CA Mainframe Network Management

Security Guide

Release 12.1

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CA Technologies Product References

This document references the following CA Technologies products:

- CA ACF2™ for z/OS (CA ACF2)
- CA NetMaster® File Transfer Management (CA NetMaster FTM)
- CA NetMaster® Network Automation (CA NetMaster NA)
- CA NetMaster® Network Management for SNA (CA NetMaster NM for SNA)
- CA NetMaster® Network Management for TCP/IP (CA NetMaster NM for TCP/IP)
- CA NetSpy™ Network Performance (CA NetSpy)
- CA SOLVE:Access™ Session Management (CA SOLVE:Access)
- CA SOLVE:FTS
- CA SOLVE:InfoMaster™
- CA SOLVE:NetMail™
- CA SOLVE:Operations® Automation
- CA SOLVE:Operations® Automation for CICS
- CA Top Secret® for z/OS (CA Top Secret)

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- Product and documentation downloads
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Chapter 1: Understanding Security

Your products require a sophisticated security system, because:

- Each product has many features.
- The features often have varied security requirements.
- The products have many users.

Setting up a security regime is an important part of the implementation of each product. This guide helps you to make the best choice of security system, and guides you through the necessary implementation steps.

Note: This guide contains descriptive text and procedures about options and products that you may not be licensed for or have not enabled. Inclusion of the descriptions of these options and products in this guide in no way implies that you are licensed for these options or products.

This section contains the following topics:

Security System Options

Your product region can use internal or external security systems, or a combination of the two. The options available are:

- UAMS—the internal security interface
- Partial security exit
- The NMSAF solution
- Full security exit
- The NMSAFF solution

UAMS

The internal security configuration that your product region can use is UAMS (User ID Access Maintenance System). In this configuration, all information about authorized users, including user ID, password, name, and privileges, is stored in a VSAM data set.

Because this is an internal security interface, your product region does not interface to any external security system or product.

Partial Security Exit

The partial security exit configuration that your product region can use is a hybrid. The UAMS data set still exists, but an exit is used in conjunction with it. The exit interfaces to an external security system, and performs (at least) user ID and password validation. In this case, the UAMS data set still contains user information and privileges. Passwords are not stored in the UAMS data set.

This is the most useful configuration. As described in the following section, a comprehensive hybrid security solution, NMSAF, is provided that uses a partial security exit.

NMSAF Solution

A comprehensive security solution using a partial security exit is shipped with your product. This solution is known as NMSAF.

The solution uses the UAMS data set to store specific information for your product region, and uses whatever security product is installed (through the IBM-defined SAF interfaces) to perform the user validation and password checking.

NMSAF uses its own parameter file (SXCTL) to provide flexible implementation.

Full Security Exit

The full security exit configuration that your product region can use consists of just an exit. In this case, the exit performs all user authentication. It also supplies all user attributes and privilege information. There is no UAMS data set.

NMSAFF Solution

A security solution using a full security exit is shipped with your product. This solution is known as NMSAFF.

NMSAFF uses its own parameter file (SXCTL) to provide flexible implementation.

Product Libraries

The following tables list products and their product version prefixes.

Macro Libraries—z/OS

Various samples and macros are installed with your product into libraries that have a high-level qualifier, which comprises the following:

dsnpref

Identifies your site-specific data set name prefix.

pvpref

Identifies your product version prefix and version number

Product Version Prefix	Product
NM*nn*	CA NetMaster FTM
	CA NetMaster NA
	CA NetMaster NM for SNA
	CA NetMaster NM for TCP/IP
	CA SOLVE:FTS
SM*nn*MS	CA SOLVE:Access
	CA SOLVE:InfoMaster
	CA SOLVE:NetMail
OP*nn*	CA SOLVE:Operations Automation
	CA SOLVE:Operations Automation for CICS
Note: *nn* is the version number.	

Macro Libraries—VM/GCS

Various samples and macros are installed with your product into minidisks under the maintenance VM ID. The following table lists products and their VM ID (*vmid*) values:

VM ID Value	Product
NMMAINT	CA NetMaster NA
	CA NetMaster NM for SNA
SMMAINT	CA SOLVE:Access

Recommended Options

From the options available, which is the best choice for you? This choice depends on:

- Whether you are running your product region for production or testing purposes
- How specific or stringent your security requirements are

We recommend the following options to suit different requirements:

- For a product region used for production, we recommend you use the NMSAF solution. You can implement this solution with minimal work. The solution provides a comprehensive set of facilities that make administration of security for your product region straightforward.
- For a product region used for testing, you can use NMSAF. However, in some cases, simply using UAMS is sufficient (for example, if only one or two people use the product region).
- If you have specific or stringent requirements, consider writing your own partial or full security exit, which is not a trivial task.

Note: The NMSAF solution has flexibility and can meet all or most of your needs.

More information:

Using the NMSAF Security Solution (see page 23)

Implementing Security

Security is implemented on two levels:

- Signon access
- Access to functions and resources

There are also additional security options (see page 21) available, in the form of exits.

Note: Background User IDs must be defined to the security system. If you are using an external security package, you must create these definitions within your security system; if you are using UAMS, the definitions are created automatically.

More information:

Background Environment User IDs (see page 53)

Signon Access

Signon access to a region is controlled by one or more of the following:

- The User ID Access Maintenance Subsystem (UAMS)
- The NMSAF security solution
- An external security package that performs some or all the security functions through a full or partial security exit.

UAMS

UAMS is a database of user details and access authority levels used by your product. You can maintain all security details (including user passwords) in UAMS, or you can replace UAMS, either partially or fully, with an external security package.

You can either define each user's user ID separately or add users with the same security requirements by using a UAMS group.

NMSAF Security Solution

The NMSAF security solution (see page 23) is based on the partial security exit facility. It does not replace UAMS but works in conjunction with it.

User ID Security Exits

If your organization has an external security package, such as CA ACF2, CA Top Secret, or IBM RACF, access to that package is provided through one of the following types of exit:

- **Partial security exit**—password and logon access maintenance is controlled by the external security package while UAMS stores the user access authorities.
- **Full security exit**—all security functions are maintained and stored by your external security package.

More information:

User ID Security Exit Support (see page 213)

Controlling Access to Functions and Resources

A user's privileges (as defined in their UAMS record or by a full security exit) provide a base level of control over their access authorities to your product region.

You can implement a more granular level of control by implementing resource-level security. This level of security can allow or deny user access to the following functions and resources:

- Individual menus and menu options
- Specific Automation Services system images and resources
- Individual commands
- Individual Customizer parameter groups

You can implement resource-level security by using the Network Partitioning Facility (NPF), or by using an external security option.

NPF uses resource tables to contain access permissions. For resource security to be activated for a user, the user's UAMS record (or its associated group definition) must include an NPF resource list member name.

Alternatively, your external security package can provide resource-level security if it supports SAF. With this option, SAF calls to your external security packages are used to check a user's access permissions. Sample definitions are distributed for CA ACF2, CA Top Secret, and RACF. SAF security checking is performed if the user's UAMS record (or its associated group definition) includes a special, reserved name.

You can also implement a combination of NPF and SAF checking.

More information:

Implementing Security Exits (see page 113)

Additional Security Options

Your product provides additional security options in the following areas:

- File access from NCL—can be restricted by using the NCL authorization exit, NCLEX01
- INMC link activation—can be verified for authority by using the INMC security exit
- The ALLOCATE command and CA SOLVE:FTS—can be secured by using the data set access authorization exit
- The data set services interface ($DSCALL)—can be secured by using the data set services authorization exit

More information:

Implementing Security Exits (see page 113)

Chapter 2: Using the NMSAF Security Solution

The NMSAF security solution is an integrated security management system for users of your regions.

The NMSAF security solution is based on the partial security exit facility and works with UAMS. The solution provides the following features:

- A complete security solution for your region, using whatever external security system is in use
- A sensible balance between what is stored in the external security system for your users and resources, and what is maintained on UAMS
- Control and customizing options that allow for flexible implementation

The NMSAF security solution minimizes duplication between external security definitions and UAMS. By using the NMSAF security solution, it is possible to eliminate almost all maintenance issues associated with using a UAMS data set.

This section contains the following topics:

Components of NMSAF

The NMSAF security solution consists of the following components:

- **UAMS**—NMSAF uses the UAMS file to store user records that contain the access authorization details for a user ID. You can add, modify, or delete the user records manually in the UAMS file. If NMSAF is installed as recommended (with grouping and modeling enabled), then NMSAF automatically updates the UAMS file as needed. You do not need to perform any maintenance on your UAMS records.
- **Partial security exit**—NMSAF is a partial security exit to interface with your external security package for password checking. Passwords are not stored in UAMS.
- **Modeling**—You can use the modeling facility to reduce the number of users that must be defined to your product region (by using UAMS). When you use modeling, a set of model users is defined. Each model user definition is used to define the privileges that a specific type of user has.

  The NMSAF parameter file defines a list of resource names and associated model names. When a user logs on, this list is searched and each resource name is tested to see whether the user has READ access. The model user ID of the first one that matches is then used as the user ID definition.

  By giving users PERMIT access to the appropriate resource, UAMS definitions are created or updated automatically when a user logs on to your product region.
- **SXCTL parameter file**—The SXCTL file is the control file that NMSAF uses. You can use the SXCTL file as supplied, or you can tailor it to your requirements by using parameters.
- **Additional security exits**—NMDSNCHK and NMDSSCHK can work with NMSAF. Several other exits are supplied.

More information:

Understanding Security (see page 15)

User Groups and Modeling with NMSAF

With user groups, you can classify users by the type of functions that they have access to. User groups are defined in the UAMS file. The following default groups are defined during installation:

- Administrator
- Network Operator
- Operator
- Monitor

If these groups do not suit your requirements, you can define others.

Benefits of Using Groups and Modeling

User groups simplify the definition of user records—a user is allocated to a group, inheriting all of its access authorizations.

Using both groups and modeling provides the following combination of benefits:

- When your region models a user, a copy of the model user ID record is produced.
- By containing only the group name in this record, you ensure that the UAMS records (created as users are modeled) contain only unique user-specific information (such as user ID, user name, and telephone number).
- To change the profiles of all users in a group, you need only change the group entry in UAMS.
- To move a user from one group to another, you need only update the user's UAMS record to point to the correct group name.
- When a user logs on to your product region for the first time, that user is tested against the listed resource names. When a resource that the user has permission to access is found, the associated model definition is used to create the user's UAMS record. The user is prompted to supply specific information, such as name and telephone number. However, everything else is taken from the model user for the appropriate group.

How You Implement NMSAF

To implement the NMSAF security solution with user groups and modeling enabled, you perform the following tasks:

1. Defining Your User Groups (see page 26)
2. Modeling Your User Groups (see page 27)
3. Enabling NMSAF (see page 28)

Note: If your UAMS data set is empty, you log on with the INSTALL user ID before you perform these tasks. For more information, see *Installation Guide*.

Define Your User Groups

To define your user groups

1. Define a set of logical user groups. Each group will have specific authority needs in your region. As well as the default user groups, there is also a special group for background user IDs.

   Note: You must manually define users with significant privileges using UAMS (see page 39).

2. For each group, create a UAMS GROUP user definition with the appropriate set of privileges. These are the only comprehensive UAMS definitions that you must create.

   The following default groups are created automatically when a region starts for the first time:

   - $RMADMIN
   - $RMOPER
   - $RMNOPER
   - $RMMON
   - $RMBUSER

   You can recreate these GROUP definitions at any time by executing the supplied NCL procedure $NMUAINI.

   Note: For CA SOLVE:FTS, CA SOLVE:Access Session Management, CA SOLVE:InfoMaster, and CA SOLVE:NetMail, you must create your groups manually, because no default groups are created.

   To run $NMUAINI:

   a. Enter **CMD** from the primary menu to display the Command Entry panel.

   b. Enter **$NMUAINI** at the command prompt (===>).

Model Your User Groups

To model your user groups

1. For each defined GROUP user, create a single model user ID.

   The following default MODEL definitions are created automatically when a region starts for the first time:

   - $MDADMIN
   - $MDOPER
   - $MDNOPER
   - $MDMON

   Notes:

   - For CA SOLVE:FTS, CA SOLVE:Access, CA SOLVE:InfoMaster, and CA SOLVE:NetMail, create your model definitions manually, because no default definitions are created.
   - $RMBUSER has no model created because only background user IDs use it.

2. Using your external security package, create resource names for each defined group. These must use the same resource class name as the SXCTL RCLASS setting (default FACILITY); for example:

   - NETMASTR.ADMIN, for an administrator
   - NETMASTR.OPER, for a system operator
   - NETMASTR.NOPER, for a network operator
   - NETMASTR.MON, for a monitor user

   Notes:

   - These resource names are generic. If you have several product regions and you want users to have different profiles on each, you could use the ACB name or domain name of each region as part of the name (for example, NETMASTR.ADMIN.NM01).
   - If you use a different class name, define the class to the security system.

3. Issue commands to define and activate the resources in your external security system. Give PERMIT privileges with (at least) READ access to the appropriate resource, to all users that access your region.

4. Set up the SXCTL file with the following statements:

   ```
   MODEL LIST
   MODELGROUP   resource.name.1   model1
   MODELGROUP   resource.name.2   model2
   MODELGROUP   resource.name.3   model3
   MODELGROUP   resource.name.4   model4
   ```

   Note: List the resource names in the order that you want them to be tested.

   If you want to allow a generic logon for any other users, add an additional line:

   ```
   MODELGROUP   *   dfltmodel
   ```

More information:

External Security Definitions for Modeled Users (see page 295)
User ID Modeling (see page 62)

Enable NMSAF

To enable the NMSAF security solution, you update the SEC JCL parameter for the region.

Follow these steps:

1. Set the JCL parameter SEC to SEC=NMSAF.

   You can set SEC=NMSAF either during initial implementation of your product, or later.

   When you set SEC=NMSAF, you activate the NMSAF partial security exit and enable the NMSAF security solution.

   If you require other components of the NMSAF security solution, activate them separately. See SXCTL Parameter File (see page 30) and Additional Security Exits (see page 31).

   Note: For a full description of the JCL parameter SEC, see the *Reference Guide*.

   Note: If your Security product is CA Top Secret, create a region control definition for signon (see page 30).

2. Restart your region.

   The security exit picks up the definitions.

Define Remote Background User IDs

When regions are linked, you want to permit a remote region background user (*nnnn*BSYS) to log on to the local region. Define the remote background user ID to the local region.

Follow these steps:

- Define the remote *nnnn*BSYS user ID to the local region UAMS.

  For products that use the link and synchronize process to link regions, the remote region user ID is automatically added to UAMS during synchronization. If this process fails or links are established manually, the *nnnn*BSYS user must be added manually. Assign the user ID to group $RMBUSER.

- Define the remote *nnnn*BSYS user ID as a user to the external security package. No password is required:

  - For CA ACF2, use the following commands:

    ```
    ACF
    SET LID
    INSERT nnnnBSYS NAME(bsys_user_name) PASSWORD(NOPW)
    ```

  - For CA Top Secret, use the following command:

    ```
    TSS CRE(nnnnBSYS) TYPE(USER) DEPT(dept_acid) NAME('bsys_user_name')
    PASS(NOPW,0)
    ```

  - For RACF, use the following command:

    ```
    ADDUSER nnnnBSYS NAME('bsys_user_name')
    ```

  bsys_user_name specifies a text string to identify the user (for example, BSYS User 1).

Implement Signon and Signoff with CA Top Secret

External security includes security for signon and signoff. The CA Top Secret security administrator must create a region control ACID, FACILITY, and started task definition for the online STC (NETMASTR).

To create this definition

1. Create a region control ACID using the following commands:

   ```
   TSS CRE(netmacid) NAME('region_acid NETMASTR') DEPT(netmdept) PASS(NOPW,0)
   FAC(STC,NETMASTR) MASTFAC(NETMASTR) NOVOLCHK NORESCHK NOLCFCHK NODSNCHK NOSUBCHK
   ```

2. Create a NETMASTR FACILITY by placing the following statements into the CA Top Secret startup parameter file member:

   ```
   FAC(user15=NAME=NETMASTR)
   FAC(NETMASTR=NOABEND,ASUBM)
   FAC(NETMASTR=INSTDATA,KEY=8,LCFCMD,LOCKTIME=0,NOLUMSG)
   FAC(NETMASTR=MULTIUSER,PGM=NM0,NORNDPW,RES,SIGN(M))
   FAC(NETMASTR=SHRPRF,NOSTMSG,NOTSOC,WARNPW,NOXDEF)
   ```

3. Define the NETMASTR STC to the CA Top Secret STC table using the following command:

   ```
   TSS ADD(STC)  PROCNAME(NETMASTR)  ACID(netmacid)
   ```

4. For any region control ACID to be used to sign on, authorize it to the NETMASTR FACILITY using the following command:

   ```
   TSS ADD(user1) IBMFAC(NETMASTR)
   ```

SXCTL Parameter File

If SEC=NMSAF is in effect, there is an optional parameter file, accessed through DD SXCTL. You can use this file to customize the NMSAF facility to suit the security needs of your installation.

A sample SXCTL file, SXP*dmid*, is in the PARMLIB member SXPARMS. *dmid* is the domain ID of a region.

Note: For more information, see the comments in this sample file.

Note: If the SXCTL file is not allocated, then default settings are used for all parameters.

More information:

SXCTL Parameters (see page 131)

Additional Security Exits

The following security exits are available to use with the security solution:

- NMSECDSN (for the NMDSNCHK exit type)
- NMSECDSS (for the NMDSSCHK exit type)

The NMSECDSN exit works with the solution to provide the user level security authorization for CA SOLVE:FTS functions and the ALLOCATE command.

The NMSECDSS exit works with the solution to provide the user level security authorization for data set services functions.

More information:

Data Set Allocation Authority (see page 119)
Security for Data Set Services (see page 121)
Data Set Authorization Exits Support (see page 257)

Chapter 3: Using the NMSAFF Security Solution

The NMSAFF security solution is an integrated security management system for users of your regions.

The solution is based on the full security exit facility. The solution provides the following features:

- A complete security solution for your region, using whatever external security system is in use
- Control and customizing options that allow for flexible implementation

This section contains the following topics:

Components of NMSAFF

The NMSAFF security solution consists of the following components:

- **Full security exit**—NMSAFF is a full security exit to interface with your external security package.
- **Modeling**—Use the modeling facility to define the privileges that a user has.

  The SXCTL parameter file defines a list of resource names and associated profile names. When a user logs on, this list is searched and each resource name is tested to see whether the user has READ access. The profile of the first one that matches is then used as the user ID definition.

  By giving users PERMIT access to the appropriate resource, a user is permitted to log on and given the attributes of the associated profile.
- **SXCTL parameter file**—The SXCTL file is the control file that NMSAFF uses. You can use the SXCTL file as supplied or you can tailor it to your requirements by using parameters.
- **Additional security exits**—NMDSNCHK and NMDSSCHK can work with NMSAFF. Several other exits are supplied.

More information:

Understanding Security (see page 15)

Enable NMSAFF

To enable the NMSAFF security solution, you update the SEC JCL parameter for the region.

Follow these steps:

1. Set the JCL parameter SEC to SEC=NMSAFF.

   You can set SEC=NMSAFF either during initial implementation of your product, or later.

   When you set SEC=NMSAFF, you activate the NMSAFF full security exit and enable the security solution.

   If you require other components of the NMSAFF security solution, activate them separately. Use the SXCTL parameter file.

   Note: For a full description of the JCL parameter SEC, see the *Reference Guide*.

2. Restart your region.

   The security exit picks up the definitions.

Define Remote Background User IDs

When regions are linked, you want to permit a remote region background user (*nnnn*BSYS) to log on to the local region. Define the remote background user ID to the local region.

Follow these steps:

1. Define the remote *nnnn*BSYS user ID as a user to the external security package. No password is required:

   - For CA ACF2, use the following commands:

     ```
     ACF
     SET LID
     INSERT nnnnBSYS NAME(bsys_user_name) PASSWORD(NOPW)
     ```

   - For CA Top Secret, use the following command:

     ```
     TSS CRE(nnnnBSYS) TYPE(USER) DEPT(dept_acid) NAME('bsys_user_name')
     PASS(NOPW,0)
     ```

   - For RACF, use the following command:

     ```
     ADDUSER nnnnBSYS NAME('bsys_user_name')
     ```

   bsys_user_name specifies a text string to identify the user (for example, BSYS User 1).

2. Permit the remote *nnnn*BSYS user ID to the facility resource associated with the SYSBGRND MODELGROUP entry in the PARMLIB(SXPARMS) member. The following commands assume the default value NETMASTR.BSYS is being used:

   - For CA ACF2, use the following commands:

     ```
     ACF
     SET RESOURCE(FAC)
     RECKEY NETMASTR ADD(BSYS UID(bsysuid) SERVICE(READ) ALLOW)
     ```

     bsysuid is the user identification (UID) corresponding to the *nnnn*BSYS user.

   - For CA Top Secret, use the following command:

     ```
     TSS PERMIT(nnnnBSYS) IBMFAC(NETMASTR.BSYS) ACCESS(READ)
     ```

   - For RACF, use the following command:

     ```
     PERMIT NETMASTR.BSYS CLASS(FACILITY) ID(nnnnBSYS) ACCESS(READ)
     ```

Implement Signon and Signoff with CA Top Secret

External security includes security for signon and signoff. The CA Top Secret security administrator must create a region control ACID, FACILITY, and started task definition for the online STC (NETMASTR).

To create this definition

1. Create a region control ACID using the following commands:

   ```
   TSS CRE(netmacid) NAME('region_acid NETMASTR') DEPT(netmdept) PASS(NOPW,0)
   FAC(STC,NETMASTR) MASTFAC(NETMASTR) NOVOLCHK NORESCHK NOLCFCHK NODSNCHK NOSUBCHK
   ```

2. Create a NETMASTR FACILITY by placing the following statements into the CA Top Secret startup parameter file member:

   ```
   FAC(user15=NAME=NETMASTR)
   FAC(NETMASTR=NOABEND,ASUBM)
   FAC(NETMASTR=INSTDATA,KEY=8,LCFCMD,LOCKTIME=0,NOLUMSG)
   FAC(NETMASTR=MULTIUSER,PGM=NM0,NORNDPW,RES,SIGN(M))
   FAC(NETMASTR=SHRPRF,NOSTMSG,NOTSOC,WARNPW,NOXDEF)
   ```

3. Define the NETMASTR STC to the CA Top Secret STC table using the following command:

   ```
   TSS ADD(STC)  PROCNAME(NETMASTR)  ACID(netmacid)
   ```

4. For any region control ACID to be used to sign on, authorize it to the NETMASTR FACILITY using the following command:

   ```
   TSS ADD(user1) IBMFAC(NETMASTR)
   ```

SXCTL Parameter File

If SEC=NMSAFF is in effect, there is an optional parameter file. You access the file through DD SXCTL. You can use this file to customize the NMSAFF facility to suit the security needs of your installation.

A sample SXCTL file, SXP*dmid*, is in the PARMLIB member SXPARMS. *dmid* is the domain ID of a region.

Note: For more information, see the comments in this sample file.

Note: If the SXCTL file is not allocated, then default settings are used for all parameters.

More information:

SXCTL Parameters (see page 131)

Additional Security Exits

The following security exits are available to use with the security solution:

- NMSECDSN (for the NMDSNCHK exit type)
- NMSECDSS (for the NMDSSCHK exit type)

The NMSECDSN exit works with the solution to provide the user level security authorization for CA SOLVE:FTS functions and the ALLOCATE command.

The NMSECDSS exit works with the solution to provide the user level security authorization for data set services functions.

More information:

Data Set Allocation Authority (see page 119)
Security for Data Set Services (see page 121)
Data Set Authorization Exits Support (see page 257)

Chapter 4: Working with UAMS

This section contains the following topics:

UAMS

UAMS is designed to provide a fully self-contained system for user security. The subsystem allows you to define user IDs for each user of your regions. User IDs provide logon and password checking and can be added, deleted, or updated.

You can use UAMS to define:

- Each user ID separately
- A group ID to be used as a model for each user that requires similar access and authority

UAMS by itself is independent of any external security system. For example, passwords stored in UAMS are not synchronized with RACF.

Multiple regions can share a single UAMS data set.

UAMS Data Set Sharing

The sharing of an UAMS VSAM data set is best achieved by using record-level sharing (RLS).

Use of VSAM RLS requires the following software and hardware configuration:

- The systems must be configured as a parallel sysplex.
- The appropriate CF structures must be set up.

Note: For complete information about setting up systems for VSAM RLS support, see the IBM *DFSMSdfp Storage Administration* guide.

For a VSAM data set to be eligible for RLS with this product, it must:

- Be SMS-managed
- Not be defined as recoverable

The LOG(NONE) parameter is specified on the DEFINE CLUSTER or ALTER command. When a VSAM data set is defined as using RLS, all concurrent users of the data set must open it using the RLS option.

Enable RLS

When your systems have RLS support, you can enable your UAMS data set for RLS.

Follow these steps:

1. Verify that VSAM RLS processing is available in your parallel sysplex.
2. Allocate the data set to be SMS managed, and specify the LOG(NONE) parameter in the DEFINE CLUSTER or ALTER CLUSTER command for the data set.
3. Specify a cache set on the storage class with at least one of the associated CF cache structures available.
4. Set the RLS VSAM Option for your UAMS data set by specifying the XOPT=RLSU parameter in your region SYSIN member.

