z/OS](#)

[4. Configure Authentication & Authorization](#)

3. Configure DCAS and RACF on z/OS

This configuration is required before trust can be established between Management and Security Server and the DCAS server.

To enable Automated Sign-on for Mainframe to connect to IBM host applications, the MSS Administrative Server must exchange information with the Digital Certificate Access Server (DCAS) on z/OS (OS/390 V2R10 and later). DCAS works with RACF to obtain PassTickets, which act as time-limited single-use passwords in the automated sign-on process.

DCAS is included with the z/OS Communications Server, but is not installed by default. You may wish to verify whether DCAS has already been enabled on the mainframe.

For example, if you used the Express Logon Facility (ELF) feature of z/OS, then DCAS may already be enabled; however, other z/OS components (such as the Telnet server or RACF) may need additional configuration.

Configuring DCAS and RACF

The **z/OS administrator** must configure DCAS (and RACF) to communicate with the MSS Administrative Server.

The administrator must also create a TLS key database file that contains both the DCAS client's certificate information and the DCAS server's certificate (public key) information. The MSS Administrative Server and DCAS must exchange public keys and place them in the other's trusted store.

Detailed steps are presented in [Appendix A. Configuring DCAS and RACF on z/OS](#).

In brief, the **z/OS administrator** will:

1. Configure RACF services for DCAS.
2. Configure DCAS and TLS on the z/OS mainframe.
3. Set up key exchange between the DCAS server and TLS.
4. Manage keys and certificates using RACF's Common key ring support.
5. Define a PassTicket profile for each application.

6. Configure the DCAS server.
7. Start the DCAS server.

NOTE: If you use more than one DCAS server, you can configure each of them for Automated Sign-on. When you assign access to an automated sign-on session, you can choose which DCAS server to use.

When the z/OS setup is complete, continue with the configuration in MSS.

[Appendix A. Configuring DCAS and RACF on z/OS](#)

[Task List for Administrators](#)

[4. Configure Authentication & Authorization](#)

[5. Establish trust between the MSS Administrative Server and the DCAS server](#)

4. Configure Authentication & Authorization

Automated Sign-on for Mainframe requires users to authenticate to the MSS Administrative Server by using a smart card, username and password, or other credentials.

Note: An LDAP directory is required for user authorization.

To configure user authentication and authorization:

- 1 In Management and Security Server, open the Administrative Console to **Configure Settings - Authentication & Authorization**.
- 2 Select an **Authentication method** (any other than **None**).

Using smart cards. If users will authenticate to the MSS Administrative Server with smart cards, select **X.509**. Further configuration is required before running a simple test, noted in [When smart cards are used for authentication](#).

Configure Settings - Authentication & Authorization

Choose Authentication Method

Authentication method

- None
- LDAP
- Single sign-on through IIS
- Single sign-on through Windows authentication
- X.509

- 3 For Authorization method, select **Use LDAP to restrict access to sessions**.

Choose Authorization Method

Authorization method

- Allow authenticated users to access all published sessions
- Use LDAP to restrict access to sessions

- 4 Enter the required information for your LDAP server. Click **Help** for assistance.
- 5 Click **Apply**. The server is listed under LDAP Servers.

5. Establish trust between the MSS Administrative Server and the DCAS server

Initial Setup

Configuration Workflow

5. Establish trust between the MSS Administrative Server and the DCAS server

This step requires information about the DCAS server and is dependent on step 3. [Configure DCAS and RACF on z/OS](#).

These settings in Management and Security Server are needed for testing, and can also be used in production.

Configure Settings - Automated Sign-on

Before you begin, obtain this information for each DCAS server (from your z/OS host administrator):

- ♦ DCAS server name
- ♦ DCAS server port

NOTE: When **smart cards** are used for authentication, configure those settings first, and then continue with these steps to configure Automated Sign-on.

See the MSS **Help** for more information about each setting.

- 1 In the Administrative Console, click **Configure Settings > Automated Sign-on**.
- 2 Check **Enable automated sign-on to mainframe sessions**.
- 3 Enter the **DCAS Server** name and port number.
- 4 If you choose to use a **custom keystore filename** and **password**, see **Help** for further instruction.
- 5 **Verify** the server's identity, and **Test** the connection.
- 6 If you are using a secondary LDAP directory (Option B in [Choose a data store option](#)), check **Enable secondary LDAP server**.
 - 6a Enter the server-specific information for this LDAP server: **Server type**, **Security options**, **Server name**, **Server port**, **User name**, and **Password**.
 - 6b Enter details for the **Directory search base**. See **Help** for more information.

- 6c When **TLS/SSL** is selected, you need to import the LDAP server's trusted certificate into the default trusted keystore. Click **Import Certificate**.
- 6d **Test Connection** verifies the connection between the secondary LDAP server and the MSS Administrative Server. If the connection fails, consult the logs to resolve the issue.
- 7 Under **User Principal Name (UPN)**, enter the name of the LDAP attribute in the *authenticating* directory that contains the UPN value.

This value is needed when assigning automated sign-on sessions that derive the mainframe user names from the UPN.
- 8 If using a secondary LDAP server, enter information for the **Search filter**. See **Help** for more information.

NOTE: Remember this selection. When you Assign Access, you are prompted to select the **Method to obtain mainframe user name**.

- 9 Click **Apply**.
The Initial Setup requirements are met for Management and Security Server.
- 10 **Next step:** [6. Enable your emulator for automated sign-on](#)

When smart cards are used for authentication

Configure these settings to manage the MSS Administrative Server certificate, the client certificate, and certificate signing requests.

- 1 In Administrative Console, click **Configure Settings > General Security**.
- 2 Scroll to **Smart card settings**. The default parameters specify the certificate attributes associated with the provider, SunPKCS11.
 - ♦ If you use SunPKCS11, you do not need to designate smart card libraries.
 - ♦ If you use a different provider, enter the smart card provider with the certificate attributes and designate the smart card libraries. For assistance, open **Help** and click the link for **Smart card settings**.
- 3 Accept or change the default settings.
- 4 Click **Apply**.
- 5 Continue with [Configure Settings - Automated Sign-on](#).

[6. Enable your emulator for automated sign-on](#)

[Configuration Workflow](#)

6. Enable your emulator for automated sign-on

Steps 6 and 7 are specific to the emulator you are using. Click your emulator (and session type), and then **follow steps 6 and 7** for that setup.

NOTE: For *Reflection Desktop* or *InfoConnect Desktop*, you must choose your session type — **Workspace Automated Sign-on** or **Managed Sessions**.

- ♦ **Workspace Automated Sign-on** enables the administrator to implement automated sign-on for users who create and save mainframe sessions on their desktops
- ♦ **Managed Sessions** uses Management and Security Server to create mainframe sessions and save them on the MSS Administrative Server, where they can be centrally updated and maintained.

Click your emulator type, and continue with steps 6 and 7.

- ♦ [Reflection or InfoConnect Desktop - Workspace Automated Sign-on](#)
- ♦ [Reflection or InfoConnect Desktop - Managed Sessions](#)
- ♦ [Reflection ZFE](#)
- ♦ [Reflection for the Web](#)
- ♦ [Rumba+ Desktop](#)

Reflection or InfoConnect Desktop - Workspace Automated Sign-on

This session type in Reflection or InfoConnect Desktop enables the administrator to implement automated sign-on for users who create and save mainframe sessions on their desktops.

The Workspace Automated Sign-on session type requires Reflection or InfoConnect Desktop version 16.2 or higher.

Continue with steps 6 and 7 for [Reflection or InfoConnect Desktop - Workspace Automated Sign-on](#).