Implement Security for the First Time

When a region starts for the first time, the following UAMS definitions are automatically generated:

- Sample group definitions
- Sample model definitions

  Note: Sample group definitions and sample model definitions do not apply to CA SOLVE:FTS, CA SOLVE:Access, CA SOLVE:InfoMaster, and CA SOLVE:NetMail.

- Background user IDs

  Note: All background user definitions are linked to the $RMBUSER group definition.

If any of the default background group definitions are not defined in UAMS, you can create them by running $NMUAINI, which builds any of the definitions that do not exist.

Note: For CA SOLVE:FTS, CA SOLVE:Access, CA SOLVE:InfoMaster, and CA SOLVE:NetMail, you create your groups manually, because no default groups are created and the $NMUAINI procedure is not available.

To run $NMUAINI

1. Enter **CMD** from the primary menu to display the Command Entry panel.
2. Enter **$NMUAINI** at the command prompt (===>).

Sample Group Definitions

The following group definitions are created:

- $RMADMIN—administrators
- $RMOPER—operators
- $RMNOPER—network operators
- $RMMON—monitors
- $RMBUSER—background users

You can use these group definitions to simplify the creation of user definitions.

If used as distributed, these groups also implement resource-level security.

More information:

Security Settings for Group Definitions (see page 143)
Implementing Resource-Level Security (see page 73)

Sample Model Definitions

The following model definitions are created:

- $MDADMIN—corresponding to group $RMADMIN
- $MDOPER—corresponding to group $RMOPER
- $MDNOPER—corresponding to group $RMNOPER
- $MDMON—corresponding to group $RMMON

No model is defined for $RMBUSER, because modeling is not used with background users.

You can use the generated model and group definitions in conjunction with NMSAF.

More information:

Using the NMSAF Security Solution (see page 23)

Background User IDs

The following UAMS background user definitions (where *nnnn* is the domain ID) are defined when a region is started for the first time.

Note: The AOM procedure does not apply to CA SOLVE:FTS, CA SOLVE:Access, CA SOLVE:InfoMaster, and CA SOLVE:NetMail. The CNM procedure applies *only* to CA NetMaster NM for SNA.

User ID	Description
*nnnn*AOMP	AOM procedure
*nnnn*BLOG	Logger
*nnnn*BMON	Monitor
*nnnn*BSVR	Server
*nnnn*BSYS	System
*nnnn*CNMP	CNM procedure
*nnnn*LOGP	Log procedure

Background User Considerations for Existing UAMS File

If you set up your region by using a pre-existing UAMS file in which the background users are already defined for your region, those background user definitions are not replaced. If this is the case, both of the following happen:

- The following message is displayed in the job log:

  ```
  N10107 USERID xxxxBSYS NOT AUTHORIZED FOR REQUESTED COMMAND
  ```

- Parameter group ABENDCMD fails.

To enable the new region to work correctly, you must update those background user definitions by associating the definitions to the $RMBUSER group ID. To do this:

1. Enter **/UAMS** to access the UAMS maintenance function.
2. Update each of the background user IDs by entering $RMBUSER in the Group ID field.
3. Press F3 to file the changes, and again to exit.
4. Enter **CMD** to display the Command Entry panel.
5. Enter the **SUBMIT** *background-name* **SIGNON** command at the command prompt to invoke the changes.

   Note: *background-name* is the last four characters of the background user ID, for example, BSYS.

6. Repeat step 5. for each of the background user IDs that you changed in step 2.
7. Press F3 to exit from the Command Entry panel.

The $RMBUSER group ID provides the minimum security settings needed for a background user. However, additional settings can be added to meet your requirements.

Note: This process can be done at any stage, including during initial customization when the region is first started.

Users to the Region

Different types of user ID can be defined to your region:

- Individual user
- Model
- System console
- Background environments
  - Background process
  - System procedure

The following sections describe how to define each of these user IDs.

Security Planning

Note: This section only applies to CA SOLVE:FTS.

The transmission of a file from one location to another implies access to two data sets: the one being transmitted and the one into which the transmitted data set is being received. If those data sets are of a production nature, it is probable that the individual who requests the transmission is not allowed personal access to either of the data sets. By classifying a transmission definition as a system definition, CA SOLVE:FTS regards the access to the data sets as being access by CA SOLVE:FTS rather than as personal access by the user that issues the transmission request (such as when a user requests a private transmission).

Define a User ID

Before anyone can access your region, they must be defined as an authorized user. A one- to eight-character user identifier (the user ID), together with a password, is used to associate an individual to the privileges and authorities allocated them. The password can be maintained by UAMS or by an external security system.

In addition to identifying an individual user of the system, the user ID also defines the following information about a user:

- Statistical information—personal information such as name, location, telephone number, as well as user ID expiry date and start times of last session.
- Control information—identifies the functions the user is allowed to perform and the features they can access when logged on to the system. This information determines, for example, whether a user is allowed to act as an OCS operator and if so, their authority level .

To define an individual user ID for a new user

1. Enter **/UAMS** at the command prompt.

   The UAMS : Primary Menu is displayed.

2. Type **A** at the Select Option prompt.
3. Type in the User Name.
4. Type **USER** in the Definition Type field and press Enter.

   The first of several panels of user ID definition details is displayed. These describe a user’s access to various features.

   Note: You can associate a user with a group definition (for example, one of the groups generated when your region was installed). To associate a user with a group definition, simply enter the group name in the Group ID field on the first panel. Doing this means that the user inherits the privileges set in the group definition.

5. Type the required information on each following panel, scrolling forward (F8) to review the next panel.
6. Press F3 (File) to save the new user ID definition when all the panels have been reviewed and the required attributes specified.

   You are returned to the UAMS : Primary Menu.

   Note: If the user ID you are defining is similar to another ID, you can save time by copying an existing user ID to a new user you wish to add. Do this by selecting option L (List) to list the existing users, and then option C (Copy) to copy the user definition. UAMS retrieves the details for that user ID and then enters Add mode. You must now enter the new user ID name and change any fields required, before filing the new definition under the new name.

Maintain User IDs

You can obtain a selection list of the user IDs defined to your system. The list allows you to browse, force a password, update, delete, or copy any of the listed user IDs. If you are not authorized for UAMS maintenance functions, only the browse function is allowed.

The following information is displayed about each user ID:

- Name
- Location
- Telephone number
- Type (Group or User definition)
- Access privileges

To maintain an existing user ID

1. Type **L** at the Select Option prompt on the UAMS : Primary Menu.
2. To obtain a partial listing, enter a prefix in the User field to list only those user IDs beginning with that prefix.
3. To display the command authority and access privileges information, press F11 (Right) twice.

Force a Password Change for a User ID

If a user forgets their password, you can allocate a new password using the Force User's Password Change facility.

To allocate a new password using the Force User's Password Change facility

1. Enter **/UAMS** at the command prompt.

   The UAMS : Primary Menu is displayed.

2. Type **F** at the Select Option prompt on the UAMS : Primary Menu, change the User field to the user ID you want to change the password for, and press Enter.

   The UAMS : User Details panel for the specified User ID is displayed.

3. Type the new password in the New Password field, and press Enter.

   The following message displays:

   ```
   PASSWORD VERIFICATION COMPLETE
   ```

4. Press F3 (File) to save the changes.

   When the user next logs on to the region, they are prompted to change the forced password. If a security exit is provided for password processing, this option can be suppressed by the exit.

Note: This function is not available from the special Install User ID.

Model User ID

Many installations have numerous users who access only one or two functions. Defining and maintaining system access for individual users requires considerable administrative effort. To minimize this effort, you can set up a model user ID so that users can automatically log on and register.

The SYSPARMS MODLUSER command specifies this model user ID.

The command has the following format:

```
SYSPARMS MODLUSER={ userid | NONE }
```

Note: For a detailed description of the MODLUSER operand, see the *Reference Guide*.

How It Works

If no security exit is in place and a model user ID is defined, a user who tries to log on with an undefined user ID, but using the password of the model user ID, causes the following to occur:

- The model user ID definition is read.
- A new user ID is created using the user ID specified during the logon request with the attributes of the model user ID.
- The new user ID is saved and flagged as a new user.
- The user ID creation is recorded on the log.
- Logon is allowed to proceed.
- The new user is prompted to change their password and fill in personal details (name, telephone, location, and so on) before the logon is complete.

Note: Creating new user IDs from model definitions is not suitable when defining high authority user IDs.

If no security exit is in place, and no model user ID has been defined, logon attempts from user IDs that are not defined are rejected.

If a model user ID has been specified in the SYSPARMS MODLUSER operand but has not been defined to UAMS, logon requests by undefined users will fail as if no model was defined.

If a security exit is in place, model user IDs work differently (see page 62).

System Console User ID

The system console needs a special type of user ID because of the following characteristics:

- The console only receives messages.
- The console has no full-screen capabilities.
- User logon is not possible.

The system console user ID can be defined in the same manner as any other user ID, however, only fields that are applicable to message receipt are valid. For example, by defining the system console user ID as a monitor status OCS operator with PPO authority and an appropriate command authority, you can profile the system console as an OCS operator console in the same manner as any other user ID.

The following sections describe how the system console user ID is created.

How a Region Assigns the System Console User ID in z/OS

The z/OS environment supports named consoles and extended MCS consoles, RACF signon, and security for consoles.

The console user ID can be reproduced in UAMS so that a user who has limited authority cannot circumvent that authority by going to a console and issuing a MODIFY command.

Default OPER Environment

A default CONSOLE environment allows messages to be delivered to the operator. These messages are then delivered using the routing and descriptor codes set by the SYSPARMS ROUTCDE and DESC operands. This environment is built after INIT has finished.

The default terminal name for the system console environment is CONSOLE. The user ID for the console is automatically assigned using the following process:

1. The value of the SYSPARMS SYSCONUI operand is examined.
2. If no value is defined, it looks at the default—*pppp*OPER, where *pppp* is the system user prefix as defined in the NMSUP region JCL parameter.
3. If there is no definition for *pppp*OPER, the region assigns .DFLTOP as the user ID.

If .DFLTOP is used because no other value is defined, problems with ROF routing to other regions can result.

Note: For more information about the SYSPARMS DESC, ROUTCDE, and SYSCONUI operands, see the *Reference Guide*.

Actual Console Environments

A system console environment is signed on the first time that a command is sent from the console to the system (for example, MODIFY).

The terminal name used is one of the following:

- The MVS console name if:
    - SYSPARMS SYSCONNM=ALL is in effect
    - It is an extended MVS console
- CONS#*nn* or CONS#*nnn*

The user ID depends on the values of the following SYSPARMS operands:

- SYSCONUI—sets the basic user ID. If this operand is not specified, it defaults to *pppp*OPER.
- SYSCONSO—determines the search order for user IDs when a user attempts to sign on to the console.

If SYSPARMS SYSCONXU=NO is in effect, the user ID is determined as shown in the following table, with one exception. The extended MCS consoles use the SYSCONUI user ID value as the logical user ID because a user ID cannot be derived from the console ID.

When an attempt to log on to the system console is made, the system tries three times to assign a user ID to the system console. The outcome depends on the value of the SYSCONSO operand, as shown in the following table:

	Attempt 1	**Attempt 2**	**Attempt 3**
SYSCONSO= DEFAULT	User ID is set to *ppppCNxx* or *ppppCxxx*	User ID is set to the value of SYSCONUI	User ID is set to .DFLTOP
SYSCONSO= NO	User ID is set to the value of SYSCONUI	User ID is set to .DFLTOP	
SYSCONSO= REQUIRED	User ID is set to *ppppCNxx* or *ppppCxxx*		

If SYSCONXU=YES is in effect, the values of the SYSPARMS SYSCONSO and SYSCONUI operands determine the user ID:

- SYSCONUI—sets the basic user ID. If not specified, it defaults to *pppp*OPER.
- SYSCONSO—determines the search order for user IDs when a user attempts to sign on to the console

When an attempt to log on to the system console is made, the system tries three times to assign a user ID to the system console. The outcome depends on the value of the SYSCONSO operand. The following table describes this process:

	Attempt 1	**Attempt 2**	**Attempt 3**
SYSCONSO= DEFAULT	User ID is set to the RACF user ID signed on at the console	User ID is set to the value of SYSCONUI	User ID is set to .DFLTOP
SYSCONSO= NO	User ID is set to the value of SYSCONUI	User ID is set to .DFLTOP	

	Attempt 1	Attempt 2	Attempt 3
SYSCONSO= REQUIRED	User ID is set to the RACF user ID signed on at the console		

The console is signed on by trying each attempt in turn until one succeeds.

Note: For detailed information about the SYSPARMS SYSCONUI, SYSCONSO, SYSCONXU, and SYSCONNM operands, see the *Reference Guide*.

When a RACF user ID is signed on at the system console, there are two special cases, as follows:

- If a user is not signed on at the master console, RACF uses an internal name of *BYPASS*. This defaults to .MASTOP in this case.

  If .MASTOP is encountered, the signon always succeeds, with system assigned defaults.

- If the user is not signed on for other consoles, an internal user ID of .NOTSIGN is used.

  If .NOTSIGN is encountered, the signon of that user ID fails, leading to a try of the next user ID, and so on. If it is the last, the signon fails completely.

Receiving Command Replies on the System Console

All commands entered at the system console in an MVS system are treated as private to that console. The results of the commands entered are returned only to that console.

Defining the System Console User ID in z/VM Environments

The system console for a z/VM environment is created during initialization. The logical terminal name is CONSOLE. The system console is used as a target to deliver messages to the operator.

The system console is automatically signed on during initialization (after INIT has finished). The user ID for the console is automatically assigned using the following process:

1. The value of the SYSPARMS SYSCONUI operand is examined.
2. If no value is defined, it looks at the default—*pppp*OPER.
3. If there is no definition for *pppp*OPER, the region assigns .DFLTOP as the user ID.

If .DFLTOP is used because no other value is defined, problems with ROF routing to other regions can result.

Note: For detailed information about the SYSPARMS SYSCONUI operand, see the *Reference Guide*.

Note: z/VM environments do not support multiple operating system consoles.

ROF and System Consoles

System consoles can establish ROF sessions with remote domains.

If a user ID is defined to UAMS for a specific console, then a corresponding user ID must be defined on the remote domains.

If no specific console user ID is defined and the console is operating with the same privileges as the console user, the console user ID can establish ROF connections to other domains without those domains requiring specific user ID definitions. The console user ID uses the ROF attributes of the console user instead.

MSGPROC and System Console User IDs

The user ID environment for a system console can have a standard MSGPROC associated with it. MSGPROC processing is activated automatically during the console’s signon.

Unsolicited Output to the System Console

To have the system console receive unsolicited messages, for example, PPO messages or Monitor class messages, direct them to a console user ID. The default system routing codes then determine which physical consoles receive the messages.

For example, if your region receives PPO messages and has no one to report them to, the messages are automatically sent to *pppp*OPER so that they appear on the system console. The system routing codes (as set by the SYSPARMS ROUTCDE operand) then determine which consoles receive the messages.

If no PPO authorized users are logged on as native users, the system console routing codes in your installation must enable your region to route PPO messages successfully to the system console.

If at least one signed-on console is profiled as a PPO receiver, then messages are regarded as deliverable, and are not sent to the console user automatically.

Background Environment User IDs

There are two types of background environments:

- Background processes, which include:
  - BMON—background monitor
  - BLOG—background logger
  - BSYS—background system process
- System procedures, which execute in special system-level environments logically signed on before the procedure starts; examples include:
  - LOGPROC
  - PPOPROC
  - AOMPROC
  - CNMPROC

Initialization User IDs

Each background environment is assigned a special user ID by the system at initialization. These user IDs are formed by using the system user prefix as defined in the NMSUP initialization parameter. For example, if your system has a system user prefix of NM01:

- The background environment user ID is defined as NM01BMON.
- The LOGPROC system procedure user ID is defined as NM01LOGP.

Note: Background environments cannot be canceled.

To see the names of these processes on your own system, enter a SHOW USERS command to list background environment users.

Initialization Privileges

When the system initializes, the background environment users are logically signed on. If a UAMS user ID is defined for a background environment, the attributes and privileges for it are determined from the user ID definition. If no user ID is defined, the system assigns the background environment with the following privileges:

- Time zone of the system
- Maximum command authority
- OCS authority

Note: UAMS background user ID definitions are created automatically when your product region starts for the first time.

ROF and Background Environments

Background environments can have ROF sessions with connected domains. Background environments must have their user IDs defined to all the remote domains that they will log on to.

MSGPROC and Background Environment User IDs

Background environment user IDs can have standard MSGPROCs associated with them. To associate a MSGPROC with a background environment user ID, update the user ID in UAMS to include MSGPROC.

How You Retrieve User ID Information Using NCL

The NCL verb &SECCALL allows you to access the attributes of any nominated user ID defined to UAMS. The &SECCALL GET statement retrieves a nominated user ID and presents the requested user ID information to an NCL procedure.

You can access all the information about a specified user ID or you can specify the structured fields (see page 149) that identify particular fields within the user ID. The following syntax is used to obtain this information:

```
&SECCALL GET USERID=userid FIELDS=(nnnn,...,nnnn)
```

Each field that is retrieved from the user ID is given a default name generated as follows:

&SEC*nnnn*

where &SEC is the default prefix, and *nnnn* is a four-digit number corresponding to one of the structured field keys used to identify fields within the user ID.

Example:

The structured field key used to identify the user ID name is 0010. When this field is retrieved, it has a name of &SEC0010.

Note: Only those user ID privileges relevant to the configuration of the system in which the &SECCALL GET statement is executed can be retrieved. The &SECCALL GET statement operates in the same manner if a full security exit is implemented that supports the relevant calls generated by these statements.

More information:

Structured Fields (see page 149)

Chapter 5: Working with an External Security Exit for User IDs

This section contains the following topics:

User ID Security Exits

A user ID security exit can be used to provide partial or full security processing:

- A *partial* security exit *supplements* UAMS by replacing the password checking part of UAMS with external security system validation of the user ID and password. Other user profile information is still maintained on UAMS, although the exit has the option of supplementing or overriding this information.
- A *full* security exit *replaces* UAMS. All security and user profile information must be supplied by the exit.

Source Code for Sample Exits

Source code for sample exits is distributed with your product. These include a SAF partial exit, CA ACF2 full exits, and RACF full exits. These are supplied as-is, to show how an exit should be written.

Note: Using any form of security exit can have ramifications on some products; for example, on system user IDs. These issues are explained in more detail in the following sections.

Partial Security Exits

If your region operates with a partial security exit, then UAMS password checking functions are disabled. Instead, the exit is called to validate a user ID and password. Typically, this is done with a call to the external security system (for example, RACF).

The exit can also supply overriding or additional user profile attributes. The exit can also control modeling, whereby users can be dynamically created in the UAMS data set the first time that they use this product.

PARTSAF Partial Security Exit

Your product includes a standard partial security exit that uses SAF to communicate with your external security package. If the JCL parameter SEC=PARTSAF is coded, then your region operates with this partial security exit. This exit performs straightforward processing; for example, for logons, it requires the user to be defined to the external security system and validates the password. If a model name is set (by using the SYSPARMS MODLUSER command), and the user is not known to the region, then the user is defined to the region and the nominated model user ID is used to build the user's profile in UAMS.

Full Security Exits

If your region operates with a full security exit, then no UAMS data set is used. The security exit must perform all required security functions. Specifically, it must provide all information about user authority on the region.

Considerations When Using a Security Exit

Some products might not operate correctly if a security exit is in use. This is because many products make use of system users to perform work. A system user is an internal user, automatically logged on. System users do not correspond to any real user. The internal logon occurs even if the security exit says that the user is not defined. These users can log on to other regions. However, when this occurs, the target region's security exit attempts to validate the user.

Thus, if you are using a security exit, these user IDs (that log on to other regions) must be defined to the external security system. However, no specific password is required, because the validation call simply checks that the user is known.

If you have many regions that interconnect, then, by using the NMSUP JCL parameter, you can reduce the number of unique user IDs that must be defined this way. Set the value of NMSUP for all the regions to the same value (for example, NETM). The system user IDs in each region will then have the same names (for example, NETMBSYS, NETMBLOG, NETMAOMP). By default, the prefix is the value of the NMDID parameter.

Functions Performed by a User ID Security Exit

The following security functions can be implemented by using the user ID security exit:

- Control access to your system
- Perform logon verification
- Allow users to change their password
- Retrieve user ID definitions
- Update user ID definitions
- Add additional security exit functions
- List user ID definitions
- Add user ID definitions
- Delete user ID definitions

Each of these functions is described below.

More information:

User ID Security Exit Support (see page 213)

Access to Your Region

Access to your region is controlled by providing user logon security. Your exit performs the following functionality:

- Verify whether the user ID is authorized to access the region.
- Confirm the attributes and privileges that the user has when logged on to the region.

The exit is called to accept logon attempts from the following sources:

- Native terminal logons
- TSO/TSS interface logons from the External Interface Package (EIP)
- ROF logons
- Operating system console logons
- System environment logons
- Advanced program-to-program communications (APPC) user region logons
- Model user ID logons

When a user attempts to log on, the user ID and password (if applicable) are passed to the exit for confirmation.

When a partial security exit is installed, and the user ID is defined on UAMS, the user ID attributes are also passed to the exit.

External Interface Package (EIP) Logons

EIP logons can originate from TSO or BCI. These calls do not need to supply a password.

Note: A z/VM system can receive a TSO interface logon from an OS/VS system, so the exit should be written to handle this situation.

ROF Logons

ROF logon requests might originate from domains that implement differing levels of security. In order to assist the exit to reach a decision with ROF logon requests, the following information is provided to the exit:

- The INMC link name of the domain from which the request came
- The domain ID (if available) of the originating domain
- A flag byte indicating whether the domain ID is present
- A flag byte indicating whether the ROF request originated from a domain that is different from the one identified by the INMC link name

The SIGNON command allows a password to be specified. The exit can check whether a password was specified for a ROF logon, and refuse the logon if no password was specified.

Operating System Console Logon

When an operating system console is first attached, a logon request is made. The exit can return user ID information applicable to the profile required for the particular console or it can indicate that the user ID is unknown.

More information:

System Console User ID (see page 48)

System Environment Logons

A logon call is generated for each system environment during system or procedure initialization. No passwords are associated with system environment logons.

If the exit rejects the logon by setting return code 24, default values are assigned for the system environment logon.

More information:

Working with UAMS (see page 39)

APPC User Region Logon

When an APPC transaction is defined with conversation level security, an APPC user region logon is performed to validate and sign on the partner transaction program region.

Depending on the type of APPC logon being performed, a password may or may not be provided. If one is provided, it should be checked. If none is provided, it indicates that the region is being started from a known, valid environment. In this case the user ID should be validated, with no password check.

User ID Modeling

Using a partial security exit allows more flexibility with model user IDs. The following scenarios can be specified in the exit:

- The SYSPARMS MODLUSER command can provide a system default model name that is supplied to the exit to create a new user ID.
- The SYSPARMS MODLUSER model user ID can be used, or an alternative model can be nominated to define a new user ID.
- A model user ID can be nominated to override the existing attributes of an already defined user ID.
- The exit can modify any or all of the individual attributes of that user ID by supplying a group of structured fields.

In this manner, the exit has complete control over both known and unknown users wishing to log on to your region.

When a model is specified, the exit changes the value of the 8-character user ID name addressed by word 3 of the Logon Request parameter list, to the user ID name for the nominated model user ID. You can define many model user IDs, for example, ADMIN, NETOP, SYSOP, or SYSPROG.

The exit should validate both user ID and password before allowing an automatically modeled user creation. Otherwise, simple mistakes from mistyped user IDs might generate spurious user ID definitions on the UAMS data set.

Note: Model users take precedence over changes to the user ID. If the exit specifies a model user ID but the model is itself not defined on UAMS the logon attempt is rejected with a user not known condition. This is the case regardless of whether the user is defined on UAMS or not, and the logon fails.

Password Status of Modeled User IDs

By default, all users defined using the model user ID are new users, and all new users have to change their password when they first log on. This is not convenient if users have the same password for all systems.

To avoid this situation, the partial security exit must indicate that the logon password is correct and that the user ID is to be created and treated as an existing user ID. This means that a password change is not enforced before allowing the logon.

If an unknown user logs on and is automatically given a new user ID based on a model designated by the exit, the new user ID is created on UAMS:

- If the exit sets return code 0, then the new user ID is created but the user is not asked to change their password.
- If the exit sets return code 4, then the user is requested to change their password since the exit is indicating the password for that user ID has expired.
- If the exit sets return code 8, then the new user ID is created but the user is prompted to change their password since they are classified as a new user.

Logon Verification

When a user is logged on to the region, there are times when their password is verified. Password verification is needed in the following circumstances:

- When a user enters their password to resume use of a locked terminal
- When a user attempts to alter the MAI-FS details that use the &USERPW function
- For any NCL procedure using &SECCALL CHECK

Logon verification functionality is supplied by the &SECCALL CHECK verb. When there is no external security package being used, UAMS handles &SECCALL CHECK.

Model User ID Verification

Consider the following points when model user IDs are subject to logon verification:

- Consistent logic should be used in the coding of user logon and logon verification calls, and they should use the same model user IDs.
- If a user ID is not defined to UAMS, then the exit can be coded to either reject the user ID or specify a user ID to be used as a model.
- If the SYSPARMS MODLUSR operand is specified, all calls that pass the user ID to the exit also pass the model user ID.

APPC Link Verification

Verification is also required when an APPC link is started and the link is defined with PASSWORD=EXIT.