- 6. [Enable Reflection or InfoConnect Desktop to use Workspace Automated Sign-on](#)
- 7. [Create an IBM 3270 session for Workspace Automated Sign-on](#)

6. Enable Reflection or InfoConnect Desktop to use Workspace Automated Sign-on

In brief, the administrator must:

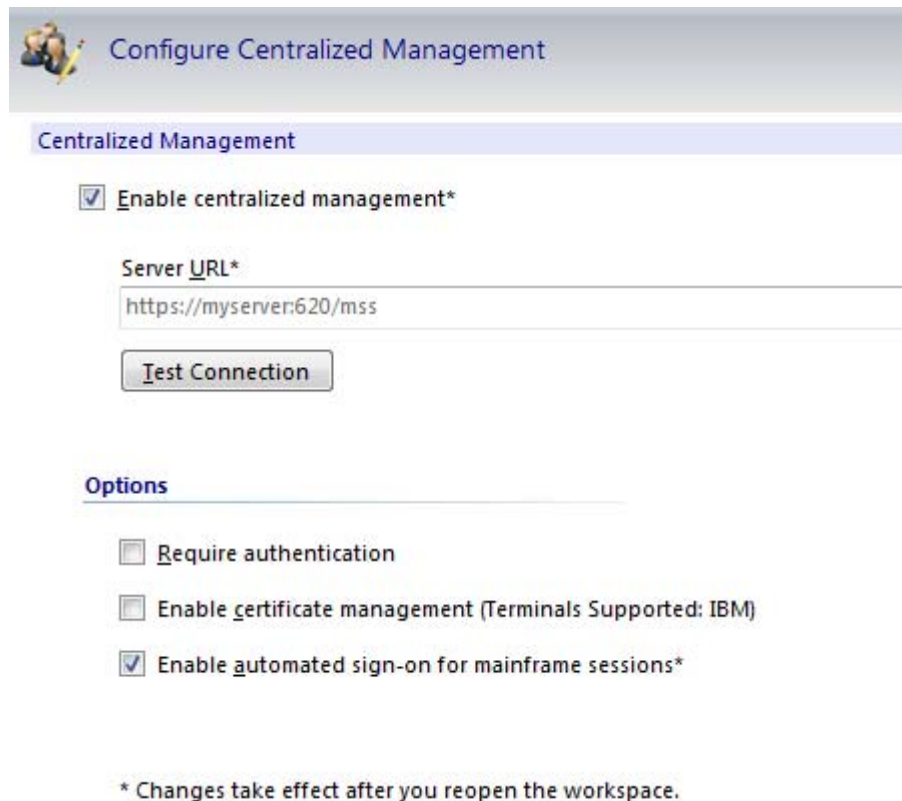
- 6A. [Configure Centralized Management](#)
- 6B. [Create an automated sign-on macro and save the session document](#)

6A. Configure Centralized Management

This global setting establishes a connection between the client and the MSS Administrative Server, which is needed to request and deliver the PassTicket for automated sign-on.

- 1 In Reflection or InfoConnect Desktop, open the **Workspace Settings**.
- 2 Click **Configure Centralized Management**.
- 3 Check **Enable Centralized Management**.

- 4 Enter the URL for your MSS Administrative Server (Management and Security Server).
Click OK.



Configure Centralized Management

Centralized Management

Enable centralized management*

Server URL*

https://myserver:620/mss

Test Connection

Options

Require authentication

Enable certificate management (Terminals Supported: IBM)

Enable automated sign-on for mainframe sessions*

* Changes take effect after you reopen the workspace.

- 5 Check **Enable automated sign-on for mainframe sessions**.

This setting is needed to use Automated Sign-on for Mainframe when sessions are created by users and saved on their individual desktops. When enabled, the automated sign-on macro inserts a time-limited PassTicket to log the user on to the mainframe session.

6B. Create an automated sign-on macro and save the session document

Create a macro that uses methods and properties on the IbmTerminal object.

To automatically log on a user to a mainframe session, the macro must:

- ◆ Send a host application ID to the MSS Administrative Server so that the Administrative Server can request a PassTicket from DCAS.
- ◆ Insert the user's RACF credentials (PassTicket and mainframe user ID) that are returned from the MSS Administrative Server (to the client) into the data that is transmitted to the host. This action logs the user on to the mainframe application.

Follow these steps, heeding the required naming conventions.

- 1 Gather these details for the macro:
 - ◆ the application ID
 - ◆ valid logon credentials for the mainframe application

- 2 In Reflection or InfoConnect Desktop, create a session and configure it to connect to the host that users will automatically log on to.
- 3 From the **Macros** tab, click **Record VBA**.
- 4 Log on to the mainframe host application with valid credentials, and then click **Stop Recording**.
- 5 In the **Recording Complete** dialog, save the macro in the current document's project. Name the macro according to these requirements:
 - ◆ To apply the macro to all sessions connecting to this mainframe, name it **SignOn**.
 - ◆ To apply this macro only to sessions connecting to a specific port on this mainframe, you **must append** the name with underscore [_]<port number>.
 For example: **SignOn_623**.

NOTE: If you want to specify different logon information for **different ports on the same host**, you can create a macro for each port and save these macros in the same VBA module.

For example, if you connect to a mainframe on port 623 and on port 723 with a different logon, create different macros named **SignOn_623** and **SignOn_723**. When the session connects, the port-specific macro is used.

- 6 Save the session document file with this **required name**: `ASM.rd3x`
 The session must be named `ASM.rd3x` to ensure the session VBA Project component has the required name.
- 7 In the VBA Editor, open the ASM Project > Modules. Open the **Recorded** module.
- 8 Edit the macro code to use `PassTickets`:

- 8a Add this line after the variable declarations:

```
ibmCurrentTerminal.GetDASOPassTicket("APPID")
```

where "APPID" is replaced with the host application ID (noted in step 1).

- 8b Replace your user name with the `DASOUserID` retrieved by the `GetDASOPassTicket` function:

```
ibmCurrentScreen.SendKeys(ibmCurrentTerminal.DASOUserID)
```

As a result, your `DASOUserID` will be sent instead of your user name.

- 8c Comment out or delete the line that uses the `PasswordBox` function to prompt the user for the password.

```
hiddenTextEntry = ibmCurrentTerminal.Macro.PasswordBox("", "")
If (hiddenTextEntry = "") Then
    Err.Raise 5002, "Hidden TextEntry", "No Value Provided.", "VBAHelp.chm", "5002"
End If
```

```
ibmCurrentScreen.SendKeys(hiddenTextEntry)
```

- 8d Replace that line with one that contains the `DASOPassTicket` that was retrieved by the `GetDASOPassTicket` function call, like this:

```
ibmCurrentScreen.SendKeys(ibmCurrentTerminal.DASOPassTicket)
```

TIP: To add another macro for a specific port on this mainframe, disconnect this session and connect on that port. Then repeat the steps in this procedure to record another `SignOn` macro and save it with the port number appended to the `SignOn` name (for example, `SignOn_623`).

- 9 Save the macro. Close the VBA editor and save the session document.

Next step, in MSS: [7. Create an IBM 3270 session for Workspace Automated Sign-on](#)

7. Create an IBM 3270 session for Workspace Automated Sign-on

In brief, the MSS administrator must

[7A. Create a Workspace Automated Sign-on session in MSS](#)

[7B. Upload the session document that contains an automated sign-on macro](#)

7A. Create a Workspace Automated Sign-on session in MSS

- 1 Open the Administrative Console to **Manage Sessions**, and click **+Add**.
- 2 Select **Reflection/InfoConnect Desktop** as the **Product**.
- 3 Select **Workspace Automated Sign-on** as the **Session type**.
- 4 Enter a **Session name** that *exactly matches* the name of the host to which the session document files are configured to connect.

For example, if the host name is `myHost`, then the **Session name** must be `myHost`.

If your environment has session documents that are configured to connect to variations of host names (such as fully qualified names or IP Addresses), create a separate Workspace Automated Sign-on session for each name. For examples, see the **Manage Sessions Help**.

7B. Upload the session document that contains an automated sign-on macro

- 1 Click **Browse**. Select the Reflection or InfoConnect Workspace session document file (`ASM.rd3x`) that contains the automated sign-on for mainframe login macro.

The Reflection or InfoConnect Desktop administrator created this session document during Initial Setup.

- 2 Click **Save** to upload the settings file and save the session.

The session is added to the Manage Sessions list and is available to be assigned.

Next step: [8. Assign access to one user for testing](#)

[8. Assign access to one user for testing](#)

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Reflection or InfoConnect Desktop - Managed Sessions

This session type in Reflection or InfoConnect Desktop uses Management and Security Server to create mainframe sessions and save them on the MSS Administrative Server, where they can be centrally updated and maintained.

Automated Sign-on for Mainframe is available with Reflection or InfoConnect Desktop version 16.0 or higher.

Continue with steps 6 and 7 for **Reflection or InfoConnect Desktop - Managed Sessions**.

[6. Enable Reflection or InfoConnect Desktop for automated sign-on](#)

[7. Create an IBM 3270 Workspace session and add an automated sign-on macro](#)

6. Enable Reflection or InfoConnect Desktop for automated sign-on

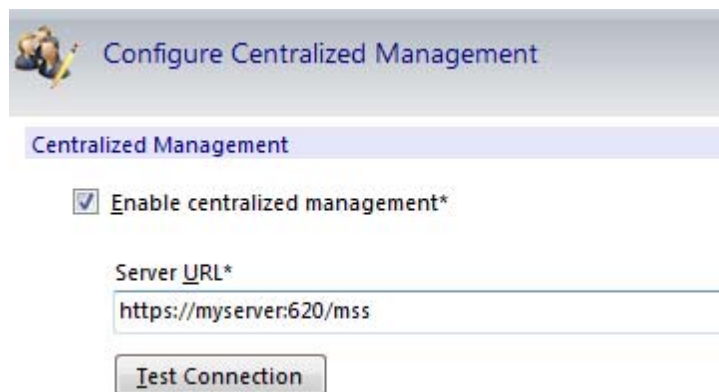
In brief, the administrator must:

[Enable Centralized Management in Reflection or InfoConnect Desktop](#)

Enable Centralized Management in Reflection or InfoConnect Desktop

This global setting establishes a connection between the client and the MSS Administrative Server, which is needed to request and deliver the PassTicket for automated sign-on.

- 1 In Reflection or InfoConnect Desktop, open **Reflection Workspace Settings**.
- 2 Click **Configure Centralized Management**.
- 3 Check **Enable Centralized Management**.
- 4 Enter the URL for your MSS Administrative Server (Management and Security Server).
Click **OK**.



Configure Centralized Management

Centralized Management

Enable centralized management*

Server URL*

https://myserver:620/mss

Test Connection

Next step: [7. Create an IBM 3270 Workspace session and add an automated sign-on macro](#)

7. Create an IBM 3270 Workspace session and add an automated sign-on macro

In brief, the administrator must

[7A. Create an IBM 3270 Workspace session in MSS](#)

[7B. Record and edit a macro in a Reflection Workspace session](#)

7A. Create an IBM 3270 Workspace session in MSS

- 1 Open the Administrative Console to **Manage Sessions**, and click **+Add**.
- 2 Select **Reflection/InfoConnect Desktop** as the **Product**.
- 3 Select **Workspace** as the **Session type**.
- 4 Enter a **Session name**.
- 5 Click **Launch** to open the session.
- 6 Create a new **3270 terminal session**. In the **Create New Document** dialog, 3270 terminal should be selected. Click **Create**.

- 7 If the session will connect through the **Security Proxy Server**, continue with steps 8-11 to configure security.
Otherwise, enter the name or IP address of the host computer, click **OK**, and proceed to step 12.
- 8 In the **Create New 3270 Terminal Document** dialog, check **Configure additional settings** (at the bottom of the dialog), and click **OK**.
- 9 On the **Settings** dialog, under Host Connection, select **Set Up Connection Security** and click the **Security Settings** button.
- 10 On the **SSL/TLS** tab in the Security Properties dialog, check both **Use SSL/TLS security** and **Use Security Proxy**. Configure the Security Proxy settings. Click **OK**.
(The Security Proxy server name and port are listed on the Administrative Console > **Security Proxy** panel.)
- 11 Accept the connection security settings and click **OK**. Continue to configure the features you want users to be able to access or edit. Click **Help** for guidance.
- 12 Keep the session open and connected to the host. Continue with [7B. Record and edit a macro in a Reflection Workspace session](#).

7B. Record and edit a macro in a Reflection Workspace session

The logon macro is initiated when an authenticated user launches the session to connect or reconnect to the host. Keeps these notes in mind when creating the macro.

NOTE: The automated sign-on macro must:

- ◆ Send a host application ID to the MSS Administrative Server so that the Administrative Server can request a PassTicket from DCAS.
- ◆ Insert the user's RACF credentials (PassTicket and mainframe user ID) that are returned from the MSS Administrative Server (to the client) into the data that is transmitted to the host. This action logs the user on to the mainframe application.

These instructions are guidelines to enable Automated Sign-On for Mainframe. Although error-checking is omitted for brevity and clarity, the macro author should check for errors as required by the application. These settings are needed for testing, and can also be used in production.

- 1 In the 3270 session you just created, start the macro recorder (**Macros > Record VBA**).
- 2 Connect to the host and log on to the appropriate host application using a valid user name and password.
You will edit the macro to remove specific user information and replace it with values that support logon by any authenticated user.
- 3 Stop the macro recorder (**Macros > Stop Recording**).
- 4 In the Recording Complete dialog, name the macro (for example TSO_logon). Click **OK**.
- 5 **Save** the macro with the current document (session) or in the common project.
By saving the macro with the current document, it will be transferred to the MSS Administrative Server when the session is saved in the Administrative Console, and then distributed to users who run this session.
- 6 Open the Visual Basic Editor (**Macros > Visual Basic**). Locate your macro: open Project > Modules, and double-click **Recorded** (or right-click > **View Code**).
- 7 After retrieving the `ibmCurrentTerminal` object, add this line:

```
ibmCurrentTerminal.GetDASOPassTicket("APPID")
```


where "APPID" is replaced with the appropriate host application ID.

- 8 Edit the statement that sends your user name. Remove your user name and replace it with the mainframe user name that was retrieved by the `GetDASOPassTicket` function call.

The edited line should look like this:

```
ibmCurrentScreen.SendKeys(ibmCurrentTerminal.DASOUserID)
```

- 9 a. Comment out or delete the line that uses the `PasswordBox` function to prompt the user for the password.

```
hiddenTextEntry = ibmCurrentTerminal.Macro.PasswordBox("", "")  
If (hiddenTextEntry = "") Then  
    Err.Raise 5002, "Hidden TextEntry", "No Value Provided.", "VBAHelp.chm",  
    "5002"  
End If
```

- b. Replace that line with one that looks like this:

```
ibmCurrentScreen.SendKeys(ibmCurrentTerminal.DASOPassTicket)
```

- 10 **Save** the macro. Click **Yes** to send settings to the MSS Administrative Server.
Close the Visual Basic editor, and keep the session open.
- 11 Open **Document Settings** (File > Settings > Document Settings). Under Host Connection, click **Configure Advanced Connection Settings**.
- 12 In Configure Advanced Connection Settings, under **Connection Action**, check the boxes to
 - ♦ **Run a macro** or other action *after* the initial connection.
Select the logon macro and click **OK**.
 - ♦ **Run when reconnecting**.
Select the logon macro and click **OK**. The macro will be initiated when a user connects to a mainframe session.
- 13 **Save** the session. (Click **Save** or **Exit**.) Click **Yes** to send the settings to the MSS Administrative Server.

Next step: [8. Assign access to one user for testing.](#)

[8. Assign access to one user for testing](#)

[Configuration Workflow](#)

[Task List for Administrators](#)

Reflection ZFE

Continue with steps 6 and 7 for **Reflection ZFE**.

[6. Enable Reflection ZFE for automated sign-on](#)

[7. Create a Reflection ZFE session and add an automated sign-on macro](#)

6. Enable Reflection ZFE for automated sign-on

Reflection ZFE uses Management and Security Server for centralized management, so no additional setting is required.

However, be sure the **Automated Sign-on for Mainframe activation file** is installed on MSS. To verify or install the activation file, see [2. Activate the Automated Sign-On for Mainframe Add-On](#).

Next step: [7. Create a Reflection ZFE session and add an automated sign-on macro](#)

7. Create a Reflection ZFE session and add an automated sign-on macro

In brief, the administrator must

[7A. Create a Reflection ZFE session in MSS](#)

[7B. Record and edit a macro in a Reflection ZFE session](#)

7A. Create a Reflection ZFE session in MSS

- 1 Open the Administrative Console to **Manage Sessions**, and click **+Add**.
- 2 Select **Reflection/ZFE** as the **Product**.
- 3 Enter a **Session name**.
- 4 Click **Launch** to open the session.
- 5 Confirm the session **Type** is **IBM 3270**.
- 6 Enter the **Host** name and **Port**, and click **Save**.
- 7 While the session is open and connected to the host, continue with [7B. Record and edit a macro in a Reflection ZFE session](#).

7B. Record and edit a macro in a Reflection ZFE session

The logon macro is initiated when an authenticated user launches the session to connect or reconnect to the host.

NOTE: These instructions are guidelines to enable Automated Sign-On for Mainframe. Although error-checking is omitted for brevity and clarity, the macro author should check for errors as required by the application.

- 1 In the IBM 3270 session you just created, create a macro to log on to this mainframe session. See [Creating Macros](#) in Reflection ZFE Help.
- 2 Name the macro, for example ASO_logon.
- 3 Edit the macro to contain the `AutoSignon` object that provides the methods needed to create a Reflection ZFE login to use with Automated Sign-on.
See the example in [Automatic sign-On Macro for Mainframes](#) in the Reflection ZFE Help.
- 4 **Save** the macro and send the settings to the MSS Administrative Server.
- 5 **Save** the session and send the settings to the MSS Administrative Server.

Next step: [8. Assign access to one user for testing](#)

8. [Assign access to one user for testing](#)

[Configuration Workflow](#)

[Task List for Administrators](#)

Reflection for the Web

Continue with steps 6 and 7 for [Reflection for the Web](#).

6. [Enable Reflection ZFE for automated sign-on](#)

7. [Create a Reflection ZFE session and add an automated sign-on macro](#)

6. Enable Reflection for the Web for automated sign-on

Reflection for the Web uses Management and Security Server for centralized management, so this requirement is met.