The exit is designed to use SAF APPCLU class. When a request for an APPC link is made, session partners are passed to the exit as an entity defined to the SAF security system in the following form:

```
NETID.LU1.LU2
```

where LU1 is the requesting system and LU2 is the target system. To remove the necessity to define NETID.LU1.LU2 and NETID.LU2.LU1 with the same session key, you should specify the security exit to swap LU1 and LU2.

Password Change

To help ensure the security of your system, users must be able to change their password in the following circumstances:

- At any time by using the PASSWORD command or **/CHGPWD**
- When they log on and their password has expired

Retrieval of User ID Information

When a user is logged on to your system, they can enter commands that require the retrieval of their user ID attributes. You provide this functionality in the following circumstances:

- When a SHOW OCS command is issued—name and location is obtained for all users currently using OCS
- When a PROFILE INITCMD command is issued— retrieves a copy of the user ID definition to update their OCS profile
- When a CA SOLVE:FTS TRANSMIT command is issued—verifies the user ID's CA SOLVE:FTS privileges
- For any NCL procedure using &SECCALL GET
- When a user ID definition is updated

The required user ID information is returned as a set of structured fields.

If you have a partial security system, your region retrieves the definition of the required user ID from UAMS. The region then presents the definition to the exit as a set of structured fields for inspection or modification before completing the request.

If you have a full security system, the security exit must provide all the structured fields for the user definition.

More information:

Processing of Structured Fields (see page 69)

Updates to User IDs

User IDs must be updated when information pertaining to the user has changed. Provide this functionality in the following circumstances:

- When a user ID requires a change in its privileges
- When a user wants to update their user details
- For any NCL procedure using &SECCALL UPDATE
- For any NCL procedure using &SECCALL CHANGE with the FIELDS or DETAILS operands

Updating a user ID requires the ability to retrieve user ID information.

If you do not want to override any user attributes from UAMS, then return the parameter list unchanged and set the return code to zero. This consideration applies to partial security exits only.

The exit does not need to support the ability to update user IDs, but if it does not, some other method of changing a user's INITCMD and user details must be available.

Additional Security Functions

You can add your own functions to the security exit; for example, to obtain statistics about the exit's performance. The &SECCALL EXIT statement provides this functionality by allowing you to communicate between the security exit and NCL procedures. Communication is performed by passing the contents of nominated variables to your security exit.

On return to the NCL procedure the contents of the variables, passed as parameter areas, are placed in individual NCL variables named &1, &2, &3, and so on. A parameter area that was assigned a zero data length by the exit sets a null value.

Note: The exit can return only as many variables to the NCL procedure as were nominated on the original &SECCALL EXIT statement.

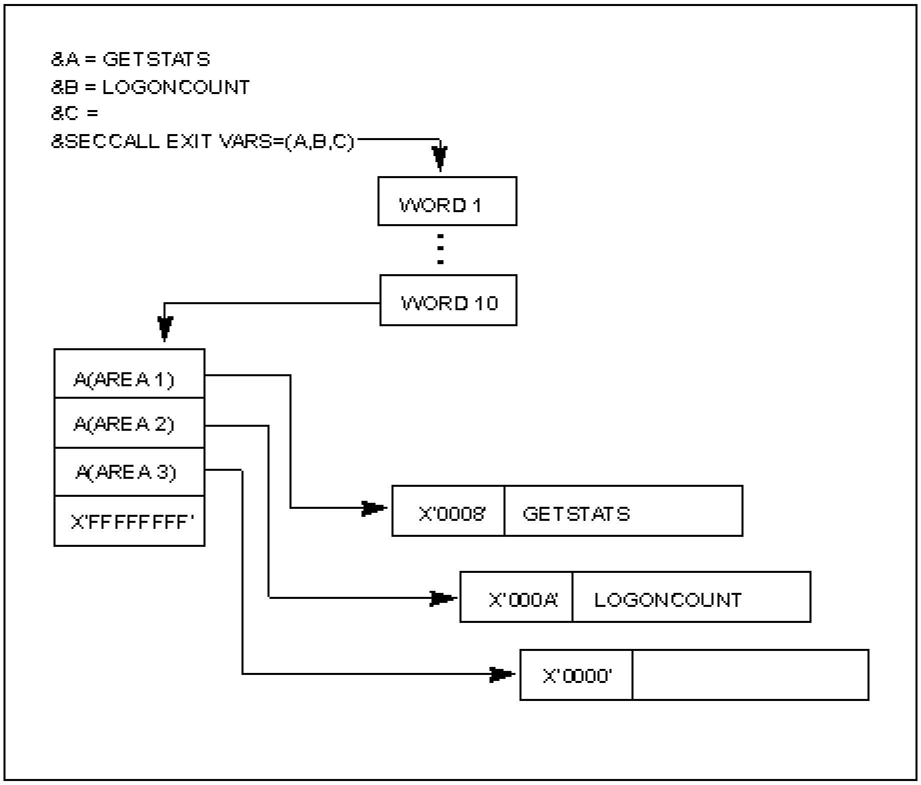
Example:

To obtain statistics about the number of logons performed by the security exit, set the following variables:

```
&A=GETSTATS
&B=LOGONCOUNT
&C=
```

These variables are passed to the exit as parameters by the &SECCALL EXIT VARS=(A,B,C) statement. The exit modifies the contents of these parameters, setting the data length in the first 2 bytes of the parameter area. The maximum length of the parameter area is 256 bytes.

The following diagram shows how the exit deals with an &SECCALL EXIT call.



When the exit returns the variables to the NCL procedure, the values of the parameter areas are placed in &1, &2, and &3.

The exit can also set a return code that is passed back to the NCL procedure as the value of the system variable &RETCODE. In addition, the exit can supply a message which is returned to the procedure in &SYSMSG.

&SECCALL EXIT is available for use in any NCL procedure, but is valid only in systems which are configured with a security exit.

Note: For detailed information about &SECCALL EXIT, see the *Network Control Language Reference Guide*.

Listing of User IDs (Full Security Exit Only)

You can obtain a list of all the user IDs defined to your system. To build this list, you retrieve sequential user IDs. The OPT=KGT or OPT=KLT option of the &SECCALL GET NCL statement performs this functionality. This statement retrieves user ID definition details for an NCL procedure of the next (KGT) or previous (KLT) user ID defined following a nominated user ID name.

If you use a partial security exit, this call is not made to the exit. A sequential get is performed on the UAMS data set and then a specific return user ID information call is passed to the security exit.

Addition of User IDs

You must be able to add a new user ID definition so that a new user can access the region. This functionality is provided by the following:

- The UAMS Add function
- Any NCL procedure using &SECCALL ADD USERID

If you use a partial security exit and you do not want to override any of the attributes, set the return code to zero and return the parameter list unchanged to add the user definition to the UAMS data set.

If you use a full security exit, this function need not be implemented. Your external security package performs this function.

Deletion of User IDs

You must be able to delete a user ID definition. This functionality is provided by:

- The UAMS Delete function
- Any NCL procedure using &SECCALL DELETE USERID

If you use a full security exit, this function need not be implemented. Your external security package performs this function.

Processing of Structured Fields

If the user logging on is defined to UAMS, their user ID definition privileges are presented to the exit as a list of structured fields (see page 149). Word 10 of the logon request parameter list addresses this list.

By translating the definition of a known user ID into structured fields and presenting them to the exit at logon time, the exit can inspect or modify the attributes and privileges of the user.

The exit cannot add structured fields to the list provided on the call but the following actions can be taken:

- Any structured field passed to the exit can be modified.
- A structured field can be logically deleted from the list by clearing its address pointer from the list.
- The exit can provide a complete replacement set of structured fields by replacing the address pointer in Word 10 of the parameter list.

Chapter 6: Implementing SmartTrace Security

Note: This chapter only applies to CA NetMaster Network Management for TCP/IP.

The SmartTrace feature lets users view IP packets flowing into and out of your z/OS systems, while providing instant access to IP packet data.

The following levels of security are associated with SmartTrace:

- **Using SmartTrace**—To use SmartTrace, a user's UAMS definition or group definition must have a TCP/IP Services value of 2. This allows them to define, delete, start and stop tracing, and view any traced packet headers.
- **Viewing Packet Data**—Because IP packets can contain sensitive information, a further level of authority is required for users to view packet payload data. This authority must be granted by your external security system (CA ACF2 for z/OS, CA Top Secret for z/OS, or RACF). The user must have READ access to NETMSTR.PKTTRACE.*region*, where *region* is the region's ACB name, as specified in the PRI= parameter in the RUNSYSIN member.

This section contains the following topics:

Defining NETMSTR.PKTTRACE.region

This section contains examples that show how to define the NETMSTR.PKTTRACE.*region* resource.

Details are given for the three most common external security systems (CA ACF2, CA Top Secret, and IBM RACF).

CA Top Secret

To set up definitions to allow access to SmartTrace in your region with ACB NMTEST, issue the following commands:

```
TSS ADD(dept) IBMFAC(NETMSTR)
TSS PERMIT(USER1) IBMFAC(NETMSTR.PKTTRACE.*) ACCESS(NONE)
```

To allow user USER1 to access SmartTrace data, issue the following command:

```
TSS PERMIT(USER1) IBMFAC(NETMSTR.PKTTRACE.NMTEST) ACCESS(CONTROL)
```

CA ACF2

To set up definitions to allow access to SmartTrace in your region with ACB NMTEST, issue the following commands:

```
[ACF]
SET RESOURCE(FAC)
COMPILE *
$KEY(NETMSTR.PKTTRACE.*) TYPE(FAC)
```

To allow user USER1 to access SmartTrace data, issue the following command:

```
$KEY(NETMSTR.PKTTRACE.NMTEST) TYPE(FAC) USER1(USER1) READ(ALLOW)
STORE
[END]
```

RACF

To set up definitions to allow access to SmartTrace in your region with ACB NMTEST, issue the following commands:

```
RDEFINE FACILITY NETMSTR.PKTTRACE.* UACC(NONE)
RDEFINE FACILITY NETMSTR.PKTTRACE.NMTEST UACC(NONE)
SETROPTS RACLIST(FACILITY) REFRESH
```

To allow user USER1 to access SmartTrace data, issue the following command:

```
PERMIT NETMSTR.PKTTRACE.NMTEST CLASS(FACILITY) ID(USER1) ACCESS(READ)
```

Chapter 7: Implementing Resource-Level Security

This chapter describes how to implement resource-level security for your product regions.

Note: This chapter does not apply to CA SOLVE:FTS, CA SOLVE:Access Session Management, CA SOLVE:InfoMaster, and CA SOLVE:NetMail.

A user's privileges (as defined in UAMS) provide a base level of control over their access authorities to your product region.

You can implement a more granular level of control by implementing resource-level security. This level of security can allow or deny user access to the following functions and resources:

- Individual menus and menu options
- Specific Automation Services system images and resources
- Individual commands
- Individual Customizer parameter groups

Access to these functions and resources is controlled using the Network Partitioning Facility (NPF), your external security package, or both.

This section contains the following topics:

Sample Group Definitions

Your product comes with sample resource-level security definitions based on the supplied sample UAMS group definitions.

The following sample group definitions are generated when a region starts for the first time:

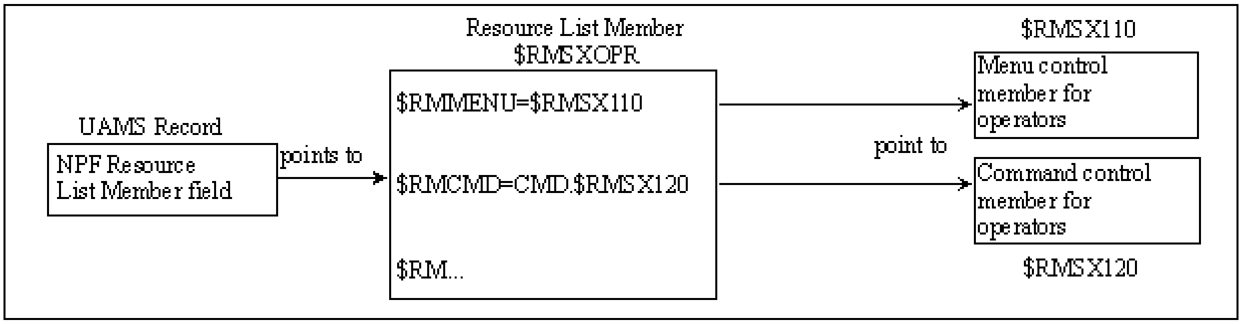
- $RMADMIN—administrator—this group of users has access to all administrative functions, such as adding user IDs and user profiles. An administrator has access to all menu options and is authorized to delete database records.
- $RMOPER—operator—this group of users has access to a restricted subset of functions. An operator does not have access to all menu options and is not authorized to delete database records.
- $RMNOPER—network operator—this group of users has similar access as an operator. Network operators can manage network operations but are not authorized to manage system operations. Use this group for network operators managing network resources from your product region.
- $RMMON—monitor—this group of users has access to a restricted subset of menu options, and can browse, but not update or delete database records. These users can display information about monitored resources but cannot act on those resources.
- $RMBUSER—Background User—this group of users has region or engine component authorization. *Do not* modify the supplied $RMBUSER group definition, because this could impede the operation of your product region.

Controlling Access to Functions and Resources by Using NPF

The Network Partitioning Facility (NPF) contains the access permissions for user's requests to menus, resources, or commands. This is enabled when an NPF resource list member is specified in a UAMS definition.

By specifying structured strings, access can be restricted or allowed to menu options, system images, commands, and Customizer parameter groups. These strings are stored in resource tables and referenced by the NPF resource list members. Resource tables and resource list members are read from the NPTABLE file.

The following diagram shows the relationship between UAMS and NPF.



Sample NPF Members

The sample NPF members in the CC2DEXEC data set contain predefined tables that permit or restrict access for the supplied sample groups of users. These NPF members and their content are shown in the following table. For more information about these members, see the comments within the members.

Important! The NPF members must have names that start with $RMSX. If you rename a member, ensure that its name has the correct prefix.

$RMSXADM

Specifies permissions for administrators.

$RMSXOPR

Specifies permissions for operators.

$RMSXNOP

Specifies permissions for network operators.

$RMSXMON

Specifies permissions for monitors.

When a user accesses a menu, accesses a database record, or tries to issue a command, NPF is called. The region checks the NPF member specified in the user ID definition and its corresponding permissions. The region then responds by allowing or disallowing the requested action.

By using NPF, you can also restrict certain users to certain groups of resources. For example, one operator can influence all the resources in REGION1 only, while another operator can influence all the resources in REGION2. Any attempt by the first operator to influence the resources in REGION2 will be rejected.

Note: The region does not perform read access controls, so all users are able to browse data. Users who attempt to update data they are not authorized to update are presented with a warning message, and the data is not modified.

Modifying NPF Members

You can alter sample members to meet your own security requirements by changing the structured strings that are stored in the NPF resource tables. Following is a list of the NPF resource tables and the functions that can be secured by each.

$RMMENU

Secures menu options.

$RMDB

Secures databases.

$RMSYS

Secures system images.

$RMCMD

Secures commands.

$RMICS

Secures Customizer parameter groups.

The rest of this section explains how to alter the NPF resource tables.

Important! Use the method documented here to control access to commands. Do not use the command authority function, because changing the authority level of commands can interfere with the operation of the region.

Controlling Access to Menu Options

Access to menus and their options is controlled by using the $RMMENU table.

To allow access to all menu options, specify the following:

```
$RMMENU=*.*
```

To restrict access to menus and options, specify the following:

```
$RMMENU=$RMSXnnn
```

where $RMSX*nnn* is the control member for menu options for one user group. In this control member, you must list all the menus and menu options for the user group. Use the following format:

```
RM.menu-id.option-code
```

menu-id

Identifies the menu. The ID of the main Primary Menu is $NM001. To display the ID of another menu, enter **MENUID** at the Select Option prompt.

option-code

Identifies the option (for example, A for the Administration and Definition option on the main Primary Menu).

To indicate that certain menu options are invalid, you must comment them by placing an asterisk (*) beside them. To make the menu option valid again, uncomment the option by removing the asterisk.

Controlling Access to the Knowledge Base

Access to the knowledge base is controlled by the $RMDB table. Controlling access to the knowledge base allows you to control the type of access a user has to definitions by systems, classes, and resources.

Controlling the Type of Access

The type of access is controlled by specifying the actions that can be performed on systems, classes, and resources. If no restriction is required, specify the following:

```
$RMDB=ACT.*
```

To restrict the type of access allowed, specify the following:

```
$RMDB=ACT.$RMSXnnn
```

where $RMSX*nnn* is the control member for the type of access to databases for one user group. In this control member, you must list the actions that are available, and comment or uncomment them as required. The valid actions are CREATE, DELETE, and SET.

Controlling Access by System Images

If all systems are to have the type of access defined above, specify the following:

```
$RMDB=SYS.*
```

To restrict the defined access to only certain systems, specify the following:

```
$RMDB=SYS.$RMSXnnn
```

where $RMSX*nnn* is the control member for systems with restricted access for one user group. In this control member, you must list the systems that will have the defined access.

Controlling Access by Classes

If all classes are to have the type of access defined above, specify the following:

```
$RMDB=CLS.*
```

To restrict the defined access to only certain classes, specify the following:

```
$RMDB=CLS.$RMSXnnn
```

where $RMSX*nnn* is the control member for classes with restricted access for one user group. In this control member, you must list the available classes, their short names, and their description, and comment or uncomment them as required.

Controlling Access by Resources

If all resources are to have the type of access defined above, specify the following:

```
$RMDB=RSC.*
```

To restrict the defined access to only certain resources, specify the following:

```
$RMDB=RSC.$RMSXnnn
```

where $RMSX*nnn* is the control member for resources with restricted access for one user group. In this control member, you must list the resources that will have the defined access.

Controlling Access to System Images

Access to system images is controlled by the $RMSYS table.

To allow access to all system images, specify the following:

```
$RMSYS=SYS.*
```

To restrict access to certain system images, specify the following:

```
$RMSYS=SYS.$RMSXnnn
```

where $RMSX*nnn* is the control member for access to system images for one user group. In this control member, you must list the system images to which access is allowed.

Controlling Access to Commands

Access to commands is controlled by the $RMCMD table. Access to the following groups of commands can be controlled:

- Automation Services commands
- System commands
- Product commands

It is also possible to restrict the commands that can be performed against systems and resources.

Automation Services Commands

To allow access to all Automation Services commands, specify the following:

```
$RMCMD=CMD.*
```

To restrict access to particular Automation Services commands, specify the following:

```
$RMCMD=CMD.$RMSXnnn
```

where $RMSX*nnn* is the control member for access to Automation Services commands for one user group. In this control member, you must list the commands, their classes, and their descriptions, and comment or uncomment them as required.

System Commands

To allow access to all system commands, specify the following:

```
$RMCMD=SYSCMD.*
```

To restrict access to particular system commands, specify the following:

```
$RMCMD=SYSCMD.$RMSXnnn
```

where $RMSX*nnn* is the control member for access to system commands for one user group. In this control member you must list the commands, their classes, and their descriptions, and comment or uncomment them as required.

Product Commands

To allow access to all product commands, specify the following:

```
$RMCMD=NMCMD.*
```

To restrict access to particular product commands, specify the following:

```
$RMCMD=NMCMD.$RMSXnnn
```

where $RMSX*nnn* is the control member for access to product commands for one group of users. In this control member, you must list the commands, their classes, and their descriptions, and comment or uncomment them as required.

Commands Issued Against Systems

If the commands defined above are to be issued against all systems, specify the following:

```
$RMCMD=SYS.*
```

To restrict the defined commands to only certain systems, specify the following:

```
$RMCMD=SYS.$RMSXnnn
```

where $RMSX*nnn* is the control member that controls the systems against which defined commands can be issued for one user group. In this control member, you must list those systems against which the defined commands can be issued.

Commands Issued Against Resources

If the commands defined above are to be issued against all resources, specify the following:

```
$RMCMD=RSC.*
```

To restrict the defined commands to only certain resources, specify the following:

```
$RMCMD=RSC.$RMSXnnn
```

where $RMSX*nnn* is the control member that controls the resources against which defined commands can be issued for one user group. In this control member, you must list those resources against which the defined commands can be issued.

Product Commands from the OCS Panel or Command Entry Panel

When you issue a command from the OCS panel or command entry panel, you issue the command under the control of your command authority level and the external security profile of the region. You do *not* normally issue the command under the control of the NPF member specified in your UAMS record.

If you want to issue a command under the control of the specified NPF member, replace the command with an NCL procedure.

The following NCL procedures are provided to replace product commands:

- ALLOCATE
- FSTOP
- OPSYS
- ROUTE
- SHUTDOWN
- SUBMIT
- SYSCMD
- UNLOAD

If you must create other replacement NCL procedures, do the following:

1. Create an NCL procedure in the security PDS (see page 96) with the same name as the command you want to replace.
2. Ensure the NCL procedure contains the following:

   ```
   -EXEC $RMSXTPL cmdname &ALLPARMS
   &IF &RETCODE EQ 0 &THEN +
       -cmdname &ALLPARMS
   ```

3. Enter **/PARMS** from the command prompt to display the Customizer : Parameter Groups panel.
4. Add your replacement NCL procedure name to the parameter group ID CMDREPLS in category SECURITY.

   CMDREPLS can contain up to 21 entries. If you have more than 21 entries, place the command SYSPARMS CMDREPL=*cmdname* for each extra entry in the NMINIT procedure.

5. Press F6 (Action) if you want to use the replacement NCL procedure immediately (otherwise, it will only be available after the region has been restarted.)

Important! The NPF security rule, $RMCMD.REPLUNLD, controls whether a user can use the UNLOAD PROCEDURE command to unload the command replacement NCL procedures. Ensure that you provide sufficient security for the resource $RMCMD.REPLUNLD, to prevent unauthorized unloading (disabling) of the listed NCL procedures.

Controlling Access to Customizer Parameter Groups

Access to all Customizer parameter groups is controlled by the $RMICS table.

To allow all types of access to Customizer parameter groups, specify the following:

```
$RMICS=*.*
```

To restrict the type of access to Customizer parameter groups, specify the following:

$RMICS=$RMSX*nnn*

where $RMSX*nnn* is the control member that controls the type of access to initialization parameter groups for one user group. In this control member, you must list the type of access, and the initialization and customization groups, and comment or uncomment them as required. Use the following format:

action.parameter-group-name

action

Specifies the type of access to the initialization and customization parameter groups. The access can be one or more of the following types:

GET

Gets parameter group.

SET

Files parameter group.

SETPARM

Actions parameter group.

UPDPARM

Updates parameter group.

BROPARM

Browses parameter group.

parameter-group-name

Names the Customizer parameter group.

Changing an NPF Table

If you make changes to an NPF table, these changes are only activated when you have done the following:

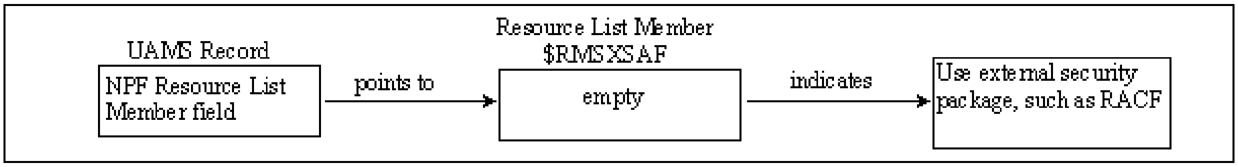
- Executed the NPTAB *resource-group* REP=*table-name* command; for example, NPTAB $RMMENU REP=$RMSX110.
- Executed a SIGNON command, or logged off and logged back on again.

Controlling Access Using an External Security Package

Your external security package can provide resource-level security if it supports SAF. It can provide security on its own or in conjunction with NPF.

SAF calls to your external security package are used to access permissions for user's requests to menus, resources, and commands. This is enabled when $RMSXS-prefixed member is specified in the NPF Resource List Member field of a UAMS definition.

The following diagram shows the relationship between UAMS and SAF within an external security package. The $RMSXS-prefixed member can either be empty (as shown in the diagram) or contain NPF statements. Sample members are listed in the table in Sample NPF Members (see page 76).


UAMS Record
NPF Resource List Member field
points to
Resource List Member $RMSXSAF
empty
indicates
Use external security package, such as RACF

The following NPF members (with names prefixed by $RMSXS) indicate that an external security package is to be used:

$RMSXSAF

Contains a special indicator—NPF will be bypassed in favor of an external security package.

$RMSXSAD

Contains permissions for administrators—combined NPF and external security package.

$RMSXSOP

Contains permissions for operators—combined NPF and external security package.

$RMSXSNO

Contains permissions for network operators—combined NPF and external security package.

$RMSXSMO

Contains permissions for monitors—combined NPF and external security package.

Sample Security Profiles

Sample security profiles are provided for each of the supported external security packages in the following libraries:

- The SMP target zone library, *dsnpref*.*pvpref*.CC2DSAMP
- The SMP distribution zone library, *dsnpref*.*pvpref*.AC2DSAMP

dsnpref

Specifies your site-specific data set name prefix.

pvpref

Specifies your product version prefix.

Note: On z/VM systems, these profiles are on the *vmid* 293 G-disk.

Each library includes the following security profiles:

$RMSXACF

Specifies permissions for all groups of users for CA ACF2 versions earlier than Version 6.

$RMSXAC6

Specifies permissions for all groups of users for CA ACF2 Version 6 and later.

$RMSXTSS

Specifies permissions for all groups of users for CA Top Secret.

$RMSXRCF

Specifies permissions for all groups of users for RACF.