However, be sure these prerequisites are met:

- ♦ **Compatible versions.** The version of Reflection for the Web must be compatible with Management and Security Server. See the Reflection for the Web [Release Notes](#).
- ♦ **Activation file.** The Automated Sign-On for Mainframe activation file must be installed on MSS. To verify or install the activation file, see [2. Activate the Automated Sign-On for Mainframe Add-On](#).

Next step: [7. Create a Reflection for the Web session and add an automated sign-on macro](#)

7. Create a Reflection for the Web session and add an automated sign-on macro

In brief, the administrator must

[7A. Create a Reflection for the Web IBM 3270 session](#)

[7B. Record and edit a macro in a Reflection for the Web session](#)

7A. Create a Reflection for the Web IBM 3270 session

- 1 Open the Administrative Console to **Manage Sessions**, and click **+Add**.
- 2 Select **Reflection for the Web** as the **Product**.
- 3 Select **IBM 3270** as the **Session type**.
- 4 Enter a **Session name**.
- 5 Accept or edit the default settings, and click **Launch** to open the session.
- 6 In **Connection Setup**, enter the name or IP address of the **Host** computer. Click **OK**.
- 7 Continue to configure the features you want users to be able to access or edit. Click **Help** for guidance.
- 8 Verify that the session connects to the host.
- 9 Keep the session open and continue with [7B. Record and edit a macro in a Reflection for the Web session](#).

7B. Record and edit a macro in a Reflection for the Web session

The logon macro is initiated when an authenticated user launches the session to connect or reconnect to the host. Keep these notes in mind when creating the macro.

NOTE: The automated sign-on macro must:

- ♦ Send a host application ID to the MSS Administrative Server so that the Administrative Server can request a PassTicket from DCAS.
- ♦ Insert the user's RACF credentials (PassTicket and mainframe user ID) that are returned from the MSS Administrative Server (to the client) into the data that is transmitted to the host. This action logs the user on to the mainframe application.

These instructions are guidelines to enable Automated Sign-On for Mainframe. Although error-checking is omitted for brevity and clarity, the macro author should check for errors as required by the application. These settings are needed for testing, and can also be used in production.

- 1 In the open IBM 3270 session you created, start the macro recorder (**Macro > Start recording**).
- 2 Connect to the host and log on to the appropriate host application using a valid user name and password.
You will edit the macro to replace specific user information with values that support logon by any authenticated user.
- 3 Click **Macro > Stop Recording...**
- 4 Enter the macro name, such as `TSO Logon`.
- 5 **Save** the macro and click **OK** to acknowledge the alert message, which tells you that the macro will be saved to the MSS Administrative Server only after you save and exit the session.
- 6 Click **Macro > Macros...** Select the macro you just created and click **Edit**. The macro opens for editing in a Macro Editor window.
- 7 Below the variable definitions at the top of the recorded macro, add the following line:

```
var credentials = eclcredentials.getDASOPassTicket( "APPID" );
```

where "APPID" is replaced with the appropriate host application ID.

- 8 In the macro's "performAction" function, edit the statement that sends your user name.
Remove your user name and replace it with the mainframe username that was retrieved by the `getDASOPassTicket` method. The edited line should look like this:

```
ps.SendDASOUserID( credentials );
```

- 9 In the macro's "performAction" function, comment out or delete the lines that use the `SendCredential` method to transmit the mainframe password. Replace it with a new line that transmits the passticket retrieved from the MSS Administrative Server.

The modified line should look like this:

```
ps.SendDASOPassTicket( credentials );
```

- 10 **Save** the macro and close the Macro Editor window.
- 11 To configure the macro to run on session startup, or to run on each connection, click **Macros > Macros...**
- 12 In the Macros dialog box, select **"Run at startup"** if you want the automated sign-on macro to run after the session launches.

Click the **Events** button, then assign the macro as the “On connect macro” if you want the automated sign-on macro to run every time the session connects.

- 13 Close the Macros dialog box, and then **Save and Exit** the session to send the settings to the MSS Administrative Server.
- 14 Continue with [8. Assign access to one user for testing](#).

[8. Assign access to one user for testing](#)

[Configuration Workflow](#)

[Task List for Administrators](#)

Rumba+ Desktop

Automated Sign-on for Mainframe is available with Rumba+ Desktop 9.4.1 (or higher). Automated sign-on configuration is also documented in the Rumba+ Desktop Administrator Guide > [MSS Automated Sign-On](#)

Continue with steps 6 and 7 for **Rumba+ Desktop**.

6. [Enable Rumba+ Desktop for automated sign-on](#)
7. [Create a Rumba+ Desktop session with the automated sign-on macro](#)

6. Enable Rumba+ Desktop for automated sign-on

In brief, the Rumba administrator must:

- 6A. [Ensure the Prerequisites are met](#)
- 6B. [Create an automated sign-on connection macro](#)
- 6C. [Create a session profile that contains the macro](#)

6A. Ensure the Prerequisites are met

- ◆ Management and Security Server is installed.
- ◆ The Automated Sign-On for Mainframe Add-On activation file is installed. To verify or install the activation file, see [2. Activate the Automated Sign-On for Mainframe Add-On](#).
- ◆ **Centralized Management** is enabled in **Rumba Options** on each user’s local machine.

6B. Create an automated sign-on connection macro

See [Creating a connection macro](#) in the *Rumba System Administrator Guide*.

NOTE: The automated sign-on macro must:

- ◆ Send a host application ID to the MSS Administrative Server so that the Administrative Server can request a PassTicket from DCAS.
 - ◆ Insert the user's RACF credentials (PassTicket and mainframe user ID) that are returned from the MSS Administrative Server (to the client) into the data that is transmitted to the host. This action logs the user on to the mainframe application.
-

6C. Create a session profile that contains the macro

See [Creating a session profile](#) in the *Rumba System Administrator Guide*.

Note where the session profile is saved.

7. Create a Rumba+ Desktop session with the automated sign-on macro

In brief, the MSS administrator must:

7A. [Create a Rumba+ session in MSS](#)

7B. [Upload a Rumba+ Session Profile](#)

7A. Create a Rumba+ session in MSS

- 1 Open the Administrative Console to **Manage Sessions**, and click **+Add**.
- 2 Select **Rumba+ Desktop** as the **Product**.
- 3 Enter a **Session name**. Continue with step 7B on this same panel.

7B. Upload a Rumba+ Session Profile

- 1 On the **Add New Session** panel, click **Browse**. Locate and select the Rumba+ session profile (*created in step 6C*) that contains the automated sign-on connection macro.
- 2 Click **Save** to upload the profile and save the session.
The session is added to the **Manage Sessions** list and is available to be assigned.
- 3 Continue with step [8. Assign access to one user for testing](#).

[8. Assign access to one user for testing](#)

[Configuration Workflow](#)

[Task List for Administrators](#)

7. Create an IBM 3270 session with an automated sign-on macro

Note: Both steps 6 and 7 are emulator-specific.

After the emulator is enabled (step 6), the administrator can create an IBM 3270 session in MSS that includes an automated sign-on macro. The steps differ depending on your emulator and session type.

Follow the steps for your emulator type:

- ♦ [Reflection or InfoConnect Desktop - Workspace Automated Sign-on](#)
- ♦ [Reflection or InfoConnect Desktop - Managed Sessions](#)
- ♦ [Reflection ZFE](#)

- ◆ Reflection for the Web
 - ◆ Rumba+ Desktop
-

8. Assign access to one user for testing

Configuration Workflow

Task List for Administrators

4 Simple Test

When the [Initial Setup](#) is complete, you are ready to run a simple test.

In brief, the **MSS administrator** will:

- ♦ [8. Assign access to one user for testing](#)
- ♦ [9. Run a test](#)

8. Assign access to one user for testing

To test the macro, choose one user who has a “literal value” mapped to a mainframe user name.

- 1 In Administrative Console, click **Assign Access**.
- 2 For testing, **Search** for the user with the mapped user name. (You can use * in the Search box.)
- 3 For the selected user, check the session that you created with the logon macro.
- 4 Next to the selected session, click **Edit**.

In the **Source of mainframe user name** dialog, identify the method to use to derive the mainframe user name to automatically log on that user to that session.

4a For testing, choose **Literal value**, which is available only for individual users, not groups. (Literal value is not used in production.)

4b Enter a **Literal value**, such as the user’s mainframe user name, that conforms to these criteria:

- ♦ up to eight alphanumeric characters
- ♦ no spaces
- ♦ no other characters

4c If you configured more than one DCAS server, select or verify the one to use for this assignment.

4d Click **OK**.

5 Click **Currently Assigned** (on the left navigation) to confirm your entries.

6 [Run a test](#).

For production, access is assigned based on your data store of identity mappings. (See [10. Map enterprise IDs to mainframe user names](#).)

[9. Run a test](#)

9. Run a test

Run a test for your emulator type.

For Reflection/ InfoConnect Desktop - Workspace Automated Sign-on

Create a session document that connects to the host name that you configured in the Automated Sign-on session.

Expected result. The test is successful when the user is signed on automatically to the IBM 3270 session. That is, the automated sign-on macro retrieved a PassTicket and logged on the user with their enterprise ID,

For other emulator types

Log on to the MSS Administrative Server using one of the test user's credentials (or smart card). Or, if presented with a list of links, click the session that has the automated sign-on for mainframe macro.

Note: If the user is assigned to more than one automated sign-on session, a list of sessions is presented. Each link will automatically log the user on to that session.

Expected result. The IBM 3270 session opens without needing to log on to the mainframe. That is, the automated sign-on macro retrieved a PassTicket and logged on the user with their enterprise ID.

Next step: [Production](#)

[Production](#)

[Configuration Workflow](#)

[Task List for Administrators](#)

5 Production

When the Simple Test is successful for one user, you are ready to prepare for deployment.

To deploy the automated sign-on session to multiple users, the users' enterprise IDs must be mapped to their mainframe user names. Then, user authorization can be set by assigning access for all of your users and groups to their entitled sessions.

In brief, the **MSS administrator** will:

- 10. [Map enterprise IDs to mainframe user names](#)
- 11. [Assign access to the automated sign-on for mainframe sessions](#)
- 12. [Deploy automated sign-on sessions to users](#)

10. Map enterprise IDs to mainframe user names

Your users' enterprise user names (used for authenticating) must be mapped to their mainframe user names (used for authorization) so that the automated sign-on macro can log on directly to the mainframe application.

Mainframe user names can be stored in different ways. Determine which data store option fits your environment and whether you need to change the existing schema.

In brief, the administrator will:

- ♦ [Choose a data store option](#)
- ♦ [Implement identity mappings and data storage](#)

Choose a data store option

To help you decide, read through the conditions and scenarios described for each option:

- ♦ [Option A. An authenticating directory with primary user objects](#)
- ♦ [Option B. An authenticating directory plus a secondary directory](#)

Option A. An authenticating directory with primary user objects

Conditions:

- ♦ Mainframe user names are stored on the same LDAP directory that is used to authenticate your users.
- ♦ Every user has a single unique object.
- ♦ Each object has multiple attributes.
- ♦ An attribute is needed to search for mainframe user names.

Implementation scenarios:

1. Add an attribute to an object.

Advantages:

- ♦ The LDAP schema is similar to a template.
- ♦ One user can have multiple mainframe user names (attributes).

Disadvantage: Requires a change in schema.

2. Re-purpose an unused attribute.

Advantage: No change in schema is required.

Option B. An authenticating directory plus a secondary directory

Conditions:

- ♦ An LDAP directory is used to authenticate users.
- ♦ Mainframe user names are stored on a separate LDAP directory that is not used for authentication.

Implementation scenario:

1. Set up a separate LDAP server and create a new set of objects – one per user – in the second directory.

The LDAP search filter would:

- (1) Find the user's object with the attribute and
- (2) Find the attribute within the object that has the mainframe user name.

Advantages:

- ♦ The object is stable over time.
- ♦ Using **Assign Access** (in MSS), several options are available for searching the second LDAP directory and authorizing users to use automated sign-on:
 - ♦ Select UPN as the key to a secondary LDAP search filter.
 - ♦ Specify the LDAP attribute in the authenticating directory from which the UPN is obtained.
 - ♦ Select an LDAP attribute value in the authenticating directory as the key to a secondary LDAP search filter.
 - ♦ Select a literal value

Disadvantage:

- ♦ This scenario requires two LDAP directories.

Implement identity mappings and data storage

The administrator must create a data store of identity mappings. The mapped data relates a user's enterprise identity (such as a smart card) to his or her mainframe user name identity. Users may have more than one mainframe identity based on the applications they are entitled to access.

The text of the mappings must be provided in a format (such as CSV) that can be uploaded and searched. The administrator may choose to work with Consulting Services to prepare the identity mappings.

Configuration Tasks: Identity Mapping

- 1 Identify the data store option that you selected above, either
 - ♦ an authenticating directory with primary user objects — or —
 - ♦ an authenticating directory plus a secondary directory
- 2 Gather the data for the identity mappings:
 - ♦ **Enterprise (authenticating) IDs**, recognized by the MSS Administrative Server.
 - ♦ **Mainframe User names** (RACF IDs), recognized by RACF.

For example, a user might have the following identities.

Enterprise ID	Mainframe User name (RACF ID)
CN=Joe User,OU=Users,DC=my-org,DC=com	TSOS2W3

NOTE: A user can have multiple mainframe user names, based on their roles (such as end user or admin) and on the applications they are entitled to access.

- 3 Populate the data store with the mappings.

When the identity mappings are in place, continue with [11. Assign access to the automated sign-on for mainframe sessions](#).

[11. Assign access to the automated sign-on for mainframe sessions](#)

[Configuration Workflow](#)

[Task List for Administrators](#)

11. Assign access to the automated sign-on for mainframe sessions

Once the identity mappings are stored, you can authorize users to access the automated sign-on sessions. Access can be assigned to individuals or groups.

- 1 In the MSS Administrative Console, click **Assign Access**.
- 2 Verify the **Domain**. Enter the name of a user or a group (or enter *) in the **Search** box. Click **Search**.
- 3 Select a user or group, and check the automated sign-on sessions that they are entitled to access.
- 4 Next to the selected session, click **Edit**. Select the source of the mainframe user name.

NOTE: If you are using a secondary LDAP server, select the method you set for the [Search filter](#).

- ♦ Derive from UPN
- ♦ Get LDAP attribute value from authenticating directory
- ♦ Get LDAP attribute value from secondary directory using search filter

Do not use `Literal` value for production. See [Help](#) for more information.

- 5 If you configured more than one DCAS server, select or verify the one to use for this assignment.
- 6 Click **OK**.
- 7 To confirm your entries, click **Currently Assigned** in the navigation panel.

Now, you are ready for the final step: [12. Deploy automated sign-on sessions to users](#)

[12. Deploy automated sign-on sessions to users](#)

[Configuration Workflow](#)

[Task List for Administrators](#)

12. Deploy automated sign-on sessions to users

After the authorized users are assigned access to the automated sign-on sessions, use your typical method to deploy sessions for production.

For instance, you might provide the URL for the automated sign-on session to the authorized users. Once authenticated to the MSS Administrative Server, they will be automatically logged on to their mainframe session.

If you encounter problems with the configuration in Management and Security Server or with the emulator's setup, contact Micro Focus [Support](#).

Resources

Check your product documentation for deployment-related tasks.

- ♦ [Reflection Desktop Deployment Guide](#)
- ♦ [InfoConnect Desktop Installation and Deployment Guide](#)
- ♦ [Reflection ZFE User Guide](#)
- ♦ [Rumba 9.5 SP1 System Administrator Guide](#)

6 Task List for Administrators

The configuration of Automated Sign-on for Mainframe typically requires assistance from more than one administrator.

This section takes the vantage point of each system administrator and the tasks that need to be done. Of course, one person may serve the role of more than one administrator.

The tasks are presented as checklists to ensure the **Initial Setup** is complete before you run a **Simple Test** and then deploy to **Production**.

- ♦ [MSS Administrator](#)
- ♦ [Terminal Emulation Administrator](#)
- ♦ [z/OS Administrator](#)

MSS Administrator

Perform these tasks in Management and Security Server, noting the dependencies. Refer to the [Configuration Workflow](#) for the full picture of what needs to be configured.

Initial Setup	Task	Comments
<input type="checkbox"/>	1. Install or Upgrade Management and Security Server	
<input type="checkbox"/>	2. Activate the Automated Sign-On for Mainframe Add-On	
<input type="checkbox"/>	4. Configure Authentication & Authorization	
<input type="checkbox"/>	5. Establish trust between the MSS Administrative Server and the DCAS server	Dependency: step 3 (on z/OS)
<input type="checkbox"/>	7. Create an IBM 3270 session with an automated sign-on macro	Dependency: step 6 (in the emulator)
Simple Test		
<input type="checkbox"/>	8. Assign access to one user for testing	
<input type="checkbox"/>	9. Run a test	
Production		
<input type="checkbox"/>	10. Map enterprise IDs to mainframe user names	

Initial Setup	Task	Comments
<input type="checkbox"/>	11. Assign access to the automated sign-on for mainframe sessions	
<input type="checkbox"/>	12. Deploy automated sign-on sessions to users	

Other Administrator Tasks:

- ◆ [Terminal Emulation Administrator](#)
- ◆ [z/OS Administrator](#)

Terminal Emulation Administrator

Enable your emulator to use Automated Sign-on for Mainframe (step 6 in the [Configuration Workflow](#)).