Defining Security Profiles

To define the appropriate security profiles to an external security package, complete these steps:

1. Copy the required security member to the security PDS (which is the first library in the COMMANDS concatenation of libraries).
2. If necessary, modify the members to suit your requirements.
3. Add a valid job card to run the batch job.
4. When the job has completed successfully, enter a $RMSXS-prefixed member in the NPF Resource List Member field of your user's group or user ID definition, to indicate that an external security package is required to control security.

The security requirements for the sample groups—$RMADMIN, $RMOPER, $RMNOPER, and $RMMON—are now defined to your external security package and will apply to users attached to these groups.

More information:

Securing Data Set Members (see page 96)
Modifying Security Members (see page 88)

Modifying Security Members

The supplied security members define each group's access to functions and resources. These security members can be modified to suit your own security requirements. Use the syntax specified in the following sections to specify your own requirements for access to menu options, the knowledge base, system images, Automation Services commands, system commands, and product commands.

Controlling Access to Menu Options

To control access to menu options, specify:

```
$RMMENU.menu-id.option-code
```

menu-id

Identifies the menu. The ID of the main Primary Menu is $NM001. To display the ID of another menu, enter **MENUID** at the Select Option prompt.

option-code

Identifies the option (for example, A for the Administration and Definition option on the main Primary Menu).

- Use an asterisk (*) to represent all menu options; for example, $RMMENU.*menu-id*.* means all options from *menu-id*.
- Use $RMMENU.** to allocate access to all menus and their options.

Note: The asterisk (*) represents null, or one or more characters. Two asterisks (**) represent any suffix. This may not apply to your security system, in which case, you must use the equivalent wildcard character that does apply.

Controlling Access to the Knowledge Base

The knowledge base contains definitions of Automation Services components. To control access to knowledge base definitions, specify:

```
$RMDB.system-image-name.system-image-version.class-number.
definition-name.action-type
```

system-image-name

Names the system image.

system-image-version

Identifies the version of the system image.

class-number

Identifies the class of component. The following table lists the valid classes. A product uses a subset of these classes.

class-number	**Component Definition**
01	System image
02	Started task
03	SNA group

class-number	**Component Definition**
04	CICS transaction
05	CICS file
06	CICS database
07	CICS link
08	CONNECT:Direct manager
09	CONNECT:Direct monitor
10	Initiator
11	Printer
13	Spool
14	JES line
16	DASD
17	USRCLS—user-defined resource class
18	Tape or cartridge unit
19	Batch job
20	Job entry subsystem (JES)
21	Internal resource
22	FTS manager
23	FTS monitor
24	File transfer schedule
25	FTP manager
26	FTP monitor
27	CONNECT:Mailbox manager
28	CONNECT:Mailbox monitor
29	Sysplex component
30	Console message profile
31	VM guest
32	Linux image
33	Linux application
35	User profile

class-number	Component Definition
36	Status monitor filter Resource group filter SNA resource filter File transfer rule set File transfer rule
38	FTP policy rule set or rule
39	IP Node Monitor group
40	Command
41	Logical state table
42	IP node
43	IP address space monitor
44	Channel Interface Processor
46	Open Systems Adapter
47	Enterprise Extender
48	Communications storage manager
49	VIPA
50	Availability map
51	TCP/IP stack
52	CICS monitor
53	APPN/HPR
54	Network control program (NCP) monitor
55	SNA resource model template
56	SNMP host details
57	VTAM state
60	Resource group
61	Service
62	CA-XCOM manager
63	CA-XCOM monitor
64	Monitoring attribute
70	Macro
71	Process

class-number	**Component Definition**
74	Calendar criteria
75	Calendar
76	Calendar keyword
78	Activity schedule
80	Icon
81	Icon panel
90	Prompt list
93	Rule set
94	Message rule
95	Message group rule
96	Learnt message
98	Timer rule
9A	Included rule set
9B	Initial action

Note: Resource classes 30, 35, 36, 39, 40, 41, 56, 60, 61, 64, 70, 74 to 76, 78, 80, 81, 90, 93 to 96, 98, 9A, and 9B are independent of system images.

definition-name

Identifies the component definition.

action-type

Identifies the action to be performed on the definition. Valid values are:

CREATE

Creates a new definition.

DELETE

Deletes an existing definition.

SET

Updates a definition.

- Use an asterisk (*) to represent all knowledge base components. The following example shows the ability to create started task resource definitions for all versions of *system-image-name*:

  `$RMDB.`*`system-image-name`*`.*.02.*.CREATE`

- Use $RMDB.** to allow all knowledge base functions on all knowledge base components.

Controlling Access to System Images

You can control which functions a user can perform on a system image. To control access to system image resources, specify:

```
$RMSYS.system-image-name.system-image-version
```

system-image-name

Names the system image.

system-image-version

Identifies the version of the system image.

- Use an asterisk (*) to represent all of a resource type; for example, $RMSYS.*.0001 indicates all version 1 system images.
- Use $RMSYS.** to allocate permission to perform all functions on all system images.

Controlling Access to Automation Services Commands

You can control whether a user can issue an Automation Services command on an Automation Services component. To control the use of these commands, specify:

```
$RMCMD.system-image-name.system-image-version.
class-number.component-name.as-command-name
```

system-image-name

Names the system image.

system-image-version

Identifies the version of the system image.

class-number

Identifies the class of component. The table in Controlling Access to the Knowledge Base (see page 89) lists the valid class numbers.

If you want to restrict the use of a command on SNA resources in CA NetMaster Network Automation, specify 55 for the class number.

component-name

Identifies the component.

as-command-name

Names the command.

Note: For information about how to view the list of registered commands, see the *Reference Guide*.

The following list shows non-registered commands:

DBSYNC

Synchronizes databases.

REPLUNLD

Enables a user to unload command replacement NCL procedures.

TRANSMIT

Transmits a system image or other database components.

SETUP

The express setup facility calls $NMSEC with the command name SETUP to check if the user ID has authority to run the facility.

- Use an asterisk (*) to represent all of a resource type. The following example shows the ability to issue commands relating to file transfer schedules in all versions of *system-image-name*:

  `$RMCMD.`*`system-image-name`*`.*.24.*.*`

- Use $RMCMD.** to allocate permission to perform all commands on all components in all system images.

Controlling Access to System Commands

To control the use of system commands, specify:

`$RMSYCMD.`*`system-command-name`*`.`*`operand-1`*`.`*`operand-2…operand-n`*

system-command-name

Names the system command.

operand-n

Specifies the operands of the command.

- Use an asterisk (*) to represent all of a resource type. For example, to secure the MODIFY system command for the following commands in all regions:
  - For the FSTOP command, use $RMSYCMD.F.*.FSTOP.
  - For the SHUTDOWN command, use $RMSYCMD.F.*.SHUTDOWN*. The trailing asterisk ensures that every variation of the command is covered.
- Use $RMSYCMD.** to allocate permission to perform all system commands.

Controlling Access to Product Commands

To control the use of product commands, specify:

```
$RMNMCMD.product-command-name
```

product-command-name

Names the command. See the 3270 Online Help for the list of product commands.

- Use $RMNMCMD.** to allocate permission to perform all product commands.

When you issue a command from the OCS window or command entry panel, you issue the command under the control of your command authority level and the external security profile of the region. You do not normally issue the command under the control of your own security profile.

If you want to issue a command under the control of your own security profile, replace the command with an NCL procedure.

Note: This does not affect system commands that are already controlled by SAF.

More information:

Product Commands from the OCS Panel or Command Entry Panel (see page 82)

Controlling Access to Customizer Parameter Groups

To control the type of access to Customizer parameter groups, specify:

```
$RMICS.action.parameter-group-name
```

action

Specifies the type of access to the Customizer parameter groups. The access can be one or more of the following types:

GET

Gets parameter group.

SET

Files parameter group.

SETPARM

Actions parameter group.

UPDPARM

Updates parameter group.

BROPARM

Browses parameter group.

parameter-group-name

Names the Customizer parameter group.

- Use the asterisk (*) as a wild card. The following example shows the ability to retrieve all parameter groups:

  ```
  $RMICS.GET.*
  ```

- Use $RMICS.** to allow all types of access to Customizer parameter groups.

Securing Data Set Members

On z/VM systems, read:

- Minidisk for PDS
- SOLVE GCS for RUNSYSIN
- *vmid* 292 F-disk for TESTEXEC
- *vmid* 293 G-disk for *dsnpref.pvpref*.CC2DEXEC

The members that control a region must be secured. The library in which these members are secured is known as the security PDS. Only security personnel are allowed access to the security PDS.

The security PDS is *not* created during the installation of your product, and *must* be created manually before you proceed to implement security. To establish a valid security PDS that secures all members controlling access to Automation Services functions, complete the following steps:

1. Create a security PDS as the *first* library in the COMMANDS concatenation of libraries.

   Note: The COMMANDS concatenation of libraries is in your RUNSYSIN member. The default first library is TESTEXEC.

2. Copy the following members from the CC2DEXEC data set into the security PDS:

   $NMSEC

   Controls access to functions.

   $RMSX*xxx*

   Provides sample SAF security profiles for the following:

   - CA ACF2 (if you are using it to control access to the region)
   - NPF members (if you are using NPF to control access to the region)
   - RACF

   ALLOCATE, **FSTOP**, **OPSYS**, **ROUTE**, **SHUTDOWN**, **SUBMIT**, **SYSCMD**, and **UNLOAD**

   Controls access by message monitor users to commands. These members are command replacement NCL procedures.

3. Copy any user-defined command replacement NCL procedures into the security PDS.

4. Restrict access to this security PDS to security personnel, and the region (read access only).

5. Point the NPTABLES DD to your security PDS.

   Note: The NPTABLES DD in your RUNSYSIN member points to *dsnpref*.*pvpref*.CC2DEXEC by default.

Chapter 8: Administering Security

This section contains the following topics:

Command Authority Levels

Product commands and VTAM commands that your product can execute are each assigned a default authority level. These levels are within the range of 0 to 255.

Users of your product region are also allocated a command authority level. This level is in their user ID definition. The authority level set corresponds to the authority level for the commands they are authorized to issue.

Change Command Authority Levels

To allocate a different command authority to a particular command, use the SYSPARMS CMDAUTH operand.

Example:

To allocate a command authority of 5 to the CANCEL command, enter the following command:

```
SYSPARMS CMDAUTH=(CANCEL,5)
```

Disable Commands

To disable a command, allocate an authority level higher than the level available to any user.

Replace Commands with NCL Procedures

To replace native commands with an NCL procedure of the same name, use the CMDREPLS parameter group in Customizer.

Example: Replace the CANCEL Command

To run an NCL procedure in place of the CANCEL command

1. Enter **/PARMS** at the command prompt.

   The Customizer : Parameter Groups panel is displayed.

2. Enter **U** next to the CMDREPLS parameter group.

   The Customizer : Parameter Group panel for the CMDREPLS parameter group is displayed.

3. Type **CANCEL** in the next available position in the Replaced Command ID field.

4. Press one of the following function keys:

   - F3 (File) to file the changes—the changes are not applied to the current region, but are applied when the region is restarted.
   - F6 (Action) to apply the changes to this region—the changes are not saved.

Note: This rest of Administering Security does not apply to CA SOLVE:FTS, CA SOLVE:Access, CA SOLVE:InfoMaster, and CA SOLVE:NetMail.

Customizing Parameters that Affect Security

Note: This section does not apply to CA SOLVE:FTS, CA SOLVE:Access, CA SOLVE:InfoMaster, and CA SOLVE:NetMail.

Review the following Customizer parameter groups (/PARMS) for security:

- CMDREPLS
- SECSHIPPING

Command Replacement

The CMDREPLS parameter group specifies which commands are to be intercepted and have an NCL procedure of the same name started instead of the command being executed. This allows you to perform additional security checking on these commands.

Important! If you change the default set of replacements, the functioning of some of the supplied applications may be impacted.

More information:

Product Commands from the OCS Panel or Command Entry Panel (see page 82)

Synchronizing Updates Across Linked Regions

To automatically update UAMS records across all active linked regions, you must enable the automatic propagation facility, known as security shipping.

Note: If security shipping is enabled, it occurs when a user ID or group definition is added, updated, or deleted.

Synchronization depends on whether you make an update from a focal point region or a subordinate region as follows:

- If the update is in a focal point region, the update is synchronized across all active linked regions that are enabled for this feature.
- If the update is in a subordinate region, the update is synchronized across only those active linked focal point regions that are enabled for this feature.

Enabling or disabling the update of UAMS records across multiple regions is the function of parameter group SECSHIPPING. To set or alter this parameter group:

1. Enter **/PARMS** at the command prompt to display the Customizer : Parameter Groups panel.
2. Apply the **U** (Update) action to SECSHIPPING, which is located in the SECURITY category.

   With the SECSHIPPING - Ship UAMS Maintenance panel displayed, you can make various settings, by choosing one of the following:

   - Respond **YES** to both questions.

     This allows all add, update, delete, *and* password change operations for UAMS records to be propagated to linked regions. (This setting is for regions that do not share a UAMS file and do not use NMSAF or a partial security exit.)

   - Respond **YES** to the question Ship to Linked Systems? and **NO** to the question Including Password Changes?

     This allows all add, update and delete operations for UAMS records to be propagated to the linked regions. Update requests from linked regions are processed, but changes to the password field are not. (This setting is for regions that do not share a UAMS file and use NMSAF or a partial security exit.)

   - Respond **NO** to both questions.

     This means that no UAMS records changes are propagated. If an update is requested from a remote region via this facility, it is refused. If linked regions share a UAMS file, you should choose this setting. Otherwise, you will get error messages when updating shared values on the User Description panel of the user profile.

UAMS updates are sent to linked regions immediately, for security reasons. A UAMS update report is displayed immediately, indicating the success or failure of those updates.

More information:

Defining User Profiles (see page 105)

Troubleshooting

Possible reasons for a remote region update not working include the following:

- The region is not profiled for remote updates. To profile it for remote updates, specify **YES** in the Ship to Linked Systems? field of its SECSHIPPING parameter group.
- The link or remote region is not active. (Because UAMS update records are not written to a staging file, no record of the update is retained, and the UAMS record in the remote region is not updated.)
- The user does not have UAMS administration authority on the remote region.
- The record or database is locked.
- The UAMS record does not exist. This condition occurs when an administrator updates a user profile record, without providing a new initial password, and there is no associated UAMS record for the remote region. The administrator can remedy this by supplying an initial password. This results in the automatic generation of a UAMS record for the remote region, and resets the users password across all regions.
- You based the user access on a customized user group that does not exist in the remote region.

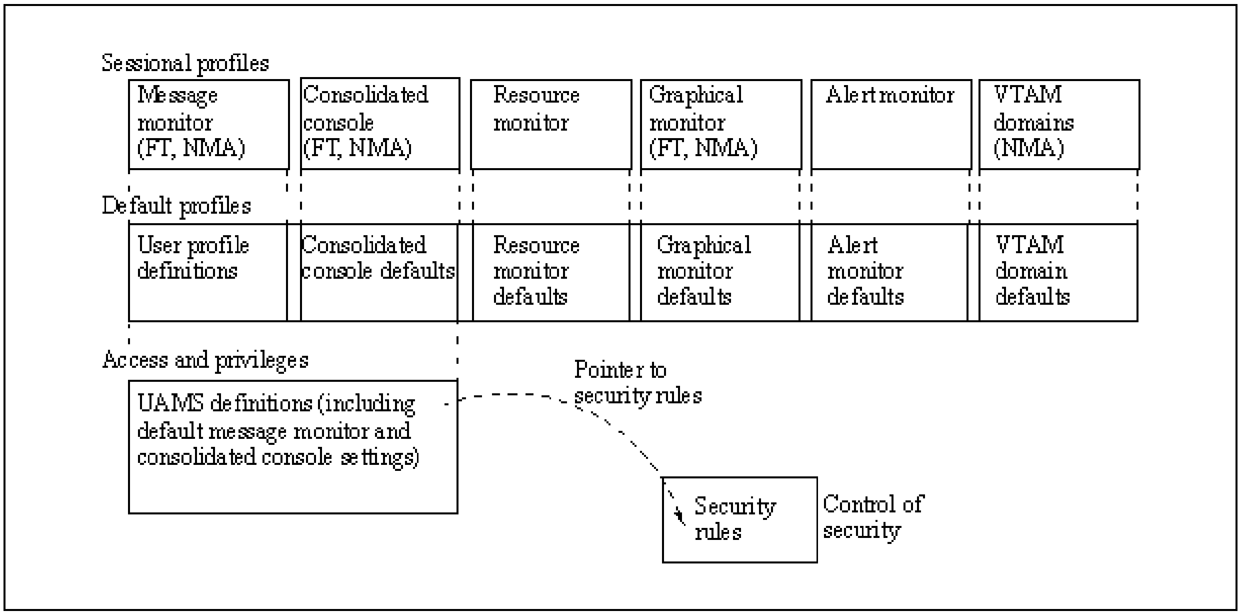
Understanding User Profiles

Note: This section does not apply to CA SOLVE:FTS, CA SOLVE:Access Session Management, CA SOLVE:InfoMaster, and CA SOLVE:NetMail.

User profiles set user preferences and tailoring options. User profiles work with a user's UAMS definition to set the user's working environment.

The following illustration shows examples of user access and privilege. Profiles that are specific to a particular product are identified in parentheses.

- At the lowest level, UAMS uses the security rules to control basic functions, security, and logon access to the region. Only a system administrator should have the authority to maintain UAMS definitions.
- At the next level, user profiles contain default settings (which are within any UAMS limitations) for the operational environment. Users can update their own profiles, and the system administrator can update any user profile.
- At the highest level, the specific environments seen by a user are determined by the defaults set in that user's profile record. A user can, however, change those defaults (within any UAMS or user profile limitations) for the duration of a work session.


Sessional profiles
Message monitor (FT, NMA)
Consolidated console (FT, NMA)
Resource monitor
Graphical monitor (FT, NMA)
Alert monitor
VTAM domains (NMA)
Default profiles
User profile definitions
Consolidated console defaults
Resource monitor defaults
Graphical monitor defaults
Alert monitor defaults
VTAM domain defaults
Access and privileges
UAMS definitions (including default message monitor and consolidated console settings)
Pointer to security rules
Security rules
Control of security

Defining User Profiles

Note: This section does not apply to CA SOLVE:FTS, CA SOLVE:Access Session Management, CA SOLVE:InfoMaster, and CA SOLVE:NetMail.

User profile information controls what resources and messages a user sees on monitors and consoles. User profile records are automatically propagated to all linked regions when created.

To assist with ease of administration if a UAMS user ID definition does not already exist, a UAMS user ID definition is automatically generated when a user profile is created for a user and a group ID is specified.

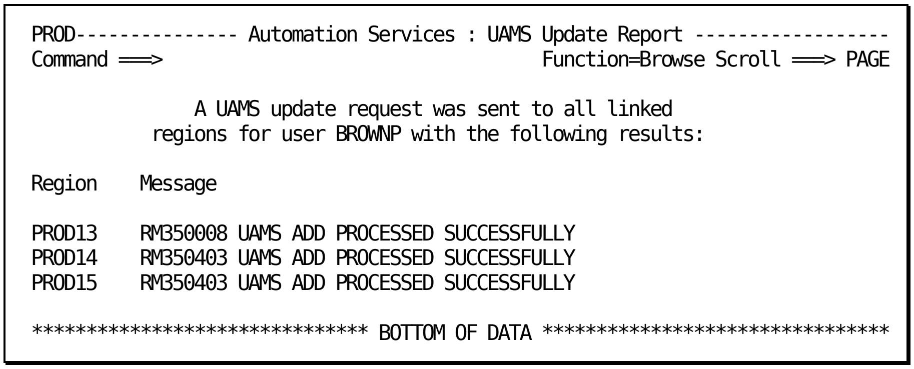
Note: If you are using a full security exit, user ID definitions are not automatically generated.

To create a profile for a new user, complete the following steps:

1. Enter **/ASADMIN** from the primary menu to display the Automation Services Administration Menu.
2. Select option **UP** - User Profiles to display the User Profile List.
3. Press F4 (Add) to add a new user profile. The action presents you with the first panel in the user profile definition. The following sections describe some of the panels. Use F8 (Forward) to scroll to each new panel.
4. File or save the new record.

   A UAMS Update Report is displayed if the following conditions apply:

   - You have completed fields on the User Description panel.
   - The SECSHIPPING parameter group is set in the current region to enable automatic propagation of UAMS updates.



```
PROD--------------- Automation Services : UAMS Update Report ------------------
Command ===>                                    Function=Browse Scroll ===> PAGE

               A UAMS update request was sent to all linked
           regions for user BROWNP with the following results:

Region    Message

PROD13    RM350008 UAMS ADD PROCESSED SUCCESSFULLY
PROD14    RM350403 UAMS ADD PROCESSED SUCCESSFULLY
PROD15    RM350403 UAMS ADD PROCESSED SUCCESSFULLY

******************************* BOTTOM OF DATA ********************************
```

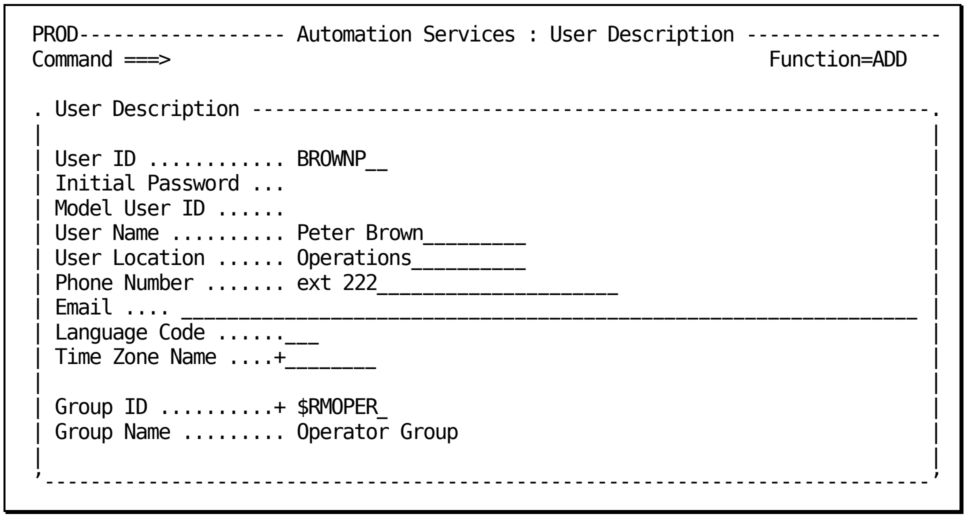
Note: When you have defined one user profile, you can use the **C** (Copy) action to duplicate an existing user profile and change the values for another user in the copied record as required.

More information:

Customizing Parameters that Affect Security (see page 100)

Specifying a User’s Details

You can specify a user’s details by using the User Description panel. These details are the same as those details in the user’s UAMS user ID definition.



```
PROD------------------ Automation Services : User Description -----------------
Command ===>                                                       Function=ADD

. User Description -----------------------------------------------------------.
|                                                                             |
| User ID ............ BROWNP__                                               |
| Initial Password ...                                                        |
| Model User ID ......                                                        |
| User Name .......... Peter Brown_________                                   |
| User Location ...... Operations_________                                    |
| Phone Number ....... ext 222_____________________                           |
| Email .... ________________________________________________________________ |
| Language Code ......___                                                     |
| Time Zone Name ....+________                                                |
|                                                                             |
| Group ID .........+ $RMOPER_                                                |
| Group Name ......... Operator Group                                         |
|                                                                             |
'-----------------------------------------------------------------------------'
```

Note: If the user is already defined to UAMS, you can enter an equal sign (=) in the User Name, User Location, Telephone Number, and Group ID fields to get the values from the UAMS record. Also, you do not need to complete the Initial Password field. If, however, you enter new values in any of these fields, the user’s UAMS record is updated with the new values.

Customizing a User’s Primary Menu Format Control

You can customize a user’s Primary Menu Format Control display by using the Primary Menu Format Control panel.

The panel enables you to specify defaults for the following:

- Format for the Primary Menu
- (CA NetMaster NM for TCP/IP) Format of the IP Summary display, including sort order for IP Traffic Summary and auto-refresh

Customizing a User’s Alert Monitor

You can customize a user’s default alert monitor display by using the Alert Monitor Profile panel.

The panel enables you to specify defaults for the following:

- Alert monitor filter that restricts the displayed alerts (You can define the filters at the Filter Definition List panel. To access the list, enter **/ALADMIN.F**.)
- Display format that determines what alert information is displayed (You can define the format at the List Definition List panel. To access the list, enter **/ALADMIN.L**.)
- Alert sort criteria to be applied when the user accesses the alert monitor

Customizing a User’s Resource Monitor Display

Note: This section only applies to CA NetMaster NA, CA NetMaster FTM, CA SOLVE:Operations Automation for z/OS, and CA SOLVE:Operations Automation for CICS.

Besides the resource monitor profile, there are profiles for other types of monitors that you may customize. Depending on the products running in your region, you have different types of monitors available to you.

You can customize a user’s resource monitor display by using the Resource Monitor Profile panel.

The panel displays the following information:

- Resource monitor filter
- Display format
- The number of display COLUMNS
- Sort criteria
- Extended display control (ON|OFF)

Customizing a User's Message Monitor Profile

Note: This section only applies to CA NetMaster Network Automation, CA NetMaster File Transfer Management, CA SOLVE:Operations Automation for z/OS, and CA SOLVE:Operations Automation for CICS.