Initial Setup	Task - for your emulator	Comments
Reflection/ InfoConnect Desktop		
- using Workspace Automated Sign-on		
<input type="checkbox"/>	6A. Configure Centralized Management	
<input type="checkbox"/>	6B. Create an automated sign-on macro and save the session document	
Reflection/ InfoConnect Desktop		
- using Managed Sessions		
<input type="checkbox"/>	6. Enable Reflection or InfoConnect Desktop for automated sign-on	
Reflection ZFE		
<input type="checkbox"/>	6. Enable Reflection ZFE for automated sign-on	
Reflection for the Web		
<input type="checkbox"/>	6. Enable Reflection for the Web for automated sign-on	
Rumba+ Desktop		
<input type="checkbox"/>	6. Enable Rumba+ Desktop for automated sign-on	

Other Administrator Tasks:

- ◆ [MSS Administrator](#)
- ◆ [z/OS Administrator](#)

z/OS Administrator

This configuration must be done on your z/OS system to establish trust between Management and Security Server and the DCAS Server.

Initial Setup	Task	Comments
	3. Configure DCAS and RACF on z/OS	Detailed steps are in Appendix A. Configuring DCAS and RACF on z/OS

Other Administrator Tasks:

- ◆ [MSS Administrator](#)
- ◆ [Terminal Emulation Administrator](#)

A Appendix A. Configuring DCAS and RACF on z/OS

Read through the overview and then follow the steps for configuring DCAS and RACF on z/OS.

NOTE: The procedures for using TopSecret and ACF2 are similar to those for RACF, but are not presented in this guide. For details, refer to the TopSecret or ACF2 documentation.

In Appendix A:

[Overview of DCAS Configuration and the z/OS Security Server](#)

1. [Configure RACF so that DCAS can run as a system daemon.](#)
2. [Configure TLS for use with DCAS.](#)
3. [Define a PassTicket profile for each application.](#)
4. [Update the Configuration for the DCAS server.](#)
5. [Start the DCAS server.](#)

[References](#)

Overview of DCAS Configuration and the z/OS Security Server

Automated Sign-on for Mainframe works with DCAS, a component of the z/OS Communications Server. Automated Sign-on requires that DCAS and the z/OS security server be configured to support PassTickets.

Security servers, such as RACF (Resource Access Control Facility), Top Secret, and ACF2, support PassTickets for use with z/OS. For simplicity, procedures are presented for configuring RACF; however, with minor modifications, the concepts and procedures also apply to Top Secret and ACF2.

To enable DCAS and RACF to support PassTicket services, the following conditions must be met.

- 1 RACF must be configured so that DCAS can run as a system daemon.
- 2 TLS must be configured for use with DCAS, including these items:
 - ◆ RACF key ring support must be enabled.
 - ◆ A TLS client authentication level must be configured.
 - ◆ A TLS server certificate for DCAS must be created or obtained.
 - ◆ A TLS client certificate must be created or obtained for use by the Automated Sign-On for Mainframe system to authenticate to DCAS.
- 3 A PassTicket profile must be defined for each host application that will support automated sign-on.
- 4 The DCAS server configuration must be updated with values that match those used with your deployment.
- 5 The DCAS server must be started.

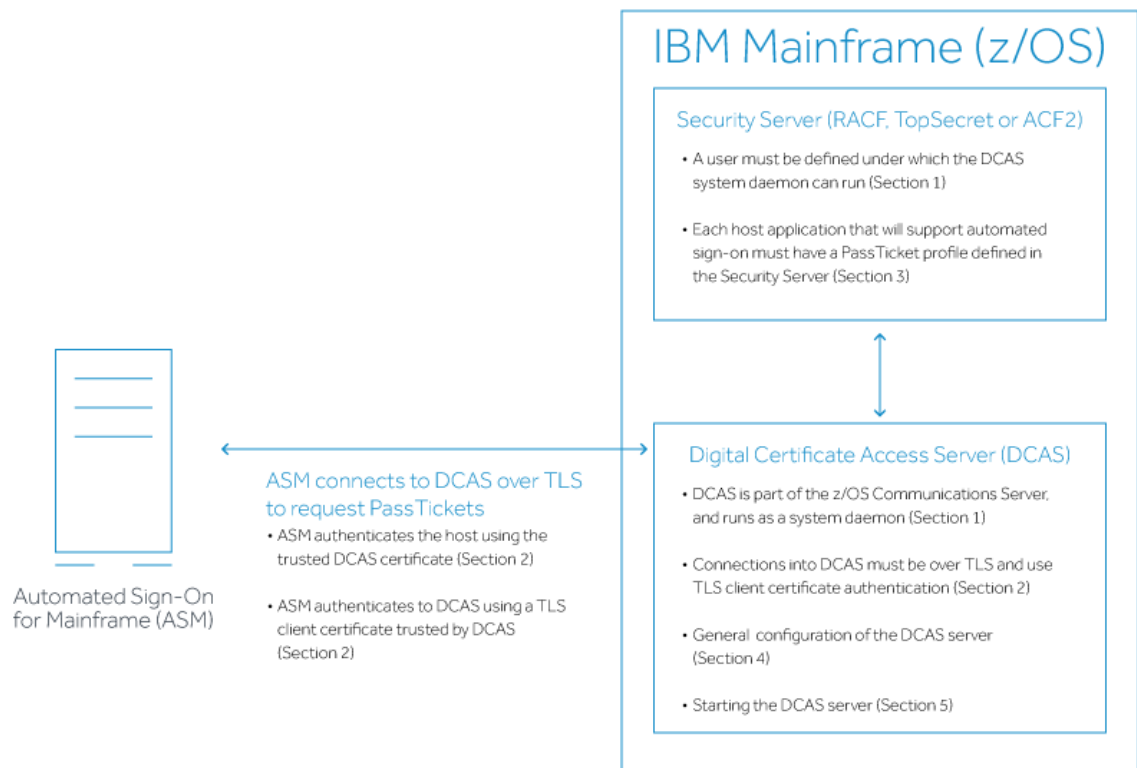
Detailed steps are provided in the sections that follow.

For more information, see these [References](#): *IBM Redbooks* and *Examples of Using CA ACF2 , CA Top Secret, or IBM RACF to Configure Passtickets*.

Information Exchange between Automated Sign-on, DCAS, and RACF

In the Introduction of this Administrator Guide, an [overview diagram](#) depicts how the terminal client emulator, Administrative Server, and Automated Sign-On for Mainframe use PassTickets to provide automated on-log for the end user.

The following diagram shows further detail about how DCAS and the z/OS security server provide PassTicket services for use by Automated Sign-On for Mainframe. This diagram refers to the sections in Appendix A for configuring each item.



1. Configure RACF so DCAS can run as a system daemon.

To configure RACF so that DCAS can run as a system daemon, follow the steps and examples in this section.

In the sample RACF commands below, *italicized* items should be replaced with values appropriate for your environment.

NOTE: For information on RACF commands, refer to these [References](#): *OS/390 SecureWay® Security Server RACF Security Administrator's Guide* and *OS/390 SecureWay® Security Server RACF Command Language Reference*.

1.1 Define a user ID as superuser to use OMVS Services.

The DCAS server runs as a system daemon and must be started under a controlled user ID that has superuser authority (that is, not an end-user or system programmer user ID). To define the user ID to use OMVS services, use the following command:

```
ADDUSER dcasid DFLTGRP(OMVSGRP) OMVS(UID(0) HOME('/'))
```

where *dcasid* is the name of the user ID.

1.2 Provide a user ID with access to MVS.SERVMMGR.DCAS.

Starting DCAS from an MVS procedure requires that the user ID from which it is started have access to the MVS.SERVMMGR.DCAS resource in the OPERCMDS class. To provide this access, use the following commands:

```
RDEFINE OPERCMDS (MVS.SERVMMGR.DCAS) UACC(NONE)  
PERMIT MVS.SERVMMGR.DCAS CLASS(OPERCMDS) ACCESS(CONTROL) ID
```

1.3 Provide a RACF definition for MVS Start-up.

If DCAS is started as an MVS procedure, you will need the following RACF definition:

```
RDEFINE STARTED DCAS.* STDATA(USER(dcasid))  
SETR RACLIST(STARTED) REFRESH
```

where *dcasid* is the name of the user ID.

If CLIENTAUTH LOCAL2 is coded in the DCAS configuration file, at a minimum, you must use RACF to associate the certificate with a valid user ID. You can do this using the RACDCERT ADD command. The user ID could be the one associated with DCAS itself or it could be any valid user ID. If you want additional checking, you must activate the SERVAUTH class and define an EZA.DCAS.cvtsysname profile with the user ID associated with the client certificate to access the profile.

2. Configure TLS for use with DCAS.

This section provides overviews and detailed steps for configuring TLS for use with DCAS on z/OS.