You can customize a user's message monitor (or Operator Console Services) profile by entering the relevant information on the following four panels:

- Message Monitor Screen Control
- Message Monitor Command Control
- Message Monitor Message Receipt
- Message Monitor Message Formatting

To access these panels, enter **/ASADMIN.UP**.

Note: Customized values (that is, values other than the default) are set for the message monitor only if the $RMCCOCS procedure is run. The procedure is specified in the user ID definition.

See the Online Help for information about the fields on these panels.

Entering a Command String

The Message Monitor Command Control panel includes an Initial Command field. You can use this field to enter a command string that is issued when the user selects the message monitor.

Customizing a User's Consolidated Console

Note: This section only applies to CA NetMaster NA, CA NetMaster FTM, CA SOLVE:Operations Automation, and CA SOLVE:Operations Automation for CICS.

You can specify the message profiles to activate when a user accesses the consolidated console by using the Console Consolidation Profile panel.

The panel lists the message profiles available to the user. (These message profiles are specified as the console routing codes in the user definition and correspond to the message profile IDs).

For each profile, the panel displays the following:

- Name of the profile
- ID of the profile
- User status indicating whether the profile is enabled to the consolidated console

Note: If a profile is enabled, it is not effective unless its global status is also ACTIVE.

- Global status indicating whether the profile is defined to be active (that is, whether the profile can be loaded)
- Description of the profile

A profile has a status of either DISABLED or ENABLED.

To change the status of a profile from the Console Consolidation Profile panel

1. Press F10 (ScrLst).

   The list of profiles becomes scrollable. When you press F7 (Backward) and F8 (Forward), you scroll through the list (instead of scrolling through the user profile panels).

2. Type **D** next to the profiles you want to disable and **E** next to the profiles you want to enable, and press Enter.

   The user statuses of the selected profiles are updated.

3. Press F3 (OK) to accept the settings; press F3 (File) to file the settings.

Customizing a User's SNA Network Summary Display

If you are using CA NetMaster NA, you can specify the VTAM domains to be monitored in the SNA network summary display by using the VTAM Domain Consolidation Profile panel.

The panel lists the domains that are included in the SNA network summary display.

To change which domains are included and excluded

1. Press F10 (LstRegn), and then enter **S** or **I** next to the domains to be included and **X** next to the domains to be excluded.

   The domains selected for inclusion are flagged.

2. Press F3 (OK) to accept the settings; press F3 (File) to file the settings.

Maintaining User Profiles

Note: This section does not apply to CA SOLVE:FTS, CA SOLVE:Access Session Management, CA SOLVE:InfoMaster, and CA SOLVE:NetMail.

User profile records are maintained by applying actions to items on the User Profile list. You can update, copy, or delete listed profile records.

Updating User Profiles

To update a user profile definition

1. Enter **/ASADMIN.UP** from the primary menu to display the User Profile List.
2. Apply the **U** (Update) action to the item you want to update.

   The Panel Display List panel is displayed.

3. Select the panel you want to update.
4. Update the fields on this panel as required. If you want to update further fields on other user profile panels, use F7 (Backward) and F8 (Forward) to move between panels and F11 (Menu) to return to the Panel Display List.
5. File (F3) the updated definition.

Note: You can customize parts of your own user profile from certain associated panels. For example, you can customize your resource monitor profile from the status monitor by using the PROFILE command.

Users who have sufficient authority can update their own user profiles. Enter **U.UP** on the primary menu to display the list of user profile panels, then select the panel to be updated. (The sequence of panels can be scrolled by using F7 and F8.)

Deleting a User Profile Definition

If you want to delete a user profile record *and* its associated UAMS record, apply the **D** (delete) action to that item on the User Profile list. To delete the user profile record while retaining the UAMS record, apply the **DP** (delete profile) action.

Chapter 9: Implementing Security Exits

Implementation of security exits can provide additional security for your systems.

Your product provides some special-purpose exits that you can use to perform security checks. The following exits are supported:

- NCL authorization exit
- INMC security exit
- Data set access authorization exit
- Data set services authorization exit

This section contains the following topics:

Security for File Access

The NCL authorization exit, NCLEX01, controls access to the following:

- User databases (UDBs)
- SQL databases in a DB2 environment
- Writing SMF records (z/OS systems)
- Network databases (NDBs)

Access can be restricted to certain levels, or can be denied altogether. For example, the level of access to a database can be used to restrict users to read only or update without delete.

The exit is invoked automatically the first time an NCL procedure attempts to open a database, using the &FILE OPEN, &EDB, or &NDBOPEN statement, or write a record using the &SMFWRITE statement. A return code from the exit sets the level of access permitted, which is made available to the NCL procedure.

Note: If an exit controls the writing of SMF records in z/OS systems, it must provide clearance for a user to use the &SMFWRITE verb.

You can also define other uses for the NCL exit by tailoring the supplied NCLEX01 or writing your own.

More information:

How the NCL Authorization Exit Works (see page 114)

How the NCL Authorization Exit Works

To activate the NCL authorization exit, specify the name of the load module to invoke in the SYSPARMS NCLEX01 operand. To ensure that the exit is always activated during system initialization, place the SYSPARMS command in the INIT initialization member. If no exit is required, specify SYSPARMS NCLEX01=NO. If necessary the name of the exit can be changed online and a new module invoked.

Note: For information about the SYSPARM NCLEX01 operand, see the *Reference Guide*.

Note: If you are using a security product, such as RACF, to control VSAM file access, ensure that your product region itself is authorized for file access.

The exit executes within a subtask and can therefore issue a WAIT or SVC that causes suspension of the task without affecting the primary task.

The exit is passed a parameter list that provides information about the request. Write the exit as a reentrant facility so that multiple concurrent requests are possible.

For performance reasons, calls to NCLEX01 are not generated to the high-usage system files MODS and $PSPOOL.

Errors in the Exit

If an ABEND occurs within the exit, any current request is rejected as though access had been denied. Although this can impact the requesting NCL procedure, other processing is not affected. Subsequent requests to the exit continue without impact.

Parameters Passed to the Exit

When the exit is invoked, it is passed a communication area that provides information about the request and the requestor. The $NMNCEX1 macro, as supplied in the macro library, describes this area. The macro is distributed as follows:

- (z/OS systems) *dsnpref*.*pvpref*.CC2DMAC

  dsnpref

  Specifies your site-specific data set name prefix.

  pvpref

  Specifies your product version prefix.

- (z/VM systems) NMMACLIB MACLIB on the *vmid* 193 C-disk

More information:

Product Libraries (see page 17)

Preload the NCL Authorization Exit

You can load a single copy of the exit into the region in advance to avoid the overhead of the loading process.

To preload the NCL authorization exit, specify the name of the exit in the LOAD MODULE operand.

If the exit is link edited with the RENT (reentrant) attribute, this single copy is shared concurrently among multiple requestors.

Important! We recommended that you make the NCL exit module reentrant. Failure to do so causes significant additional disk activity and resource consumption in a busy system, and can impact overall performance.

Additional Checking in the NCL Authorization Exit

You can provide additional checking for access through the NCL authorization exit. This additional information is specified on the &FILE OPEN statement.

Example:

To have the exit ask for the user's password to confirm access to a particular UDB, you code the password information in the exit as follows:

```
&FILE OPEN ID=MYFILE DATA=&MYPASSWD
&FILE OPEN ID=MYFILE FORMAT=UNMAPPED DATA=&MYPASSWD
```

The exit interrogates the password and set an appropriate return code to control the subsequent processing in the NCL procedure.

A maximum of 50 characters of data can be passed. This data is available to the exit in the NEXUDATA field. The length of the data passed is set in the NEXUDLEN field. No validation is performed on passed data.

Information Sharing between NCL Authorization and External Security Exits

If you have a partial or full security exit, you can correlate access to UDBs by sharing information between your external security exit and the NCL authorization exit.

The NEXCORR field of the communications area in the NCL authorization exit is the standard correlator. Your external security exit can use this correlator. This correlator could, for example, be used to address a control block that contains information associated with that user.

If your external security exit supports a SAF user token, then this token is also available in the NEXUTOKN field in the communications area. This token is the UTOKEN provided by the external security exit when the user logs on. The token can be used in a security authorization call to verify the access to the UDB by the user.

Sample Distributed NCL Authorization Exit

A sample exit, NCLEX01, is supplied in the SMP target zone library, *dsnpref*.*pvpref*.CC2DSAMP.

dsnpref

Is your site-specific data set name prefix.

pvpref

Is your product version prefix.

More information:

Product Libraries (see page 17)

INMC Link Security

A security exit is provided as one of the facilities of INMC (Inter-Network Management Connection). This exit provides security for the connections between domains.

The security exit is coded as an assembler language exit routine. An exit must exist in each of the domains that are being linked. The exits are installed with the following components:

Primary exit

> Communicates with the secondary exit in the other domain. The exit decides whether to establish the link and allow traffic flow.

Secondary exit

> Responds to messages received from the primary exit. The exit makes no decisions whether a link is established or terminated.

This design allows each end of an INMC link to determine independently whether to activate a link, without having to depend on cooperation from the remote domain to enforce the decision.

These components are described in more detail in the following sections.

Primary Exit

The INMC *primary* exit decides whether a newly opened INMC link to a remote domain should be made available for general traffic. The secondary exit is not involved in this decision.

In order to pass control to the exit to make this decision the following calls are made by INMC to the exit:

- **The Initialization Call**—made when an INMC link to another domain is activated. The primary exit is notified of the event and whether the remote domain is configured with a secondary exit.
- **The Deliver Call**—made to the primary exit when INMC receives the reply from the (remote) secondary exit to a message sent to it earlier by the primary exit.
- **The Notify Call**—made to the primary exit when INMC determines that an unexpected event (for example, link outage) has occurred, which results in the deactivation of the link.

For every piece of data sent by the primary exit, there is always a response from the secondary exit. This response can be one of the following:

- Data exchange is complete.
- Link outage has occurred and no reply is possible.

If any protocol errors occur, a hang or stalemate condition might occur between the primary and secondary exits. Care, therefore, must be taken when designing the flow of information between the exit pairs and the rules defined for the various parameter lists passed to the exits must be adhered to.

More information:

INMC Security Exit Support (see page 269)

Secondary Exit

The function of the *secondary* exit is to act solely as a respondent to any messages received from the primary exit in the remote domain. The secondary exit has no power to recommend activation or closure of the link.

Calls made to the secondary exit are as follows:

- **The Initialization Call**—made when an INMC link becomes active. The exit can then perform any initialization required before returning to INMC.
- **The Deliver Call**—made to the secondary exit to deliver a message from the primary exit. The secondary exit must respond with a reply to the message, even if that reply is a null message.
- **The Disconnect Call**—made if the primary exit decides that the conversation is to be ended or when a link outage occurs.

This call allows the secondary exit to end cleanly and tidy up any allocated resources.

More information:

INMC Security Exit Support (see page 269)

Data Set Allocation Authority

The data set access authorization exit (NMDSNCHK) allows you to check whether a user attempting to allocate a data set dynamically is permitted to do so. This exit is invoked in two situations:

- When an ALLOCATE command is issued
- During FTS transmission processing

The data set access authorization exit is specified in the NMSECURITY parameter group (enter **/PARMS**). The default value is usually NMDSNCHK. If you have implemented the NMSAF solution, the default is NMSECDSN.

You can write your own data set access authorization exit to perform any required security checking, and implement it by updating the NMSECURITY parameter group.

More information:

Install the Data Set Access Authorization Exit (see page 261)

Using NMDSNCHK with CA SOLVE:FTS

Note: This section only applies to CA SOLVE:FTS.

CA SOLVE:FTS does not attempt to control or prevent access by private users to any data sets. The system does, however, provide an exit to an installation-provided routine that may verify that access is to be granted to the requesting user and indicate to CA SOLVE:FTS that the transmission request may or may not proceed.

When a transmission definition is created, it is classified as either a private or system definition. A private definition is usually associated with an individual user, whereas a system definition is usually associated with the installation as a whole and would often be part of the regular operational schedule.

When a private transmission request is scheduled, CA SOLVE:FTS drives the exit at both the transmitting and receiving hosts, with information that includes the user ID of the requestor, the data set to be accessed, and the function to be performed (read for the transmitting host and write for the receiving host).

The user-provided exit may decide whether the user is entitled to request personal access to the data set in question and, if necessary, refer to a proprietary security package in use by the installation, for example, CA ACF2, CA Top Secret, or RACF.

When a system request is scheduled, CA SOLVE:FTS drives the exit specifying that access is required by CA SOLVE:FTS itself, not by the individual user that issued the transmission request. The user exit may therefore identify access requests to sensitive data sets and determine whether the requests are a legitimate part of normal operations or are illegal attempts by individuals to reference data sets to which they should not have access.

Installations that use a security system to govern access to data sets may have to take steps to enable CA SOLVE:FTS itself to access the data sets that it is to transmit. Failure to do this may result in the transmission request failing with a security violation termination. Certain proprietary security packages (for example, RACF) allow access to data sets to be read and written under the auspices of the requesting user ID, rather than CA SOLVE:FTS itself, allowing greater security control at an individual level. For more information, see the *Administration Guide*.

In addition to the authorization of access to data sets, this exit can be used to fail requests for allocation of new data sets that exceed installation space allocations, attempt to allocate on reserved volumes, or use restricted transmission classes.

If no existing security package is in place, this exit could also be used to verify passwords associated with the access of data sets.

More information:

Data Set Access Authorization Exit (see page 257)

Sample Distributed Exit

A sample data set access authorization exit called NMDSNCHK is supplied in the distribution libraries. It comes in both load module format and source form. The distributed version authorizes all requests. The source contains extensive documentation and can be used as the base product for tailoring to your installation's requirements.

A second exit (called NMSECDSN (see page 31)) is supplied for use with NMSAF.

More information:

Data Set Authorization Exits Support (see page 257)

Security for Data Set Services

The data set services authorization exit, NMDSSCHK, is called periodically during data set services processing to perform security-related functions. You can use this exit to implement security procedures at the user level rather than at the region level.

The data set services authorization exit is similar to the data set access authorization exit. The exit is used by data set services functions, including the data set services ALLOC and UNALLOC operations.

The data set access authorization exit is specified in the NMSECURITY parameter group (enter **/PARMS**). The default value is usually NMDSSCHK. If you have implemented the NMSAF solution, the default is NMSECDSS.

You can write your own data set access authorization exit to perform any required security checking, and implement it by updating the NMSECURITY parameter group.

Note: For information about the data set services interface ($DSCALL) see the *Network Control Language Reference*.

More information:

Install the Data Set Services Authorization Exit (see page 267)

Sample Distributed Exit

A sample data set services authorization exit called NMDSSCHK is supplied in the distributed libraries. This is in load module format and in source form. This distributed version authorizes all requests and contains extensive documentation. The sample exit is provided as a base for you to implement your own exit procedure.

A second exit (called NMSECDSS (see page 31)) is supplied for use with NMSAF.

More information:

Data Set Authorization Exits Support (see page 257)

Chapter 10: Setting Up SNMP Security

This section contains the following topics:

About SNMP Security

Simple Network Management Protocol (SNMP) enables data to be collected by a management system from remote hosts containing an SNMP agent. Data on the remote hosts is stored in a Management Information Base (MIB). MIB data is accessed by SNMP requests.

SNMP is used to collect data from stacks, routers, and other network devices. The data is used for the following:

- Performance monitoring of some attributes
- Building diagnostic displays and use of MIBinsight

Note: CA NetMaster NM for TCP/IP needs read access to MIBs for the above functions.

The MIBinsight browser provides a method of accessing MIB data. The browser can also be used to update MIB data.

All SNMP requests issued use SNMP Version 1 and a community name of *public* (in lower case) as the default. If this is not suitable, you must create an SNMP Host Details Definition (see page 126), which describes the release of SNMP and the security details to use. The information in the host details definition is used when the monitoring or diagnostic functions require SNMP.

Note: The MIBinsight browser does not use the details stored in the SNMP host details registry. You must enter SNMP security details when you use the browser. If you want to use the browser to perform updates on the host, you must provide a suitable SET community name or Version 3 details that allow a SET request to be performed.

SNMP uses the following to control user access to data from devices:

- Community names (SNMP Version 1 and SNMP Version 2c)
- User-based security (SNMP Version 3)
- Access lists

Community Names

SNMP Version 1 and SNMP Version 2c use community names to determine the level of access you have to a particular SNMP device. For example, different community names might be required depending on whether you want to browse or have write access to MIB objects.

Note: Community names are case-sensitive and must correspond to the community name set in the target device with which you are communicating. An incorrect community name results in SNMP or monitoring errors for attributes that use SNMP on that resource.

User-based Security Details

SNMP Version 3 introduces user-based security, which provides a higher level of security than that provided by community names.

SNMP Version 3 offers the following security features:

Authentication

Provides data integrity of SNMP requests and responses using the MD5 or SHA authentication protocols.

Privacy

Provides encryption of SNMP requests and responses.

CA NetMaster NM for TCP/IP supports SNMP Version 3 under the terms of RFC2574, as a command generator application. This means that SNMP Version 3 requests can be issued and responses interpreted with full support of the SNMP Version 3 authentication and privacy protocols.

Access Lists

An access list is used to specify the IP addresses from which a device responds to SNMP requests. The IP address of the host making SNMP requests (the host running this product) should be defined in the devices’ SNMP access list; otherwise, SNMP requests fail.

Note: You must configure SNMP on the resource host and on the stack to which the region is connected using the SOCKETS parameter group. The community names must also match.

Define SNMP Security

All SNMP requests issued use SNMP Version 1 and a community name of *public* (in lower case) as the default. If this is not suitable, you must create an SNMP Host Details Definition, which describes the version of SNMP and the security details to use. The information in the host details definition is used when monitoring or diagnostic functions require SNMP.

Identify the SNMP Host

You can build a host definition for a single IP address, or for a range of addresses.

The IP address specified to identify the host must always be made up of four elements separated by periods (.). You can enter a specific value, a range, or a mask for each element. The dash (-) is used to specify a range and the asterisk (*) is used as a mask. These can be used in combinations, for example, 192.168.80.*, 172.24.10.15-30, and 192.168.16-24.*.

Performance monitoring and diagnostic functions take the definition that more clearly represents that IP address. For example, 172.16.0.0 overrides *.*.*.* settings.

Important! You must not use ranges that overlap when you define community names. For example, the following IP address ranges will cause an error condition:

192.168.10.15-30
192.168.10.20-40

Define an SNMP Host Record

To define an SNMP host record

1. Enter /**IPADMIN.S** at the prompt.

   The TCP/IP : SNMP Host Details List appears. This panel displays a list of the current definitions.

2. Press F4 (Add).

   The TCP/IP : SNMP Host Details Definition panel appears.

3. Enter the details of the security that you want. Press F1 (Help) for more information about the fields.

   Note: If you specify a range, ensure that all devices associated with the range being monitored all have the same SNMP configuration.

4. Press F3 (File).

   The definition is saved.

Chapter 11: Implementing WebCenter Security

This section contains the following topics:

Implementing WebCenter Security Using SSL

You can use the Secure Sockets Layer (SSL) feature to implement WebCenter security. This feature lets you support encrypted conversations between the WebCenter web server and client web browsers.

Note: Using this feature is an all-or-nothing decision. Either all pages are encrypted, or none of them are.

At the start of a conversation, SSL delivers a server certificate from the server to the client. This certificate identifies the server, so that the client can be sure that the server is who it claims to be. You must obtain a certificate from a Certificate Authority, install it on the LPAR where the product is running, and identify it to the product so that WebCenter can access it and send it to the client.

You might already have a server certificate installed in your security system. If WebCenter shares the domain name that the certificate refers to, you can use that certificate.

Note: For information about implementing SSL certificates and key management on z/OS systems, see the IBM publication *z/OS System SSL Programming Manual*.

To implement WebCenter Security

1. Enter **/PARMS** at the prompt.

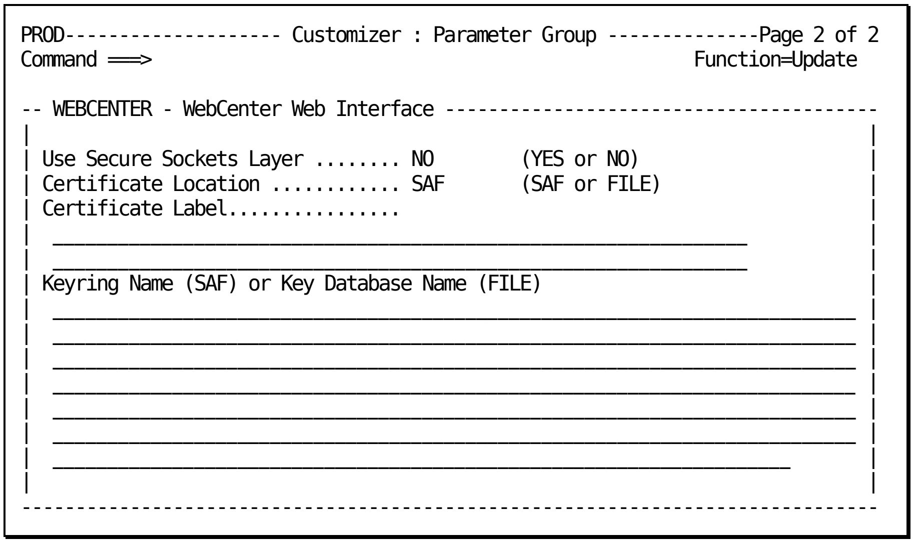
   The Customizer : Parameter Groups panel appears.

2. Enter U beside $NM WEBCENTER in the Interfaces category.

   The WebCenter Web Interface panel appears.

3. Press F8 (Forward).

   The following panel appears:



```
PROD------------------- Customizer : Parameter Group -------------Page 2 of 2
Command ===>                                                 Function=Update

-- WEBCENTER - WebCenter Web Interface --------------------------------------
|                                                                           |
| Use Secure Sockets Layer ........ NO        (YES or NO)                   |
| Certificate Location ............ SAF       (SAF or FILE)                 |
| Certificate Label...............                                          |
|  ____________________________________________________________             |
|  ____________________________________________________________             |
| Keyring Name (SAF) or Key Database Name (FILE)                            |
|  ______________________________________________________________________  |
|  ______________________________________________________________________  |
|  ______________________________________________________________________  |
|  ______________________________________________________________________  |
|  ______________________________________________________________________  |
|  ______________________________________________________________________  |
|  ________________________________________________________________        |
|                                                                           |
-----------------------------------------------------------------------------
```

4. Complete the fields. For information about the fields, press F1 (Help).

How You Control Access to WebCenter Menu Options

You can control access to WebCenter menu options programmatically by using the variables in the CC2DEXEC($W3MH01X) WebCenter menu user exit.

The exit contains a menu control variable for each menu option in WebCenter. These variables are initially set to TRUE. To prevent access to a particular option, change the value of the control variable for that option to FALSE.

The exit is called when a user logs in to WebCenter. You can update this exit to suit your requirements.

Important! If modifications are required, copy the distributed member to the TESTEXEC data set for the region for modification.

To control access to a menu option for a user, use the &SECCALL NCL verb to query the user's access as defined in UAMS. Then, set the appropriate variables to TRUE or FALSE. The exit contains some sample code.

Note: For more information about the verb, see the *Network Control Language Reference Guide*.

To control access to a menu option for all users, update the value of its control variable but do not perform an &SECCALL query.

Changes to this exit are not dynamic. For changes to the exit to take effect, the user must log in to WebCenter with a new advanced program-to-program communications (APPC) connection. That is, if a user is logged in when the changes occur, the changes are not evident until they log out and log in again.

Important! Preventing access to a menu option does not mean preventing access to the underlying function. What it does is to prevent users from using the menu option to access the function.

Appendix A: SXCTL Parameters

The SXCTL parameter file specifies the parameters that you use for the NMSAF security solution (see page 23) and the NMSAFF security solution (see page 33).

This section contains the following topics:

SXCTL Parameters

The NMSAF and NMSAFF security exits read the SXCTL file during initialization of your region:

- Blank lines and lines with an asterisk (*) as the first non-blank character are ignored.
- Other lines must contain a valid SXCTL parameter.

You can specify any of these parameters in the SXCTL file.

APPCCHECK { NO | YES }

Controls whether APPC user sessions are validated against security.

Important! Setting this parameter to NO exposes the region to unauthorized APPC sessions.

APPCMODEL { NO | YES }

Controls whether an APPC user is eligible for model processing (if this region does not know the user).

NO

(Default) The logon is rejected.

YES

A model can be used (subject to model processing rules).

CHANGEPWD { NO | YES }

Controls the use of the Password Change facility in your region.

NO

(Default) Blocks attempts to use the UAMS Password Change facility, or any other password change interface (for example, using EASINET), and produces an error message. This setting prevents users from using these region features to change their passwords (whether in UAMS or external security). This setting can be useful in distributed security environments where passwords must be changed by using a particular mechanism.

YES

Allows the Password Change facility to be used (although the security system can reject or ignore it).

CONCHECK { YES | NO }

Controls the checking of console user IDs. These user IDs are for system consoles.

YES

(Default) The console user ID is presented to SAF.

NO

The console user ID is not presented to SAF.

Note: If CONCHECK YES is specified, this user ID is presented before the CONUID user ID is presented.

CONUID { - | *userid* }

Provides a single SAF user ID for all console environments for this region. This parameter can prevent the need to define individual console users to the security system. For CONCHECK YES, the value of CONUID is presented to SAF only if verification of the specific console user ID failed.

-

Clears the value (blank).

userid

Specifies the user ID.

Limits: One through eight characters, with all characters alphanumeric or national

Note: Regardless of the settings of CONCHECK and CONUID, the logon procedure ignores a failure of a console user logon. The procedure permits the logon. If the user is not defined on UAMS, the procedure supplies default values.

DSSDSSEC { NO | YES }

Controls whether data set services register system users for data set resource checking. This feature requires the NMSECDSS exit to be active.

DSSDUSEC { YES | NO }

Controls whether data set services register normal users for data set resource checking. This feature requires the NMSECDSS exit to be active.

DSSHSSEC { NO | YES }

Controls whether data set services register system users for HFS file resource checking. This feature requires the NMSECDSS exit to be active.

DSSHUSEC { YES | NO }

Controls whether data set services register normal users for HFS file resource checking. This feature requires the NMSECDSS exit to be active.

MODEL { NO | SYSPARM | SINGLE | LIST }

Controls the use of the MODEL user facility. If you use NMSAFF, specify **MODEL LIST**.

NO

(Default) Specifies that no modeling is performed.

SYSPARM

Specifies that the setting of SYSPARMS MODLUSER is used.

SINGLE

Specifies that if a model name is specified in SXCTL, it is used as the model.

LIST

Specifies that if a resource or model list is defined, then it is used to determine the model name.

You can control which logon types can participate in modeling.

MODELGROUP { *saf.resource.name* | * } *modelname*

Supplies an entry in a list of SAF resource names and associated model names. The parameter can be repeated up to 20 times in the SXCTL file. The order in which the pairs of resource names and model names are specified is the order in which the resource names are tested. Specifying a resource name of * always matches (no SAF AUTH call is made).

For MODEL LIST, each resource name is tested (using the class that the RCLASS parameter sets), until a resource is found that the user has READ access to (or the * entry is reached). If a match is found, the associated model name is returned. If no match is found (and no * entry is found), then no model name is returned and the logon is rejected.

If you use NMSAFF, a STARTPROF parameter must reference the model name.

saf.resource.name modelname

Must be in valid PDSNAME format. The length must be one through eight characters. The first character must be alphabetic or national (@,#,$), and the rest must be alphanumeric or national.

MODELNAME { - | *userid* }

Supplies the model name for modeling if MODEL SINGLE is specified (otherwise it is ignored). If no model name is specified (the default), it is the same as MODEL NO.

-

Clears the value (blank). This setting can cause substitution by a default value.

userid

Names the model.

Limits: One through eight characters, with all characters alphanumeric or national

PROFILES

(NMSAFF only) Begins the profile section.

STARTPROF *modelname*

Begins the definition of a list of attributes and their values for *modelname*. The attribute names are defined in the SXCTL FIELD description of the structured fields (see page 152). The MODELGROUP parameter defines *modelname*.

ENDPROF

Ends the list of user attributes and values.

RAPPL { <u>-</u> | *name* }

Sets the APPL value for RACROUTE calls.

-

(Default) A dash means none; the primary ACB name is then used.

name

Must be in valid PDSNAME format. The first character must be alphabetic or national (@,#,$), and the rest must be alphanumeric or national.

Limits: One through eight characters

RCLASS { <u>-</u> | *name* }

Sets the SAF resource class for most RACROUTE AUTH checks (for example, for model determination).

-

(Default) A dash (-) means none; FACILITY is then used.

name

Must be in valid PDSNAME format. The first character must be alphabetic or national (@,#,$), and the rest must be alphanumeric or national.

Limits: One through eight characters

ROFCHECK { <u>YES</u> | NO }

Controls the SAF validation of a ROF (Remote Operator Facility) user. ROF users are users that use the SIGNON and ROUTE commands from a remotely connected region to send commands to this one. The user ID is always the user ID that the user originally signed on with.

YES

(Default) Validates the user by a SAF call. If the user is not known (or has been revoked, for example), the signon fails.

NO

Makes no SAF call on this system for a ROF user.

ROFMODEL { NO | YES }

Controls whether a ROF user is eligible for model processing (if this region does not know the user).

NO

(Default) Rejects the logon.

YES

Specifies that a model can be used (subject to model processing rules).

ROFPWD { YES | NO }

Controls whether a password is required when signing on to this region by using the ROF SIGNON command.

YES

(Default) Specifies that the SAF password (for the security system in this region) for the current user ID must be supplied on the SIGNON command. Otherwise, the signon is rejected.

NO

Specifies that no password is required (SAF is asked to validate the user with no password if none is supplied).

Note: Specifying ROFPWD YES can cause problems with system user IDs. If NCL processes executing in these environments issue ROF signons to other systems, then, when the requests come in, the user ID is not treated as a system user. Normal validation occurs. This scenario can be a problem if a password is required.

SYSCHECK { YES | NO }

Controls the checking of system (or background) user IDs; for example, the BSYS and BLOG users, and the PPOP and AOMP regions.

Note: If SYSCHECK YES is specified, this user ID is presented before the SYSUID user ID is presented.

YES

(Default) Specifies that the user ID is presented to SAF for validation (no password is required). If SAF verifies the user ID, then it is accepted.

NO

Specifies that the generated user ID is not presented to SAF.

SYSUID { - | *userid* }

This parameter provides a single SAF user ID to use for all the system (or background) user IDs for this region. This feature prevents the need to define multiple user IDs (such as NM01BSYS and NM01BMON) to the security system. For SYSCHECK YES, the value of SYSUID is presented to SAF only if verification of the specific system user ID failed.

-

Clears the value (blank). This setting can cause substitution by a default value.

userid

Specifies the user ID.

Limits: One through eight characters, with all characters alphanumeric or national

Note: Regardless of the settings of SYSCHECK and SYSUID, the initialization procedure ignores a failure of a system user logon. The procedure continues initializing. If the user is not defined on UAMS, the procedure supplies default values.

TRACE { NO | YES }

Enables tracing to the SXTRACE data set.

NO

Disables all tracing, regardless of other trace options.

YES

Enables tracing (provided the SXTRACE file can be opened during initialization), but other trace options must be set to cause actual tracing.

TRACEMOD { NO | YES }

Enables tracing of the security exit module flow. Typically, this feature is used only on CA Support request to track down errors in the exit.

Note: This option produces a large amount of trace output.

TRACEPL { NO | YES }

Enables tracing of the parameter list for the security exit call on entry and exit. The trace includes the fields pointed to by parameters that are not null (except passwords).

TRACESAF { NO | ERROR | YES }

Enables tracing of the results of RACROUTE (SAF) macro calls.

NO

Disables all tracing.

ERROR

Causes tracing of those RACROUTE calls that failed in some way.

YES

Traces all RACROUTE calls. The trace includes the parameter list and return codes.

TSOMODEL { NO | YES }

Controls whether a TSO user is eligible for model processing (if this region does not know the user).

NO

(Default) Specifies that automatic model processing is not used. The user (if not defined to UAMS) is presented with a blank logon panel that uses normal logon processing rules.

YES

Means that a model can be used (subject to model processing rules).

TSOPWD { YES | NO }

Controls the requirement for a password when using the TSO pass through facility (the NMLOGON TSO command).

YES

(Default) Specifies that the user is presented with a normal logon screen, and must enter the user ID and password to gain access.

NO

Specifies that the user can log on with no password (if this logon is not blocked in the UAMS definition).

USERFLAG*n* { NO | YES }

Sets a flag in the global area accessible to other exits. You can specify up to eight of these parameters. They can be used to control logic in installation-written exits, such as NCLEX01.

USERNAME*n* { - | *name* }

Sets a name value in the global area accessible to other exits. You can specify up to four of these parameters. They can be used as input data in installation-written exits, such as NCLEX01.

-

Clears the value (blank). This setting can cause substitution by a default value.

name

Must be in valid PDSNAME format. The first character must be alphabetic or national (@,#,$), and the rest must be alphanumeric or national.

Limits: One through eight characters

USERUID*n* { - | *uid* }

Sets a user ID value in the global area accessible to other exits. You can specify up to four of these parameters. They can be used as input data in installation-written exits (such as NCLEX01).

-

Clears the value (blank). This setting can cause substitution by a default value.

uid

Specifies a user ID.

Limits: One through eight characters, with all characters alphanumeric or national

VAPPCLINK { NO | YES | N12 | N21 | BOTH }

Controls the activation of the APPC link security facility. The facility uses a SAF query to extract a password, with a resource class of APPCLU.

NO

Disables the facility. No passwords are returned.

YES

Performs a SAF resource query using *network*.*locallu*.*remotelu*. If the query works, the password is returned.

N12

Is the same as YES.

N21

Performs a SAF resource query using *network*.*remotelu*.*locallu*. If the query works, the password is returned.

BOTH

Performs a SAF resource query using *network*.*locallu*.*remotelu* and then another SAF resource query using *network*.*remotelu*.*locallu*. If either of these queries works, the password is returned.

Note: Advanced Program-to-Program Communication (APPC) supports the use of link-level passwords. Both the DEFLINK and LINK START commands for APPC allow the specification of a password. Alternatively, the commands can use PASSWORD=EXIT, which means that the security exit can return the password.

WEBCHECK { NO | YES }

Controls whether WebCenter user sessions are validated against security.

Important! Setting this parameter to NO exposes the region to unauthorized user logins.

WEBMODEL { NO | YES }

Specifies whether a WebCenter user not known by this region is eligible for model processing.

NO

(Default) Specifies that the login is rejected.

YES

Specifies that a model can be used (subject to model processing rules).

More information:

How You Implement NMSAF (see page 26)
Security for File Access (see page 113)

Appendix B: Security Settings for Group Definitions

Note: This appendix does not apply to CA SOLVE:FTS, CA SOLVE:Access, CA SOLVE:InfoMaster, and CA SOLVE:NetMail.

This appendix specifies the recommended security settings for each of the supplied group IDs. These settings can be used if you want to create group IDs for your external security package. The settings are presented as they are in UAMS providing the panel, field, value, and structured field for each setting.

Note: The structured field information will only be useful to installations that have an external security package controlling user access with a partial or full security exit.

This section contains the following topics:

Security Settings for $RMADMIN

$RMADMIN is the group ID for administrators. The recommended security settings are given in this table.

Panel (Page Number)	Field	Value	Structured Field
User Authorities (2)	Authority Level	255	0050
	Multiple Signon Authority	Y	0019
	Split/Swap Authority	Y	002E
	APPC Access Key	ALL	0060
	APPC Access Lock	ALL	0061

Panel (Page Number)	Field	Value	Structured Field
User Access (3)	Network Management	Y (license dependent)	0022
	Operations Management	Y	002B
	Operator Console Services	Y	0020
	System Services	Y	0511
	UAMS Maintenance	Y	002A
	Broadcast Services	Y	0021
	System Support Services	Y	0023
	Managed Object Development Services	Y	0601
OCS Details (5)	Monitor Status	Y	0051
	Receive PPO Messages	Y (license dependent)	0055
	Message Code	FF	0058
	NPF Resource List Member	$RMSXADM	005B
	Undeliverable PPO Messages	Y (license dependent)	0057/2
	Initial OCS Command	-$RMCCOCS (license dependent)	0054
Network Management Details (7)	If licensed, then Y should be specified for those features that are enabled.		
	TCP/IP Services (if enabled)	2	0530
AOM General Details (10)	AOM Message Receipt	Y	0180/1
	Console Routing Codes	ALL	0180/2

Panel (Page Number)	Field	Value	Structured Field
	Message Level Screening	ALL	0182
AOM MVS Details (11)	Console Authority	M	0181
Print Services Manager Details (12)	Maintenance Access	3	0501
	Administration Access	2	0502
	Ability to Change Priority	2	0503

Security Settings for $RMOPER

$RMOPER is the group ID for operators. The recommended security settings are given in this table.

Panel (Page Number)	Field	Value	Structured Field
User Authorities (2)	Authority Level	200	0050
	Multiple Signon Authority	Y	0019
	Split/Swap Authority	Y	002E
	APPC Access Key	ALL	0060
	APPC Access Lock	ALL	0061
User Access (3)	Network Management	Y (license dependent)	0022
	Operations Management	Y	002B
	Operator Console Services	Y	0020
	Broadcast Services	Y	0021
Network Management Details (7)	If licensed, then Y should be specified for those features that are enabled.		

Panel (Page Number)	Field	Value	Structured Field
AOM General Details (10)	AOM Message Receipt	Y	0180/1
	Console Routing Codes	ALL	0180/2
	Message Level Screening	ALL	0182
AOM MVS Details (11)	Console Authority	M	0181

Security Settings for $RMNOPER

$RMNOPER is the group ID for network operators. The recommended security settings are given in this table.

Panel (Page Number)	Field	Value	Structured Field
User Authorities (2)	Authority Level	200	0050
	Multiple Signon Authority	Y	0019
	Split/Swap Authority	Y	002E
	APPC Access Key	ALL	0060
	APPC Access Lock	ALL	0061
Network Management Details (7)	If licensed, then Y should be specified for those features that are enabled.		
AOM General Details (10)	AOM Message Receipt	Y	0180/1
	Console Routing Codes	ALL	0180/2
	Message Level Screening	ALL	0182
AOM MVS Details (11)	Console Authority	M	0181

Security Settings for $RMMON

$RMMON is the group ID for monitors. The recommended security settings are given in this table.

Panel (Page Number)	Field	Value	Structured Field
User Authorities (2)	Authority Level	002	0050
	Multiple Signon Authority	Y	0019
	Split/Swap Authority	Y	002E
	APPC Access Key	ALL	0060
	APPC Access Lock	ALL	0061
User Access (3)	Network Management	Y (license dependent)	0022
	Operations Management	Y	002B
Network Management Details (7)	If licensed, then Y should be specified for those features that are enabled.		
AOM General Details (10)	AOM Message Receipt	Y	0180/1
	Console Routing Codes	ALL	0180/2
	Message Level Screening	ALL	0182
AOM MVS Details (11)	Console Authority	I	0181

Security Settings for $RMBUSER

$RMBUSER is the group ID for background users. The recommended security settings are given in this table.

Panel (Page Number)	Field	Value	Structured Field
User Authorities (2)	Authority Level	255	0050
	APPC Access Key	ALL	0060
	APPC Access Lock	ALL	0061
User Access (3)	Network Management	Y (license dependent)	0022
	Operations Management	Y	002B
	Operator Console Services	Y	0020
	System Services	Y	0511
	Broadcast Services	Y	0021
	Object Services Support	Y	0605
	System Support Services	Y	0023
OCS Details (5)	Monitor Status	Y	0051
	NPF Resource List Member	$RMSXADM	005B
Network Management Details (7)	If licensed, then Y should be specified for those features that are enabled.		
AOM MVS Details (11)	Console Authority	M	0181

Appendix C: Structured Fields

This section contains the following topics:

Overview

Each structured field identifies an item of information that can be specified when a user ID is defined. For example, user name, user location, and so on. These structured fields provide the same information as the fields in the UAMS function for defining a user ID.

Structured fields are used to exchange information between security exits and system services. When an exit returns user ID information to system services it is always in the form of a list of pointers to one or more structured fields. By processing the fields returned by the exit, system services build an internal representation of the user ID.

Your system services also translate this internal representation of a user ID into the same set of structured fields when a request is passed to an exit.

More information:

Working with UAMS (see page 39)

Format of Structured Fields

The format of a structured field is as follows:

Bytes 00 through 01

Specifies the field key—a hexadecimal value that defines the item of information described by this field.

Bytes 02 through 03

Specifies the subfield count—a hexadecimal count of the number of subfields within this structured field.

Bytes 04 through 05

Specifies the subfield length—the hexadecimal length of the following subfield.

Bytes 06 through *nn*

Specifies the subfield data.

Subfield length and subfield data are repeated according to the number specified in subfield count.

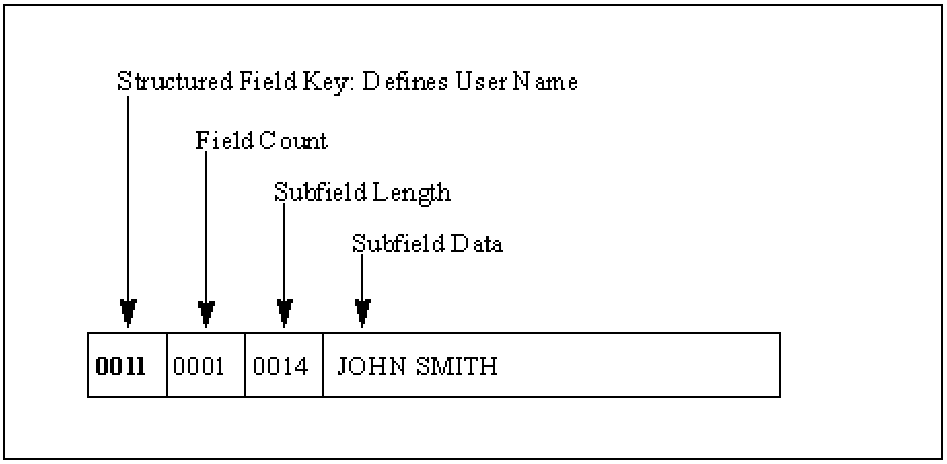
Note: For examples of how to update structured fields, including those fields with multiple subfields, see the description of the &SECCALL verb in the *Network Control Language Reference*.

Example:

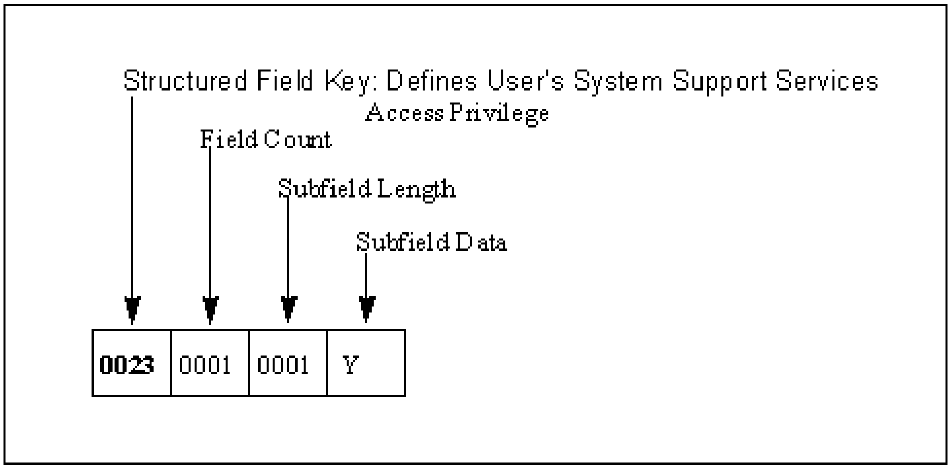
The following diagram shows structured field X’0011’. This field is used to define a user’s name. This name can be associated with the user ID so that the person can be identified when they log on.

Structured field X’0011’ consists of:

- Field key of X‘0011’
- Subfield count of X‘0001’ (1 subfield)
- Subfield length of X‘0014’ (20 characters)
- Subfield data of JOHN SMITH (padded with blanks on the right to make up the 20 characters)



The following diagram shows structured field X‘0023’. This field too has a single subfield with a value of Y and is used to indicate that the user is entitled to access the System Support Services function.


Structured Field Key: Defines User's System Support Services Access Privilege
Field Count
Subfield Length
Subfield Data
0023
0001
0001
Y

Structured Field Error Conditions

Error conditions can occur during the processing of a set of structured fields due to one of the following reasons:

- The omission of a structured field.
- An invalid value has been specified in a structured field.

If an error does occur during structured field processing, then:

- The structured field is assigned its default value.
- An error message is written to the log.

If error conditions occur, a user might not have all the expected privileges when logged on to the system.

Structured Field Sequences

Your product region processes structured fields in the order in which they appear. While most structured fields are independent of other fields, certain fields must be processed before others. Where such dependencies exist, they are noted in the description of the fields concerned.

Structured Field Descriptions

The description of each field includes comments on special processing or validation requirements.

Note: The length of each subfield is fixed and cannot be varied. Where applicable, data fields must be blank padded to the full length of the subfield.

Important! When you specify structured fields in SXCTL, note the following requirements:

- Specify masks as strings in hexadecimal digits of the exact length.
- Specify a valid value for a field. SXCTL does not support defaults for invalid values.
- Replace spaces in a value with underscores. When processed, these underscores are converted to spaces. For example, Network_Operator becomes Network Operator.

SF X‘0010’—User ID Name

FUNCTION:	Defines user ID name
SXCTL FIELD:	userIdName
KEY:	X‘0010’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’

The user ID name is any eight-character string forming a valid user ID. The name must be left justified and blank-padded to a length of eight characters. This field is optional. If generated in response to a call for the user ID information, it must be the same name as that requested by your region. If it is omitted, it defaults to the user ID name requested.

SF X‘0011’—User Name

FUNCTION:	Defines user name
SXCTL FIELD:	userName
KEY:	X‘0011’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0014’
SUBFIELD 1 DATA:	CL20‘ ’

The user name is any 20-character string. The field allows the name of the user (or any other comments) to be displayed at logon time. This field is optional. If omitted, the name field defaults to blanks. If provided, the subfield must be 20 characters long.

SF X‘0012’—User Location

FUNCTION:	Defines user location
SXCTL FIELD:	userLocation
KEY:	X‘0012’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0014’
SUBFIELD 1 DATA:	CL20‘ ’

The user location is any 20-character string. This field is optional. If omitted, the location field defaults to blanks. If provided, the subfield must be 20 characters long.

SF X‘0013’—User Telephone Number

FUNCTION:	Defines user telephone number
SXCTL FIELD:	userTelephoneNum
KEY:	X‘0013’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0014’
SUBFIELD 1 DATA:	CL32‘ ’

The user telephone number field is any 32-character string. This field is optional. If omitted, the field defaults to blanks. If provided, the subfield must be 32 characters long.

SF X‘0014’—User Language Code

FUNCTION:	Defines user language code
SXCTL FIELD:	userLanguageCode
KEY:	X‘0014’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0002’
SUBFIELD 1 DATA:	CL2‘ ’

The user language code field is any two-character string. This field is optional. If omitted, the field defaults to blanks. If provided, the subfield must be two characters long. If omitted, the field defaults to the current setting of the system language code that the SYSPARMS LANG operand sets.

SF X‘0015’—User ID Suspend Date

FUNCTION:	Defines user ID suspend date
SXCTL FIELD:	userSuspendDate
KEY:	X‘0015’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0006’
SUBFIELD 1 DATA:	CL6‘ ’

This field defines the date on which to suspend the user ID from further ability to log on to the region. Format is YY.DDD. If omitted, the field defaults to blanks.

SF X‘0016’—Terminal Restrictions

FUNCTION:	Defines terminal restrictions
SXCTL FIELD:	terminalRestrict
KEY:	X‘0016’
SUBFIELD COUNT:	X‘0003’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’
SUBFIELD 2 LENGTH:	X‘0008’
SUBFIELD 2 DATA:	CL8‘ ’
SUBFIELD 3 LENGTH:	X‘0008’
SUBFIELD 3 DATA:	CL8‘ ’

Subfields 1, 2, and 3 define the terminals to which this user ID is restricted, if any. If terminal restrictions do not apply to the user ID, the fields can be left blank or the field omitted.

Note: The full security exit is responsible for performing the actual terminal restriction processing. Your product region performs no terminal restriction validation when a full security exit is utilized.

SF X‘0017’—Time-out Control

FUNCTION:	Defines time-out control
SXCTL FIELD:	timeoutControl
KEY:	X‘0017’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether the user ID is subject to time-out facilities. Valid values are Y or N. If the field is omitted, the default is Y.

SF X‘0018’—Date/Time User ID Last Updated

FUNCTION:	Defines date/time user ID last updated
KEY:	X‘0018’
SUBFIELD COUNT:	X‘0002’
SUBFIELD 1 LENGTH:	X‘0014’
SUBFIELD 1 DATA:	CL20‘ ’
SUBFIELD 2 LENGTH:	X‘0010’
SUBFIELD 2 DATA:	CL16‘ ’
SUBFIELD 3 LENGTH:	X‘0008’
SUBFIELD 3 DATA:	CL8‘ ’

Subfield 1

- **Value**—Date and time that this user ID last logged on to the region
- **Format**—15-character last logged on date, for example, MON 09-FEB-2006, and a 5-character last logged on time, for example, 08.30

Subfield 2

- **Value**—Date and time that this user ID was last updated
- **Format**—11-character last updated date, for example, 09-FEB-2006, and a 5-character last logged on time, for example, 08.30

Subfield 3

- **Value**—User ID of the user who last updated this field
- **Format**—Eight characters

SF X‘0019’—Multiple Signon Capability

FUNCTION:	Defines multiple signon capability
SXCTL FIELD:	multipleSignon
KEY:	X‘0019’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field determines whether the user ID can log on multiple times from a terminal or MAI environment. Valid values are Y or N only. If omitted, the default is N.

SF X‘001A’—Group Definition for User

FUNCTION:	Defines group definition to be used for this user
SXCTL FIELD:	groupDefinition
KEY:	X‘001A’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’

This field defines the group definition that this user ID uses. This definition is read for all functions that are related to the user ID. The privileges of the group definition are applied to this user ID. Only user information (that is, name, location, telephone number, and initial OCS command) is specified as unique to this user ID. Valid values are:

- Blank or nulls—indicates that there is no group definition for this user.
- Group name—indicates the group definition for this user ID.

SF X‘001B’—User ID Definition Type

FUNCTION:	User ID definition type
KEY:	X‘001B’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field indicates whether this is a Group definition or a User definition. Valid values are Y (group definition) or N (user definition). If omitted, the default is N (user definition).