2.1 Overview of Using System TLS with the DCAS Server

The DCAS server and the DCAS client use TLS to communicate. The TLS protocol uses a handshake in which the DCAS client and DCAS server authenticate each other, and they agree on how to encrypt/decrypt the data.

The cipher level used for encryption can be specified at the time DCAS is configured, using the V3CIPHER configuration keyword. The cipher level can also be set dynamically when DCAS starts, based on the level of cipher installed on the system. To set the cipher level dynamically, do not specify the V3CIPHER keyword.

TLS uses X.509 certificates and public/private keys (PKI). These keys are generated and stored in key databases, known as key rings.

The X.509 certificates can be created or obtained from a Certificate Authority. In either case, the certificate becomes part of a key ring. Various services are available for creating and managing key rings and certificates.

The RACDCERT command

The RACDCERT command in RACF can be used to create, register, store, and administer keys and certificates. If you use RACDCERT, you should specify the key ring to the DCAS server in the configuration file using the SAFKEYRING keyword. A key ring created this way does not have a password file associated with it.

For more information on digital certificates, refer to these [References](#): *z/OS SecureWay Security Server RACF Security Administrator's Guide* and *z/OS SecureWay Security Server RACF Command Language Reference*.

2.2 Configure a Client Authentication Level.

DCAS and RACF support several levels of authentication.

Authenticating the DCAS server: The DCAS client always authenticates the DCAS server. This requires that the DCAS client sent the client's z/OS application ID and user ID to the DCAS server.

Authenticating the DCAS client: The DCAS client uses a key pair and certificate to authenticate to the DCAS server. Different authentication level (levels of strictness) can be configured for the DCAS client's authentication to the DCAS server.

Authentication Levels

Choose client authentication Level 1, 2, or 3.

Level 1

With Level 1 authentication, the DCAS server verifies the client's identity using the TLS key database file. This file must contain the following certificates:

- ◆ the DCAS server certificate
- ◆ the DCAS client certificate

To use Level 1 authentication: Specify the CLIENTAUTH LOCAL1 keyword and value in the DCAS configuration file. The KEYRING or the SAFKEYRING keywords in the DCAS configuration file are used to specify the key ring used by the DCAS server.

Level 2

Level 2 includes Level 1 authentication plus an additional step -- verification that the DCAS client certificate has been associated in RACF with a valid user ID, which must be the user ID that DCAS is running under.

To configure DCAS for Level 2 authentication:

- 1 Specify the CLIENTAUTH LOCAL2 keyword and value in the DCAS server configuration file.
- 2 Use FTP (with the BINARY send option) to send the DCAS client's DER certificate to an MVS dataset.
- 3 Use the RACDCERT ADD command to add the certificate to RACF and associate it with a user ID, as shown in this example:

```
RACDCERT ID(dcasid) ADD('DCAS.HOSTPUB.CERT') TRUST
```

where *dcasid* is the name of the user ID.

Level 3

Level 3 includes Level 2 authentication plus verification that the DCAS client has been granted access in RACF to the DCAS server. The user ID derived from the certificate used with Level 2 RACF checks is defined as having access to the SERVAUTH RACF class and the EZA.DCAS.cvtsysname resource in the SERVAUTH class.

NOTE

- ◆ If the SERVAUTH class is not active or the EZA.DCAS.cvtsysname profile is not defined, or both, it is assumed this enhanced level is not requested.
- ◆ If the SERVAUTH class is active and the EZA.DCAS.cvtsysname profile is defined (but not for the user associated with the certificate) the requester's connection is terminated. For example:

```
RDEFINE SERVAUTH EZA.DCAS.cvtsysname UACC(NONE)  
PERMIT EZA.DCAS.cvtsysname CLASS(SERVAUTH) ACCESS(CONTROL) ID(dcasid)
```

where *dcasid* is the name of the user ID.

To configure DCAS for Level 3 authentication:

- 1 Specify the CLIENTAUTH LOCAL2 keyword and value in the DCAS configuration file.
- 2 Activate the SERVAUTH RACF class.
- 3 Define a profile for the EZA.DCAS.cvtsysname resource and associate the profile with the user ID associated with the certificate.

The ID associated with the certificate and the EZA.DCAS.cvtsysname can be any valid user ID.

2.3 Use RACF's Common key ring support to manage keys and certificates.

2.3 a. Set up initial RACF key ring support.

Before using RACF to store your key database information, ensure that:

- ◆ the digital certificate and digital key ring (DIGTCERT and DIGTRING) classes are active before defining certificates or key rings to RACF. For example:

```
SETROPTS CLASSACT(DIGTCERT DIGTRING)
```

- ◆ a refresh is performed after each update or change. For example:

```
SETROPTS RACLIST (DIGTRING DIGTCERT) REFRESH
```

- ◆ the RACDCERT command is defined as an authorized TSO command in the IKJTSoxx member.

To issue the RACDCERT command, you must have access to the FACILITY class IRR.DIGTCERT.function with UPDATE or CONTROL access.

If the DCAS server is started as an MVS started procedure, you must permit the RACF user ID to IRR.DIGTCERT.LIST.

If the DCAS server is started from a TSO user ID under the OS/390 UNIX shell, you must also permit that ID. For example:

```
DEFINE FACILITY (IRR.DIGTCERT.function)
UACC(NONE)
PERMIT IRR.DIGTCERT.LIST
CLASS(FACILITY) ID(dcasid)
ACCESS(control)
```

where *dcasid* is the name of the user ID.

2.3 b. Create a key ring.

Create a key ring for your DCAS server. For example:

```
RACDCERT ID(dcasid) ADDRING(SERVERKeyring)
```

where *dcasid* is the name of the user ID.

2.4. Create and Connect a Certificate

You can use RACF to create self-signed certificates (see section 3.4 a) or request a well-known certificate from a Certificate Authority and add it to RACF (see section 3.4 b).

For information on RACF commands, see *z/OS Security Server RACF Security Administrator's Guide* and *z/OS Security Server RACF Command Language Reference* in [References](#).

2.4 a. Create and connect self-signed certificates on the host.

Because the clients will not know about the issuer of the self-signed certificate, in most cases you must add the server's self-signed certificate to the client's signer certificates. This process requires the following high-level steps:

- ♦ Generate the DCAS server self-signed certificate on the host.
- ♦ Transfer the DCAS server's certificate to the DCAS client machine.

Following are detailed steps describing the process. DCAS server self-signed certificates can be created using RACF.

If using RACF, follow these steps:

- 1 Generate the DCAS server self-signed certificate on the host and transfer to the DCAS client.
 - 1a Create a self-signed server certificate using RACDCERT gencert:

```
RACDCERT ID(dcasid)
SUBJECTSDN(CN('DCASCERT'))
OU('TEST')
C('US'))
TRUST
SIZE(512)
WITHLABEL('DCASCERT')
```

where *dcasid* is the name of the user ID.

- 1b Use RACDCERT Connect to connect the certificate to a key ring and make it default. This example assumes a key ring called SERVERKeyring already has been created.


```
RACDCERT ID(dcasid)
CONNECT(ID(dcasid)
LABEL('DCASCERT')
RING(SERVERKeyring)
USAGE(PERSONAL) DEFAULT)
```

where *dcasid* is the name of the user ID.

- 1c Use RACDCERT EXPORT to export the DCAS server self-signed certificate in ".DER" format to an MVS file.

```
RACDCERT ID(dcasid) EXPORT(LABEL('DCASCERT'))
DSN('dcasid.SAFCERT.DER')
FORMAT(CERTDER)
```

where *dcasid* is the name of the user ID.

- 2 FTP the exported DCAS server certificate to the DCAS client using the FTP binary option.

2.4 b. Create and connect well-known certificates on the host.

Use the following steps to add a Certificate Authority Root and Personal Certificates to the Host.

- 1 Create a self-signed certificate and key pair for the DCAS server:

```
RACDCERT ID(dcasid)
GENCERT SUBJECTSDN(CN('labelname') C('us'))
WITHLABEL('labelname')
```

where *dcasid* is the name of the user ID.

- 2 Create a certificate request for a Certificate Authority (CA) by issuing RACDCERT GENREQ against the self-signed certificate:

```
RACDCERT ID(dcasid)
GENREQ(LABEL('labelname'))
DSN(labelname.certreqname)
```

where *dcasid* is the name of the user ID.

- 3 Send the certificate request to a Certificate Authority.
- 4 When you receive the DCAS server certificate from the Certificate Authority, transfer the file to the DCAS host.
- 5 If RACF does not already have the root certificate for the Certificate Authority, then you need to get it in .DER format, and add it to RACF using this command:

```
RACDCERT CERTAUTH ADD(caroot.der)
TRUST WITHLABEL('caroot')
```

- 6 Add the DCAS server certificate from the Certificate Authority back into RACF:

```
RACDCERT ID(dcasid) ADD(certname) WITHLABEL('certname')
```

where *dcasid* is the name of the user ID.