SF X‘001C’—User Password Expiry Action Indicator

FUNCTION:	User password expiry action indicator
SXCTL FIELD:	pswdExpAction
KEY:	X‘001C’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field indicates whether to perform the password expiry checking for this user ID. Valid values are Y (password renewal at the installation determined expiry interval is enforced) or N (no expiry checking is performed). If omitted, the default is Y.

SF X‘001D’—User Email Address

FUNCTION:	Defines user email address
SXCTL FIELD:	userEmailAddr
KEY:	X‘001D’
SUBFIELD COUNT:	X‘0002’
SUBFIELD 1 LENGTH:	X‘0040’
SUBFIELD 1 DATA:	CL64‘ ’
SUBFIELD 2 LENGTH:	X‘0080’
SUBFIELD 2 DATA:	CL128‘ ’

Subfield 1

The user email address field is any 64-character string. This field is optional. If omitted, the default is blanks. If provided, the subfield must be 64 characters long. The field can contain asterisks as placeholders for User ID and domain name.

Subfield 2

The expanded user email address field is a copy of the user email address, with any asterisk placeholders replaced as follows:

- An asterisk before '@' is replaced by the UAMS User ID.
- An asterisk after '@' is replaced by the contents of the system parameter EMAILDMN as set in the SYSTEMID Customizer Parameter Group.

This field is not updateable.

SF X‘001E’—Model User ID Name

FUNCTION:	Defines model user ID
KEY:	X‘001E’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’

The Model User ID name is any eight-character string forming a valid user ID. The name must be left-justified and blank-padded to a length of eight characters. This field is optional. It is set if the UAMS record is generated from a model record.

SF X‘0020’—OCS Access Privilege

FUNCTION:	Defines OCS access privilege
SXCTL FIELD:	ocsAccess
KEY:	X‘0020’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field indicates whether the user has access to OCS. Valid values are Y or N. If omitted, or an invalid value is specified, the default is N.

SF X‘0021’—Broadcast Services Privilege

FUNCTION:	Defines Broadcast Services privilege
SXCTL FIELD:	broadcastSvcs
KEY:	X‘0021’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field indicates whether the user has access to Broadcast Services. Valid values are Y or N. If omitted, or an invalid value is specified, the default is N.

SF X‘0022’—Network Services Access Privilege

FUNCTION:	Defines network services access privilege
SXCTL FIELD:	networkSvcs
KEY:	X‘0022’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether the user ID has access to the Network Management options. Valid values are Y or N. If omitted, or an invalid value is specified, the default is N. This privilege is a prerequisite for other privileges which are available to the user within Network Services, for example, TCP/IP Services privilege.

This structured field is a prerequisite for the following structured fields:

- SF0026—NEWS Access Privilege
- SF002D—NCS Access Privilege
- SF0090—NCPView Access Privilege
- SF0150—NEWS Reset Privilege
- SF0151—NTS Access Privilege
- SF0530—TCP/IP Services Access Privilege

SF X‘0023’—System Support Privilege

FUNCTION:	Defines System Support privilege
SXCTL FIELD:	sysSupport
KEY:	X‘0023’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field indicates whether the user has access to System Support Services. Valid values are Y or N. If omitted, or an invalid value is specified, the default is N.

SF X'0025'—CA SOLVE:FTS Access Privilege

FUNCTION:	Defines CA SOLVE:FTS access privilege
SXCTL FIELD:	ftsAccess
KEY:	X'0025'
SUBFIELD COUNT:	X'0001'
SUBFIELD 1 LENGTH:	X'0001'
SUBFIELD 1 DATA:	CL1' '

This field indicates whether the user is entitled to access CA SOLVE:FTS. Valid values for the subfield data are Y or N. N is assumed if the field is omitted or specifies a value other than Y. This field is ignored if the system is not configured with the CA SOLVE:FTS product.

SF X‘0026’—NEWS Access Privilege

FUNCTION:	Defines CA NetMaster NM for SNA NEWS access privilege
SXCTL FIELD:	newAccess
KEY:	X‘0026’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field indicates whether the user has access to NEWS. Valid values are Y or N. The default is N.

This field is ignored if the user ID has not been given access privileges to Network Management (that is, if the user ID does not have structured field key X‘0022’).

SF X‘0027’—MAI-FS Access Privilege

FUNCTION:	Defines CA SOLVE:Access MAI-FS access privilege
SXCTL FIELD:	maiFsAccess
KEY:	X‘0027’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field indicates whether the user has access to MAI-FS. Valid values are Y or N. If omitted, or an invalid value is specified, the default is N. Specifying Y in this field allows the user to issue SETMODE MAI and use the MAISESS command. In addition, the supplied primary menu offers an option to select the MAI-FS primary menu.

SF X‘0028’—User Services Procedure Name

FUNCTION:	Defines User Services procedure name
SXCTL FIELD:	userSvcsProcName
KEY:	X‘0028’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’

This field identifies the eight-character name of the NCL procedure to invoke when the user selects the User Services option from the Primary Menu. The specified name must be a valid NCL procedure name, padded with blanks to eight characters if necessary. Embedded blanks within the name cause truncation.

This field is only valid if the user has access privileges for User Services. If this field is omitted, no User Services procedure name is assigned to the user ID.

SF X‘0029’—User’s NCL Procedure Library

FUNCTION:	Defines user’s NCL procedure library
SXCTL FIELD:	userNclProcLib
KEY:	X‘0029’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’

This field provides the DDname in the JCL (z/OS) or the filetype (z/VM) that defines the NCL procedure library this user uses. Whenever the user executes an NCL procedure, this library is searched for the procedure. If omitted, the library that is defined by the COMMANDS DD statement is used.

SF X‘002A’—UAMS Access Privilege

FUNCTION:	Defines UAMS access privilege
KEY:	X‘002A’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether the user ID has access to the UAMS maintenance functions. Valid values are Y or N. If omitted, or if an invalid value is specified, the default is N.

SF X‘002B’—Operations Management Privilege

FUNCTION:	Defines Operations Management privilege
SXCTL FIELD:	operationsMgt
KEY:	X‘002B’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether the user ID has access to the facilities of Operations Management. Valid values are Y or N. The default is N.

SF X‘002C’—TSO Autologon Privilege

FUNCTION:	Defines TSO auto-logon privilege
SXCTL FIELD:	tsoAutoLogon
KEY:	X‘002C’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether the user ID can log on to the region using an EIP component, such as a TSO address space, without reentering their ID and password. If omitted, the default is N. This field is only valid if you are licensed for EIP.

SF X‘002D’—NCS Access Privilege

FUNCTION:	Defines NCS access privilege
SXCTL FIELD:	ncsAccess
KEY:	X‘002D’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether the user ID has access to the facilities of NCS. Valid values are Y or N. If omitted, or an invalid value is specified, the default is N.

This field is ignored if the user ID has not been given access privileges to Network Management (that is, if the user ID does not have structured field key X‘0022’).

SF X‘002E’—User’s SPLIT/SWAP Privilege

FUNCTION:	Defines user’s SPLIT/SWAP privileges
SXCTL FIELD:	splitSwap
KEY:	X‘002E’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether the user ID is entitled to use the SPLIT/SWAP facility for operating two screen windows. Valid values are Y or N. If the field is omitted, the default is Y.

SF X‘002F’—Library Services Path Name

FUNCTION:	Defines Library Services path name
SXCTL FIELD:	libSvcsPathName
KEY:	X‘002F’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’

This field defines the user library path name. If you want to use a library path name to control the sequence of access to the panels data sets, enter the name. See the LIBRARY command for information about the path name definition. The default value is blanks, indicating that you do not want to use a path name.

SF X‘0030’—User’s Time Zone Name

FUNCTION:	Defines user’s time zone name
SXCTL FIELD:	userTimezoneName
KEY:	X‘0030’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’

This field defines the time zone name for the user. If omitted, the system time zone name is used when the user logs on.

SF X‘0050’—OCS Command Authority Level

FUNCTION:	Defines OCS command authority level
SXCTL FIELD:	ocsCmdAuthLvl
KEY:	X‘0050’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0003’
SUBFIELD 1 DATA:	CL3‘ ’

This field defines the command authority level that is assigned to the user when operating from OCS or when issuing commands within an NCL procedure. Valid values are 0 through 255 inclusive. If omitted, or an invalid value is specified, the default is 0.

SF X‘0051’—OCS Monitor Status

FUNCTION:	Defines OCS Monitor status
SXCTL FIELD:	ocsMonitorStatus
KEY:	X‘0051’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’

SUBFIELD 1 DATA:	CL1' '

This field defines whether the user is assigned Monitor status when operating in OCS. Valid values are Y or N. If omitted, or an invalid value is specified, the default is N.

SF X'0052'—NPF Command Member

FUNCTION:	Defines NPF command member
SXCTL FIELD:	npfCommandMember
KEY:	X'0052'
SUBFIELD COUNT:	X'0001'
SUBFIELD 1 LENGTH:	X'0008'
SUBFIELD 1 DATA:	CL8' '

This field defines the name of the NPF control member that specifies command partitioning for the user ID. The supplied NPF member name must be padded to eight characters, if necessary.

SF X'0053'—MSGPROC Member

FUNCTION:	Defines MSGPROC member
SXCTL FIELD:	msgprocMember
KEY:	X'0053'
SUBFIELD COUNT:	X'0001'
SUBFIELD 1 LENGTH:	X'0008'
SUBFIELD 1 DATA:	CL8' '

This field defines the name of the NCL procedure to invoke for each OCS window that the user operates. This field only applies if the user requires an MSGPROC NCL procedure to intercept all messages delivered when operating in OCS. The supplied MSGPROC name must be padded to eight characters, if necessary. If this field is omitted, no MSGPROC procedure is invoked for the user.

SF X‘0054’—OCS Mode Initial Command

FUNCTION:	Defines OCS mode initial command
SXCTL FIELD:	ocsModeInitCmd
KEY:	X‘0054’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0028’
SUBFIELD 1 DATA:	CL40‘ ’

This field defines the command that is executed automatically for this user on entry to OCS. If specified, the field data must be 40 characters long, padded with blanks if necessary. No validation of the command string is performed. If this field is omitted, no initial command is assigned to the user ID.

SF X‘0055’—PPO Message Receipt Option

FUNCTION:	Defines PPO message receipt option
SXCTL FIELD:	ppoMsgReceipt
KEY:	X‘0055’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field determines whether the user is entitled to receive unsolicited VTAM PPO messages, when logged on to OCS. Valid values are Y or N. The default is N.

SF X‘0056’—PPO Severity Level

FUNCTION:	Defines PPO severity level
SXCTL FIELD:	ppoSevLevel
KEY:	X‘0056’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0004’
SUBFIELD 1 DATA:	CL4‘ ’

This field indicates the severity level of the PPO messages to deliver to this user. This field only applies if the user is to have unsolicited VTAM PPO messages delivered when operating in OCS. Valid values are INFO, NORM, WARN, or SER. If omitted, or an invalid value is specified, the default is NORM.

SF X‘0057’—NPF Message Restriction Option

FUNCTION:	Defines NPF message restriction option
SXCTL FIELD:	npfMsgRestrict
KEY:	X‘0057’
SUBFIELD COUNT:	X‘0002’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’
SUBFIELD 2 LENGTH:	X‘0001’
SUBFIELD 2 DATA:	CL1‘ ’

This field defines the NPF message member that specifies the nodes from which the user receives unsolicited VTAM PPO messages.

This field has two subfields. The first subfield specifies the name of the NPF member. The second subfield determines whether the user is to receive undeliverable messages (that is, unsolicited messages that refer to network resources which are outside the user’s normal NPF restrictions but which cannot be delivered to any other user). Valid values are Y or N. The default is N.

This field is ignored if the user ID has not been authorized for PPO message receipt (that is, if the user ID does not have structured field key X‘0055’).

SF X‘0058’—Message Code Value

FUNCTION:	Defines message code value
SXCTL FIELD:	msgCodeValue
KEY:	X‘0058’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	XL1‘ ’

This field defines the one-byte bit string representing the message level mask for this user if they have a message code set. Any hexadecimal value (00 to FF) is Valid. If omitted, this field defaults to X‘00’.

SF X‘0059’—OCS MSG Message Receipt

FUNCTION:	Defines OCS MSG message receipt
SXCTL FIELD:	ocsMsgRcpt
KEY:	X‘0059’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field specifies the default PROFILE MSG command when entering OCS. The default is N.

SF X‘005A’—OCS Unsolicited Message Receipt Option

FUNCTION:	Defines OCS unsolicited message receipt option
SXCTL FIELD:	ocsUnsolMsgRcpt
KEY:	X‘005A’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field specifies the default PROFILE UNSOL command when entering OCS. The default is N.

SF X‘005B’—Resource List Member

FUNCTION:	Defines resource list member
SXCTL FIELD:	rsrcListMember
KEY:	X‘005B’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’

This field defines the resource list member that specifies the combined NPF restrictions for resource display and affect through VTAM commands. If omitted, the field defaults to blanks.

SF X‘005C’—User Time-out (1) Period

FUNCTION:	Defines user time-out (1) period
SXCTL FIELD:	userTimeoutP1
KEY:	X‘005C’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0006’
SUBFIELD 1 DATA:	CL6‘ ’

This field defines the interval that is used as the first time-out period for an inactive user ID. The format of the interval can be *mmm.ss* (minutes and seconds) or *mmm* (minutes). This field overrides SYSPARMS TOTIME1.

SF X‘005D’—User Time-out (2) Period

FUNCTION:	Defines user time-out (2) period
SXCTL FIELD:	userTimeoutP2
KEY:	X‘005D’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0006’
SUBFIELD 1 DATA:	CL6‘ ’

This field defines the interval that is used as the second time-out period for an inactive user ID. The format of the interval can be *mmm.ss* (minutes and seconds) or *mmm* (minutes). This field overrides SYSPARMS TOTIME2.

SF X‘005E’—User Time-out (1) Action

FUNCTION:	Defines user time-out (1) action
SXCTL FIELD:	userTimeoutAct1
KEY:	X‘005E’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0028’
SUBFIELD 1 DATA:	CL40‘ ’

This field defines the action to perform when the first time-out interval expires for a user ID. The action can be any command string, for example, LOCK, DISC, CANCEL LU=*. These commands have equivalents in the SYSPARMS time-out actions. A value of NONE can be used to disable the time-out action. This structured field overrides SYSPARMS TOACT1.

SF X‘005F’—User Time-out (2) Action

FUNCTION:	Defines user time-out (2) action
SXCTL FIELD:	userTimeoutAct2
KEY:	X‘005F’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0028’
SUBFIELD 1 DATA:	CL40‘ ’

This field defines the action to perform when the second time-out interval expires for a user ID. The action can be any command string, for example, LOCK, DISC, CANCEL LU=*. These commands have equivalents in the SYSPARMS time-out actions. A value of NONE can be used to disable the time-out action. This structured field overrides SYSPARMS TOACT2.

SF X‘0060’—User’s APPC Access Key

FUNCTION:	Defines user’s APPC access key
SXCTL FIELD:	userAppcAccKey
KEY:	X‘0060’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0002’
SUBFIELD 1 DATA:	BL2‘00’

This field defines the user APPC access key. The mask contains 16 bits, representing, from right to left, the access codes 1 through 16. These codes are used, together with the APPC lock, to allow this user to act on behalf of another user, without supplying the target user password.

A 16-bit key indicating the APPC access key must be specified. If omitted, the field defaults to zeros.

SF X‘0061’—User’s APPC Access Lock

FUNCTION:	Defines user’s APPC access lock
SXCTL FIELD:	userAppcAccLock
KEY:	X‘0061’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0002’
SUBFIELD 1 DATA:	BL2‘00’

This field defines the user APPC access lock. The key contains 16 bits, representing, from right to left, the access codes 1 through 16. These codes are used, together with the APPC key, to allow another user to act on behalf of this user, without supplying this user password. If omitted, the field defaults to zeros. Valid value is a 16-bit mask indicating the APPC access lock.

SF X‘0070’—Installation Attribute Field 1

FUNCTION:	Installation Attribute field 1
SXCTL FIELD:	instAttr1
KEY:	X‘0070’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0020’
SUBFIELD 1 DATA:	CL32‘ ’

This field allows specification of data for Installation Attributes assigned to this user ID. The data can be interrogated through NCL. This field corresponds to Installation Attribute field 1 on the Installation Attributes panel in UAMS. If omitted, the field defaults to blanks.

SF X‘0071’—Installation Attribute Field 2

FUNCTION:	Installation Attribute field 2
SXCTL FIELD:	instAttr2
KEY:	X‘0071’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0020’
SUBFIELD 1 DATA:	CL32‘ ’

This field allows specification of data for Installation Attributes assigned to this user ID. The data can be interrogated through NCL. This field corresponds to Installation Attribute field 2 on the Installation Attributes panel in UAMS. If omitted, the field defaults to blanks.

SF X‘0072’—Installation Attribute Field 3

FUNCTION:	Installation Attribute field 3
SXCTL FIELD:	instAttr3
KEY:	X‘0072’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0020’
SUBFIELD 1 DATA:	CL32‘ ’

This field allows specification of data for Installation Attributes assigned to this user ID. The data can be interrogated through NCL. This field corresponds to Installation Attribute field 3 on the Installation Attributes panel in UAMS. If omitted, the field defaults to blanks.

SF X‘0073’—Installation Attribute Field 4

FUNCTION:	Installation Attribute field 4
SXCTL FIELD:	instAttr4
KEY:	X‘0073’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0020’
SUBFIELD 1 DATA:	CL32‘ ’

This field allows specification of data for Installation Attributes assigned to this user ID. The data can be interrogated through NCL. This field corresponds to Installation Attribute field 4 on the Installation Attributes panel in UAMS. If omitted, the field defaults to blanks.

SF X‘0074’—Installation Attribute Field 5

FUNCTION:	Installation Attribute field 5
SXCTL FIELD:	instAttr5
KEY:	X‘0074’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0020’
SUBFIELD 1 DATA:	CL32‘ ’

This field allows specification of data for Installation Attributes assigned to this user ID. The data can be interrogated through NCL. This field corresponds to Installation Attribute field 5 on the Installation Attributes panel in UAMS. If omitted, the field defaults to blanks.

SF X‘0075’—Installation Attribute Field 6

FUNCTION:	Installation Attribute field 6
SXCTL FIELD:	instAttr6
KEY:	X‘0075’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0020’
SUBFIELD 1 DATA:	CL32‘ ’

This field allows specification of data for Installation Attributes assigned to this user ID. The data can be interrogated through NCL. This field corresponds to Installation Attribute field 6 on the Installation Attributes panel in UAMS. If omitted, the field defaults to blanks.

SF X‘0076’—Installation Attribute Field 7

FUNCTION:	Installation Attribute field 7
SXCTL FIELD:	instAttr7
KEY:	X‘0076’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0020’
SUBFIELD 1 DATA:	CL32‘ ’

This field allows specification of data for Installation Attributes assigned to this user ID. The data can be interrogated through NCL. This field corresponds to Installation Attribute field 7 on the Installation Attributes panel in UAMS. If omitted, the field defaults to blanks.

SF X‘0077’—Installation Attribute Field 8

FUNCTION:	Installation Attribute field 8
SXCTL FIELD:	instAttr8
KEY:	X‘0077’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0020’
SUBFIELD 1 DATA:	CL32‘ ’

This field allows specification of data for Installation Attributes assigned to this user ID. The data can be interrogated through NCL. This field corresponds to Installation Attribute field 8 on the Installation Attributes panel in UAMS. If omitted, the field defaults to blanks.

SF X‘0078’—Installation Attribute Field 9

FUNCTION:	Installation Attribute field 9
SXCTL FIELD:	instAttr9
KEY:	X‘0078’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0020’
SUBFIELD 1 DATA:	CL32‘ ’

This field allows specification of data for Installation Attributes assigned to this user ID. The data can be interrogated through NCL. This field corresponds to Installation Attribute field 9 on the Installation Attributes panel in UAMS. If omitted, the field defaults to blanks.

SF X‘0079’—Installation Attribute Field 10

FUNCTION:	Installation Attribute field 10
SXCTL FIELD:	instAttr10
KEY:	X‘0079’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0020’
SUBFIELD 1 DATA:	CL32‘ ’

This field allows specification of data for Installation Attributes assigned to this user ID. The data can be interrogated through NCL. This field corresponds to Installation Attribute field 10 on the Installation Attributes panel in UAMS. If omitted, the field defaults to blanks.

SF X‘0080’—Access to CA SOLVE:InfoMaster Maintenance Functions

FUNCTION:	Defines user’s access to CA SOLVE:InfoMaster maintenance functions
SXCTL FIELD:	infoMasterMaint
KEY:	X‘0080’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether the user ID has access to CA SOLVE:InfoMaster maintenance functions. Valid values are Y or N. If omitted, the default is N.

SF X‘0081’—Access to Information Management

FUNCTION:	Defines user’s access to Information Management
SXCTL FIELD:	infoMgtAccess
KEY:	X‘0081’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether the user ID has access to Information Management. Valid values are Y or N. If omitted, the default is Y.

SF X‘0090’—Access to NCPView

FUNCTION:	Defines user’s access to CA NetMaster NM for SNA NCPView
SXCTL FIELD:	ncpviewAccess
KEY:	X‘0090’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘’

This field defines whether a user ID has access to NCPView. Valid values are 0 (not authorized to access NCPView), and 1 (authorized to browse).

This field is ignored if the user ID has not been given access privileges to Network Management (that is, if the user ID does not have structured field key X‘0022’).

SF X'0100'—CA SOLVE:FTS Definition Privilege

FUNCTION:	Defines CA SOLVE:FTS definition privilege
SXCTL FIELD:	ftsDefinition
KEY:	X'0100'
SUBFIELD COUNT:	X'0001'
SUBFIELD 1 LENGTH:	X'0001'
SUBFIELD 1 DATA:	CL1' '

A user who is privileged for CA SOLVE:FTS access can be authorized to create file transmission definitions. This field defines the user definition privilege. Valid values for the subfield data are P or S, indicating private or system definition privilege. If this field is omitted or specifies an invalid value, no definition privilege is assigned.

This field is ignored if the user ID has not been assigned CA SOLVE:FTS access by the earlier processing of field X'0025'.

SF X'0101'—CA SOLVE:FTS Private Request Privilege

FUNCTION:	Defines CA SOLVE:FTS private request privilege
SXCTL FIELD:	ftsPrivateReq
KEY:	X'0101'
SUBFIELD COUNT:	X`0001'
SUBFIELD 1 LENGTH:	X'0001'
SUBFIELD 1 DATA:	CL1'-'

A user who is privileged for CA SOLVE:FTS access can be authorized to request execution of private file transmissions. This field defines the user private request privilege. Valid values for the subfield data are Y or N. If this field is omitted or specifies an invalid value, no private request privilege is assigned.

This field is ignored if the user ID has not been assigned CA SOLVE:FTS access by the earlier processing of field X'0025'.

SF X'0102'—CA SOLVE:FTS System Request Privilege

FUNCTION:	Defines CA SOLVE:FTS system request privilege
SXCTL FIELD:	ftsSystemReq
KEY:	X'0102'
SUBFIELD COUNT:	X'0001'
SUBFIELD 1 LENGTH:	X'0001'
SUBFIELD 1 DATA:	CL1' '

A user who is privileged for CA SOLVE:FTS access can be authorized to request execution of system file transmissions. This field defines the user system request privilege. Valid values for the subfield data are Y or N. If this field is omitted or specifies an invalid value, no system request privilege is assigned.

This field is ignored if the user ID has not been assigned CA SOLVE:FTS access by the earlier processing of field X'0025'.

SF X'0103'—CA SOLVE:FTS Private Control Privilege

FUNCTION:	Defines CA SOLVE:FTS private control privilege
SXCTL FIELD:	ftsPrivateCtl
KEY:	X'0103'
SUBFIELD COUNT:	X'0001'
SUBFIELD 1 LENGTH:	X'0001'
SUBFIELD 1 DATA:	CL1' '

A user who is privileged for CA SOLVE:FTS access can be authorized to supervise (control) execution of private file transmissions. This field defines the private control privilege of the user. Valid values for the subfield data are Y or N. If this field is omitted or specifies an invalid value, no private control privilege is assigned.

This field is ignored if the user ID has not been assigned CA SOLVE:FTS access by the earlier processing of field X'0025'.

SF X'0104'—CA SOLVE:FTS System Control Privilege

FUNCTION:	Defines CA SOLVE:FTS system control privilege
SXCTL FIELD:	ftsSystemCtl
KEY:	X'0104'
SUBFIELD COUNT:	X'0001'
SUBFIELD 1 LENGTH:	X'0001'
SUBFIELD 1 DATA:	CL1' '

A user who is privileged for CA SOLVE:FTS access can be authorized to supervise (control) execution of system file transmissions. This field defines the system control privilege of the user. Valid values for the subfield data are Y or N. If this field is omitted or specifies an invalid value, no system control privilege is assigned.

This field is ignored if the user ID has not been assigned CA SOLVE:FTS access by the earlier processing-of field X'0025'.

SF X'0105'—CA SOLVE:FTS Private Function Mask

FUNCTION:	Defines CA SOLVE:FTS private function mask
SXCTL FIELD:	ftsPvtFctMask
KEY:	X'0105'
SUBFIELD COUNT:	X'0001'
SUBFIELD 1 LENGTH:	X'000C'
SUBFIELD 1 DATA:	CL12' '

A user who is privileged for CA SOLVE:FTS access can be authorized to define, control, or request execution of private file transmissions. CA SOLVE:FTS provides a mechanism by which users can be restricted to a range of transmission definition names. This mechanism takes the form of a 12-character access mask.