- 7 Connect the CA root certificate to the key ring with usage CERTAUTH:

```
RACDCERT ID(dcasid)
CONNECT(CERTAUTH LABEL('caroot'))
RING(SERVERKeyring)
USAGE(CERTAUTH) DEFAULT)
```

where *dcasid* is the name of the user ID.

8 Connect the DCAS server certificate to the key ring with usage PERSONAL:

```
RACDCERT ID(dcasid)
CONNECT(ID(dcasid) LABEL('certname')
RING(SERVERKeyring)
USAGE(PERSONAL) DEFAULT)
```

where *dcasid* is the name of the user ID.

3. Define a PassTicket profile for each application.

A RACF PTKTDATA (PassTicket data class profile) must be created for each application ID that will support PassTickets. This profile enables the DCAS server to obtain a PassTicket for the application and user ID, and to pass it back to the client that requested the PassTicket from DCAS. This profile name must match the RACF PTKTDATA application name that is configured on the host. This name could be the same as the application name that the user is logging onto (for example, the name on USSMSG10).

When creating PTKTDATA profiles for applications such as TSO, the application name portion of the profile will most likely not be the same. For example, RACF requires that the application ID portion of the profile name be TSO+SID. Refer to *z/OS Security Server RACF Security Administrator's Guide* (in [References](#)) to determine the correct profile naming.

You must create these profiles on each separate RACF system (the system where the users will be logging on to) that contains target applications for Automated Sign-on for Mainframe. The PTKTDATA class profile defined in the "target" RACF system must match the PTKTDATA class profile in the system where the PassTicket is created, which is the system where the DCAS server executes. These PTKTDATA class profiles need to have corresponding profile names and identical secret keys (defined using the KEYMASKED parameter).

Here is an example of a PassTicket data class profile for the application TSORUS (the KEYMASKED value is a hexadecimal string of your choice):

```
RDEFINE PTKTDATA TSORUS
SSIGNON(KEYMASKED(A1A2A3A4A5A6A7A8)
UACCESS(NONE) )
SETR RACLIST(PTKTDATA) REFRESH
```

The APPLID name must be correct. For example, for TSO, the profile is TSO+SID. The SID is the SMF system id that is defined in the SMFPRMxx member in SYS1.PARMLIB. For more information on defining PassTicket profiles, refer to the *z/OS Security Server RACF Security Administrator's Guide* (see [References](#)).

4. Update the Configuration for the DCAS Server

Additional configuration is needed to update the DCAS configuration file and DCAS start procedure. The values must match those used with your deployment.

The DCAS configuration file (*/etc/dcas.conf*) contains the following keywords:

TCPIP <i>tcpstackname</i>	; Server will have affinity to TCP/IP stackname
IPADDR <i>xx.xx.xx.xx</i>	; IP address to which DCAS binds for TLS connection (defaults to <i>inaddr_any</i>)
PORT <i>xxxxx</i>	; DCAS listens on this port number (default is 8990)

KEYRING /etc/ssl/xxx.kdb	; HFS file name of Keyring for TLS/SSL negotiation
STASHFILE /etc/TLS/xx.sth	; Stash file containing the Password of Key ring file
SAFKEYRING SERVERKeyring	; Key ring via RACF
CLIENTAUTH xxxxxxx	; Client Authentication level, used with parameters: ; LOCAL1 (TLS does authentication) ; LOCAL2 (default - use RACF to validate the client's certificate)
LDAPSERVER xx.xx.xx.xx	; Fully qualified name or IP address of LDAP Server
LDAPPORT xxxx	; Port# that LDAP Server is listening on
V3CIPHER cipherspec	; Specify a subset of the supported TLS V3 cipher algorithms. The following cipher levels are valid: ; 01=NULL MD5 ; 02=NULL SHA ; 03=RC4 MD5 Export ; 04=RC4 MD5 US ; 05=RC4 SHA US ; 06=RC2 MD5 Export ; 09=DES SHA ; 0A=Triple DES SHA US

5. Start the DCAS server.

The DCAS server can be started as a generic server without stack affinity or as a server with affinity to a specific TCP/IP stack. The DCAS server can be started in different ways (detailed steps follow):

- ◆ automatically when the TCP/IP address space is started.
- ◆ from the z/OS UNIX shell.
- ◆ from an MVS started procedure.

To start the DCAS server automatically when the TCP/IP address space is started, specify DCAS on the AUTOLOG statement in the TCPIP profile dataset. For example:

```
AUTOLOG
DCAS
ENDAUTOLOG
```

The following sample procedure can be used to start DCAS. First, enter the command S DCAS. To pass optional parameters to DCAS, specify them after the final slash (/) on the PARM statement, for example:

```
// PARM=('POSIX(ON) ALL31(ON)')
// 'ENVAR("LIBPATH=/usr/lib")/-d 3 -l SYSLOGD')
```

Sample procedure:

```
//DCAS PROC
/** DEBUGGING AND LOGGING MAY BE REQUIRED TO HELP DETERMINE A PROBLEM
/** THE DCAS.
/**
/** -D OR -D - INDICATES DEBUGGING LEVEL REQUESTED.
/** FORMAT: -D LEVEL
/** LEVEL IS: 1=LOG ERROR AND WARNING MESSAGES
/** 2=LOG ERROR, WARNING, AND INFO
/** 3=LOG ERROR,WARNING, INFORMATI
/**
/**<br>//DCAS EXECPGM=EZADCDMN,REGION=4096K,TIME=NOLIMIT,
/** PARM='POSIX(ON) ALL31(ON) / -d 3 -l SYSLOGD'
/**
//SYDENV DD DUMMY
//SYSPRINT DD SYSOUT=*
//SYSIN DD DUMMY
//SYSERR DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//CEEDUMP DD SYSOUT=*
/**
```

You will find a sample start procedure in EZADCASP in the SEZAINST dataset.

To start the DCAS server from the z/OS UNIX shell, use the following format:

```
dcas <parameter_1> <parameter_2> <parameter_3> &
```

To start the DCAS server from an MVS started procedure, use the following format:

```
PARM=.../<parameter_1> <parameter_2> <parameter_3>
```

Optional Parameters

The following optional parameters can be used from either the z/OS UNIX shell or the MVS started procedure:

-d or -D

Indicates debugging. The following levels apply:

- 1= Specifies log error and warning messages.
- 2= Specifies log error, warning, and informational messages.
- 3= Specifies log error, warning, informational, and debug messages. This is the default.

-l or -L

Indicates logging to SYSLOGD or to a designated log file. If you do not specify this parameter, logging defaults to /tmp/dcas.log. If you specify a debug level, but not logging, then the DCAS server attempts to open the default log file /tmp/dcas.log. If this fails, debugging is turned off. For SYSLOGD, the DCAS server uses the log facility local0.

-c or -C

Indicates the requested configuration file (for example, /u/userx/passtick.conf). If you do not specify this parameter, the DCAS server looks for the configuration file using the following search order:
DCAS_CONFIG_FILE environment variable /etc/dcas.conf tsouserid.DCAS.CONF
TCPIP.DCAS.CONF

If the DCAS server does not find a valid configuration file, it will not start.

When DCAS is started, the process ID (pid) is stored in a Hierarchical File System (HFS) file. The file name under which it is stored depends upon how you configure DCAS:

- ♦ **If the DCAS server is configured with TCP/IP stack affinity**, the pid file is named /tmp/dcas.tcpipname.pid where tcpipname is the name of the TCP/IP stack for which DCAS has affinity.
- ♦ **If the DCAS server is configured without stack affinity**, the pid file is named /tmp/dcas.INET.pid.

You can stop the DCAS server from the UNIX shell or from MVS:

- ♦ **To stop the DCAS server from the UNIX shell**, use the following command: `kill -s SIGTERM pid`
- ♦ **To stop the DCAS server from MVS**, use the following command: `P DCAS`

References

IBM Redbooks (<http://www.redbooks.ibm.com/>)

OS/390 SecureWay® Security Server RACF Command Language Reference (<http://publibz.boulder.ibm.com/epubs/pdf/ich1a421.pdf>)

OS/390 SecureWay® Security Server RACF Security Administrator's Guide (<http://publibz.boulder.ibm.com/epubs/pdf/ich1a721.pdf>)

CA Docs: Examples of Using CA ACF2, CA Top Secret, or IBM RACF to Configure PassTickets (https://support.ca.com/cadocs/0/CA%20Cross-Enterprise%20Application%20Performance%20Management%20Release%209%206-ENU/Bookshelf_Files/HTML/ConfigurePassTicket/index.htm?toc.htm?2225069.html?intcmp=searchresultclick&resultnum=293)