This field defines the private access mask of the user. The subfield data must be left justified and blank-padded to form 12 characters if necessary. Embedded blanks cause truncation. If this subfield is specified as blank, or this structured field is omitted, the mask defaults to the user ID name.

This field is ignored if the user ID has not been assigned CA SOLVE:FTS access by the earlier processing of field X'0025'.

SF X'0106'—CA SOLVE:FTS System Function Mask

FUNCTION:	Defines CA SOLVE:FTS system function mask
SXCTL FIELD:	ftsSysFctMask
KEY:	X'0106'
SUBFIELD COUNT:	X'0001'
SUBFIELD 1 LENGTH:	X1000C'
SUBFIELD 1 DATA:	CL12' '

A user who is privileged for CA SOLVE:FTS access can be authorized to define, control, or request execution of system file transmissions. CA SOLVE:FTS provides a mechanism by which users can be restricted to a range of transmission definition names. This mechanism takes the form of a 12-character access mask.

This field defines the system access mask of the user. The subfield data must be left justified and blank padded to form 12 characters if necessary. Embedded blanks cause truncation. If this subfield is specified as blank, or this structured field is omitted, the mask defaults to the string C'*'.

This field is ignored if the user ID has not been assigned CA SOLVE:FTS access by the earlier processing of field X'0025'.

SF X‘0150’—NEWS Reset Privilege

FUNCTION:	Defines CA NetMaster NM for SNA NEWS reset privilege
SXCTL FIELD:	newsReset
KEY:	X‘0150’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

A user who has NEWS access can be authorized to reset (delete) database records. Valid values are Y or N. The default is N.

Specifying Y in this field enables the user to reset statistics within the Summary Statistics Subsystem. The setting results in the &NEWSRSET system variable being set to YES when tested within an NCL procedure that the user invokes.

This field is ignored if the user ID has not been given access privileges to Network Management and to NEWS (that is, if the user ID does not have structured field keys X‘0022’ and X‘0026’).

SF X‘0151’—NTS Access Privilege

FUNCTION:	Defines CA NetMaster NM for SNA NTS access privilege
SXCTL FIELD:	ntsAccess
KEY:	X‘0151’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether a user can access the facilities of the Network Tracking System. Valid values are Y or N. The default is N.

This field is ignored if NTS is not configured on your system.

This field is ignored if the user ID has not been given access privileges to Network Management (that is, if the user ID does not have structured field key X‘0022’).

SF X‘0180’—AOM Message Delivery and Routing Codes

FUNCTION:	Defines user’s AOM message delivery and routing codes
SXCTL FIELD:	aomMsgDeliveryRC
KEY:	X‘0180’
SUBFIELD COUNT:	X‘0002’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’
SUBFIELD 2 LENGTH:	X‘0010’ or X’0002’
SUBFIELD 2 DATA:	BL16‘ ’

This field defines whether a user ID is entitled to receive AOM messages.

Subfield 1 indicates if the user is entitled to receive AOM messages while in OCS mode. The value must be Y or N. Invalid values are treated as N.

Subfield 2 is a 128-bit mask that indicates the routing codes for which the user is entitled to receive messages. The mask contains 128 bits, which are used to represent routing codes 1 through 128 inclusive, from left to right. All 16 bytes are supported, providing routing codes 1 through 128.

For example, code the value of subfield 2 as X’8200000000000000’ to indicate that the user is authorized for routing codes 1 and 7. The binary equivalent of X’8200000000000000’ is B’10000010...0000’, which has the 1 bit on for routing codes 1 and 7 (reading from left to right).

SF X‘0181’—AOM MVS SYSCMD Console Authority

FUNCTION:	Defines user’s AOM SYSCMD console authority for z/OS systems
SXCTL FIELD:	aomSyscmdConAuth
KEY:	X‘0181’
SUBFIELD COUNT:	X‘0004’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’
SUBFIELD 2 LENGTH:	X‘0001’
SUBFIELD 2 DATA:	CL1‘ ’
SUBFIELD 3 LENGTH:	X‘0001’
SUBFIELD 3 DATA:	CL1‘ ’
SUBFIELD 4 LENGTH:	X‘0001’
SUBFIELD 4 DATA:	CL1‘ ’

This field defines the console and command authority for AOM SYSCMD on z/OS systems for a user ID.

The following description is for each of the subfields of this structured field:

- SUBFIELD 1—AOM MVS SYSCMD Console Authority level. The only values for the subfield are:

I	Information only console
M	Master console
P	Pseudo-master console
C	Subfields 2 to 4 indicate the console command authority for this user ID

  Any other values in this subfield are ignored.
- SUBFIELD 2—authority to issue SYSTEM commands
- SUBFIELD 3—authority to issue IO commands
- SUBFIELD 4—authority to issue CONSOLE commands

For subfields 2 through 4, you can only enter Y or N. If a field is omitted or invalid, N is the default.

SF X‘0182’—AOM MSG Level

FUNCTION:	Defines user’s AOM MSG level
SXCTL FIELD:	aomMsgLevel
KEY:	X‘0182’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	B‘*xxxxxx*00’

This field defines the 8-bit mask describing the MSG level for the user ID. Valid bit settings are as follows:

1... .... Receive WTORs

.1.. .... Receive Immediate Action

..1. .... Receive Critical Eventual Action

...1 .... Receive Eventual Action

.... 1... Receive Informational

.... .1.. Receive Console Broadcasts

.... ..11 Reserved

SF X‘0183’—AOM z/VM SYSCMD Authority

FUNCTION:	Defines user’s AOM SYSCMD authority for z/VM systems
SXCTL FIELD:	aomVmSyscmdAuth
KEY:	X‘0183’
SUBFIELD COUNT:	X‘0002’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’
SUBFIELD 2 LENGTH:	X‘0001’
SUBFIELD 2 DATA:	CL1‘ ’

This field defines the AOM SYSCMD authority on z/VM systems for a user ID.

The first subfield controls whether the user is authorized to issue SYSCMD DEST=PROP. Valid values are Y or N. Invalid values are treated as N.

The second subfield controls whether the user is authorized to issue SYSCMD DEST=GCS. Valid values are Y or N. Invalid values are treated as N.

AOM on z/OS systems ignores this structured field. This feature allows for a shared security profile z/OS and z/VM systems.

SF X‘0185’—AOM VOS3/JSS4 SYSCMD Command Authority

FUNCTION:	Defines user’s AOM SYSCMD command authority for VOS3/JSS4 systems
KEY:	X‘0185’
SUBFIELD COUNT:	X‘000’
SUBFIELD 1 LENGTH:	X‘0001’ or X‘0002’
SUBFIELD 1 DATA:	CL1‘*n* ’ or CL2‘*nn*’

This field provides the VOS3/JSS4 command authority level for SYSCMD. It is ignored by AOM when not in a VOS3/JSS4 environment. This allows shared security profile across all systems.

Note: The UAMS panel that displays AOM SYSCMD authority always shows this field and allows update. The field is not used by SYSCMD unless the system is actually VOS3/JSS4.

SF X‘0200’—MAI-FS Privilege Class

FUNCTION:	Defines user’s CA SOLVE:Access MAI-FS privilege class
SXCTL FIELD:	maiFsPrivClass
KEY:	X‘0200’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines the MAI-FS privilege class for the user ID. Valid values are A, B, C, or D. If this field is omitted, the default is D (at user logon).

SF X‘0201’—MAI-FS Model User ID

FUNCTION:	Defines user’s CA SOLVE:Access MAI-FS model user ID
SXCTL FIELD:	maiFsModelUserID
KEY:	X‘0201’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’

This field supplies an MAI-FS user ID on whose stored session definitions this user ID is to be modeled. If this field is omitted, the field is left blank.

SF X‘0202’—MAI-FS A and E Command Capability

FUNCTION:	Defines user’s CA SOLVE:Access MAI-FS A and E command capability
SXCTL FIELD:	maiFsAEcmdAuth
KEY:	X‘0202’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field specifies whether a user is entitled to use the A and E commands. Valid values are Y and N. If this field is omitted, the default is N.

SF X‘0203’—MAI-FS Active Session Limit

FUNCTION:	Defines user’s CA SOLVE:Access MAI-FS Active Session Limit
SXCTL FIELD:	maiFsActSesLimit
KEY:	X‘0203’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL3‘ ’

This field determines whether a user is limited in the number of sessions that they can have active at the same time. Possible values are 0 through 255. A value of 0 indicates that no limit applies. This value is the default when this field is omitted.

SF X‘0500’—PSM Primary Menu Access

FUNCTION:	Defines user’s PSM primary menu access
SXCTL FIELD:	psmPrimaryMenu
KEY:	X‘0500’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field indicates whether the user is authorized to access the PSM : Primary Menu. Valid values are 0 (not authorized) and 1 (authorized). If this field is omitted, the default is 1 (authorized).

SF X‘0501’—PSM Maintenance Access

FUNCTION:	Defines user’s PSM maintenance access
SXCTL FIELD:	psmMaintenance
KEY:	X‘0501’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines the level of access a user has to PSM printer, form, and setup definitions, and to default printer assignment. Valid values are 0 (not authorized), 1 (browse access only), 2 (browse, add, and update access), and 3 (browse, add, update, and delete access). If this field is omitted, the default is 1 (browse).

SF X‘0502’—PSM Administration Access

FUNCTION:	Defines user’s PSM administration access
SXCTL FIELD:	psmAdmin
KEY:	X‘0502’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines the level of access a user has to PSM administration functions. Valid values are 0 (not authorized), 1 (browse, and update default definitions), 2 (browse and update default definitions, and clear the spool). If this field is omitted, the default is 0 (not authorized).

SF X‘0503’—PSM Ability to Change Print Request Priority

FUNCTION:	Defines user’s PSM ability to change print request priority
SXCTL FIELD:	psmChgPrintReq
KEY:	X‘0503’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines the ability of a user to change the priority for a PSM print request. Valid values are 0 (not authorized), and 1 (authorized). If this field is omitted, the default is 0 (not authorized).

SF X‘0504’—PSM Queue Access for All Print Output

FUNCTION:	Defines user’s PSM queue access for all print output
SXCTL FIELD:	psmAllPrintAcc
KEY:	X‘0504’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines a user’s queue access to the PSM print output of other users. The following values are valid:

- 0 (not authorized to view the output queue for other users)
- 1 (authorized to view the output queue for other users)
- 2 (authorized to browse other user output)
- 3 (authorized to browse, modify, and release other user output)
- 4 (authorized to browse, modify, release, hold, and delete other user output)

If this field is omitted, the default is 1.

SF X‘0505’—PSM Queue Access for Their Own Print Output

FUNCTION:	Defines user’s PSM queue access for their own print output
SXCTL FIELD:	psmOwnPrintAcc
KEY:	X‘0505’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines the user’s queue access to their own PSM print output. The following values are valid:

- 0 (not authorized to view their output queue)
- 1 (authorized to view their output queue)
- 2 (authorized to browse their output)
- 3 (authorized to browse, modify, and release their output)
- 4 (authorized to browse, modify, release, hold, and delete their output)

If this field is omitted, the default is 4.

SF X‘0510’—Panel Command Access Authority

FUNCTION:	Defines user’s panel command access authority
SXCTL FIELD:	panelCmdAccAuth
KEY:	X‘0510’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether a user is entitled to enter EXEC or CMD in the COMMAND ===> and Select Option ===> input fields on panels. Valid values are Y and N. The default is N. If the user has OCS authority, this field is automatically set to Y and cannot be altered.

SF X‘0511’—Administration and Definition Access

FUNCTION:	Defines user’s security and system services access
SXCTL FIELD:	sysServicesAcc
KEY:	X‘0511’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field indicates whether the user has access to security and system services functions (that is, UAMS, Broadcast Services, System Support Services). Valid values are Y and N. The default is N.

SF X‘0520’—Notification Details (First Rule)

FUNCTION:	Defines user’s notification details (first rule)
SXCTL FIELD:	notificationR1
KEY:	X‘0520’
SUBFIELD COUNT:	X‘0008’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’
SUBFIELD 2 LENGTH:	X‘0004’
SUBFIELD 2 DATA:	CL4‘ ’
SUBFIELD 3 LENGTH:	X‘0007’
SUBFIELD 3 DATA:	CL7‘ ’
SUBFIELD 4 LENGTH:	X‘0004’
SUBFIELD 4 DATA:	CL4‘ ’
SUBFIELD 5 LENGTH:	X‘0004’
SUBFIELD 5 DATA:	CL4‘ ’
SUBFIELD 6 LENGTH:	X‘0020’
SUBFIELD 6 DATA:	CL32‘ ’
SUBFIELD 7 LENGTH:	X‘0008’
SUBFIELD 7 DATA:	CL8‘ ’
SUBFIELD 8 LENGTH:	X‘0040’
SUBFIELD 8 DATA:	CL64‘ ’

This field defines the mode or method by which the user is notified of an event that the user has been nominated to receive. Various applications use these notification details. Broadcast Services also supports the use of the UAMS Notification Details when sending a broadcast to a specific user using the N option.

This structured field has multiple subfields containing the following information:

SUBFIELD 1—Notification Mode
SUBFIELD 2—Notification Domain
SUBFIELD 3—Day of Notification
SUBFIELD 4—Low Time
SUBFIELD 5—High Time
SUBFIELD 6—User ID
SUBFIELD 7—Exit Name
SUBFIELD 8—Parameters

If omitted, the fields are left blank.

SF X‘0521’—Notification Details (Second Rule)

FUNCTION:	Defines user’s notification details (second rule)
SXCTL FIELD:	notificationR2
KEY:	X‘0521’
SUBFIELD COUNT:	X‘0008’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’
SUBFIELD 2 LENGTH:	X‘0004’
SUBFIELD 2 DATA:	CL4‘ ’
SUBFIELD 3 LENGTH:	X‘0007’
SUBFIELD 3 DATA:	CL7‘ ’
SUBFIELD 4 LENGTH:	X‘0004’
SUBFIELD 4 DATA:	CL4‘ ’
SUBFIELD 5 LENGTH:	X‘0004’
SUBFIELD 5 DATA:	CL4‘ ’
SUBFIELD 6 LENGTH:	X‘0020’
SUBFIELD 6 DATA:	CL32‘ ’
SUBFIELD 7 LENGTH:	X‘0008’
SUBFIELD 7 DATA:	CL8‘ ’
SUBFIELD 8 LENGTH:	X‘0040’
SUBFIELD 8 DATA:	CL64‘ ’

This field defines the mode or method by which the user is notified of an event that the user has been nominated to receive. Various applications use these notification details. Broadcast Services also supports the use of the UAMS Notification Details when sending a broadcast to a specific user using the N option.

This structured field has multiple subfields containing the following information:

SUBFIELD 1—Notification Mode
SUBFIELD 2—Notification Domain
SUBFIELD 3—Day of Notification
SUBFIELD 4—Low Time
SUBFIELD 5—High Time
SUBFIELD 6—User ID
SUBFIELD 7—Exit Name
SUBFIELD 8—Parameters

If omitted, the fields are left blank.

SF X‘0522’—Notification Details (Third Rule)

FUNCTION:	Defines user’s notification details (third rule)
SXCTL FIELD:	notificationR3
KEY:	X‘0522’
SUBFIELD COUNT:	X‘0008’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’
SUBFIELD 2 LENGTH:	X‘0004’
SUBFIELD 2 DATA:	CL4‘ ’
SUBFIELD 3 LENGTH:	X‘0007’
SUBFIELD 3 DATA:	CL7‘ ’
SUBFIELD 4 LENGTH:	X‘0004’
SUBFIELD 4 DATA:	CL4‘ ’
SUBFIELD 5 LENGTH:	X‘0004’
SUBFIELD 5 DATA:	CL4‘ ’
SUBFIELD 6 LENGTH:	X‘0020’
SUBFIELD 6 DATA:	CL32‘ ’
SUBFIELD 7 LENGTH:	X‘0008’
SUBFIELD 7 DATA:	CL8‘ ’
SUBFIELD 8 LENGTH:	X‘0040’
SUBFIELD 8 DATA:	CL64‘ ’

This field defines the mode or method by which the user is notified of an event that the user has been nominated to receive. Various applications use these notification details. Broadcast Services also supports the use of the UAMS Notification Details when sending a broadcast to a specific user using the N option.

This structured field has multiple subfields containing the following information:

SUBFIELD 1—Notification Mode
SUBFIELD 2—Notification Domain
SUBFIELD 3—Day of Notification
SUBFIELD 4—Low Time
SUBFIELD 5—High Time
SUBFIELD 6—User ID
SUBFIELD 7—Exit Name
SUBFIELD 8—Parameters

If omitted, the fields are left blank.

SF X‘0523’—Notification Details (Fourth Rule)

FUNCTION:	Defines user’s notification details (fourth rule)
SXCTL FIELD:	notificationR4
KEY:	X‘0523’
SUBFIELD COUNT:	X‘0008’
SUBFIELD 1 LENGTH:	X‘0008’
SUBFIELD 1 DATA:	CL8‘ ’
SUBFIELD 2 LENGTH:	X‘0004’
SUBFIELD 2 DATA:	CL4‘ ’
SUBFIELD 3 LENGTH:	X‘0007’
SUBFIELD 3 DATA:	CL7‘ ’
SUBFIELD 4 LENGTH:	X‘0004’
SUBFIELD 4 DATA:	CL4‘ ’
SUBFIELD 5 LENGTH:	X‘0004’
SUBFIELD 5 DATA:	CL4‘ ’
SUBFIELD 6 LENGTH:	X‘0020’
SUBFIELD 6 DATA:	CL32‘ ’
SUBFIELD 7 LENGTH:	X‘0008’
SUBFIELD 7 DATA:	CL8‘ ’

SUBFIELD 8 LENGTH:	X‘0040’
SUBFIELD 8 DATA:	CL64‘ ’

This field defines the mode or method by which the user is notified of an event that the user has been nominated to receive. Various applications use these notification details. Broadcast Services also supports the use of the UAMS Notification Details when sending a broadcast to a specific user using the N option.

This structured field has multiple subfields containing the following information:

SUBFIELD 1—Notification Mode
SUBFIELD 2—Notification Domain
SUBFIELD 3—Day of Notification
SUBFIELD 4—Low Time
SUBFIELD 5—High Time
SUBFIELD 6—User ID
SUBFIELD 7—Exit Name
SUBFIELD 8—Parameters

If omitted, the fields are left blank.

SF X‘0530’—TCP/IP Services Access Privilege

FUNCTION:	Defines a user’s TCP/IP Services authority level.
SXCTL FIELD:	tcpipSvcsAccess
KEY:	X‘0530’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines the authority level for a user using TCP/IP Services. Valid values are 0 (not authorized to access TCP/IP Services), 1 (browse only authority), and 2 (full update authority which is necessary to: run Obeyfiles, drop connections, perform packet tracing, start and stop devices, and use the SNMP Set option). If omitted, the default is 0.

This field is ignored if the user ID has not been given access privileges to Network Management (that is, if the user ID does not have structured field key X‘0022’).

SF X‘0550’—Report Writer Primary Menu Access

FUNCTION:	Defines user’s Report Writer primary menu access
SXCTL FIELD:	repWriterPriMenu
KEY:	X‘0550’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether a user ID is authorized to access the Report Writer primary menu. Valid values are 0 (not authorized), and 1 (authorized). If omitted, the default is 1.

SF X‘0551’—Report Writer Administration Access

FUNCTION:	Defines user’s Report Writer administration access
SXCTL FIELD:	repWriterAdmin
KEY:	X‘0551’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether a user ID is authorized to access Report Writer table maintenance administration functions. Valid values are 0 (not authorized), and 1 (authorized). If omitted, the default is 0.

SF X‘0552’—Report Writer Maintenance Access

FUNCTION:	Defines user’s Report Writer maintenance access
SXCTL FIELD:	repWriterMaint
KEY:	X‘0552’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether a user is authorized to access the Report Writer report definition menu. Valid values are 0 (not authorized for menu access), and 1 (menu access authorized). If omitted, the default is 1.

SF X‘0553’—Report Writer Public Report Access

FUNCTION:	Defines user’s Report Writer public report access
SXCTL FIELD:	repWriterPublic
KEY:	X‘0553’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines the level of access a user ID has to public reports. The following values are valid:

- 0 (not authorized)
- 1 (authorized to generate, browse, and copy)
- 2 (authorized to generate, browse, copy, add, and update)
- 3 (authorized to generate, browse, copy, add, update, and delete)

If omitted, the default is 1.

SF X‘0554’—Report Writer Access to Their Own Reports

FUNCTION:	Defines user’s Report Writer access to their own reports
SXCTL FIELD:	repWriterOwn
KEY:	X‘0554’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines the level of access a user ID has to their own reports. The following values are valid:

- 0 (not authorized)
- 1 (authorized to generate, browse, and copy)
- 2 (authorized to generate, browse, copy, add, and update)
- 3 (authorized to generate, browse, copy, add, update, and delete)

If omitted, the default is 3.

SF X‘0555’—Report Writer Private Report Access for All Users

FUNCTION:	Defines user’s Report Writer private report access for all users
SXCTL FIELD:	repWriterAll
KEY:	X‘0555’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines the level of access a user ID has to private reports for all users. The following values are valid:

- 0 (not authorized)
- 1 (authorized to generate, browse, and copy)
- 2 (authorized to generate, browse, copy, add, and update)
- 3 (authorized to generate, browse, copy, add, update, and delete)

If omitted, the default is 0.

SF X‘0556’—Report Writer Schedule Maintenance Access

FUNCTION:	Defines user’s Report Writer schedule maintenance access
SXCTL FIELD:	repWriterSchdMnt
KEY:	X‘0556’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines the level of access a user ID has to Report Writer schedule definitions. The following values are valid:

- 0 (not authorized)
- 1 (authorized to browse)
- 2 (authorized to browse, add, and update)
- 3 (authorized to generate, browse, add, update, and delete)
- 4 (authorized for the Stop and Start functions of the schedule processing)

If omitted, the default is 1.

SF X‘0580’—Access to CA SOLVE:NetMail

FUNCTION:	Defines user’s access to CA SOLVE:NetMail (Electronic Mail field)
SXCTL FIELD:	netmailAccess
KEY:	X‘0580’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether a user ID has access to CA SOLVE:NetMail. Valid values are Y or N. If omitted, the default is N.

SF X‘0601’—Access to Managed Objects Development Services (MODS)

FUNCTION:	Defines user’s access to Managed Objects Development Services (MODS)
SXCTL FIELD:	modsAcc
KEY:	X‘0601’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether a user ID has access to MODS. Valid values are Y or N. If omitted, the default is N.

SF X‘0605’—Object Services Access

FUNCTION:	Defines user’s access to Object Services
SXCTL FIELD:	osAcc
KEY:	X‘0605’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether a user ID has access to Object Services support functions. Valid values are Y or N. If omitted, the default is N.

SF X‘0609’—Object Services Security Access

FUNCTION:	Defines user’s security access to Object Services
SXCTL FIELD:	osSecAcc

KEY:	X‘0609’
SUBFIELD COUNT:	X‘0001’
SUBFIELD 1 LENGTH:	X‘0001’
SUBFIELD 1 DATA:	CL1‘ ’

This field defines whether a user ID has access to Object Services. Valid values are Y or N. If omitted, the default is N.

Appendix D: User ID Security Exit Support

This section contains the following topics:

External Security Packages

External security packages such as CA ACF2 or RACF can provide minimal or full security checking.

If your organization has an external security package, access to that package is provided through one of the following types of exit:

- Partial security exit—password and logon access maintenance is controlled by the external security package while UAMS stores the user definitions.
- Full security exit—all security functions are maintained and stored by your external security package.

Sample Exits

The following sample security exits are provided:

CCACF2FX

Is a full security exit for CA ACF2.

CCRACFFX

Is a full security exit for RACF.

NMSAFPX

Is a SAF partial security exit.

Sample exits are in the following libraries:

- The SMP target zone library, *dsnpref*.*pvpref*.CC2DSAMP, where:
  - *dsnpref* is your site-specific data set name prefix
  - *pvpref* is your product version prefix
  - CC2DSAMP is the data set for all products
- The SMP distribution zone library, *dsnpref*.*pvpref*.AC2SAMP, where:
  - *dsnpref* is your site-specific data set name prefix.
  - *pvpref* is your product version prefix.
  - AC2DSAMP is the data set for all products.

Note: The SMP target zone is updated when you SMP APPLY maintenance, whereas the SMP distribution zone is updated only when you subsequently SMP ACCEPT the maintenance. To ensure that you include all applied maintenance, it is recommended that you use the member in the SMP target zone (*dsnpref*.*pvpref*.CC2DSAMP).

Note: On z/VM systems, these exits are on the *vmid* 193 C-disk.

More information:

Product Libraries (see page 17)

NMSAFPX Partial Security Exit

The NMSAFPX partial security exit is a SAF-based security exit that supports UTOKENS. SAF is the IBM System Authorization Facility and is the agreed standard for the encoding of requests that require security checking.

Note: SAF is documented in IBM's *Security Server RACROUTE Macro Reference* manual. See the documentation for your security package to find out whether the package supports SAF-formatted calls.

You can make a copy of NMSAFPX and change it to suit your requirements. To assemble and link your exit, use the sample JCL member NMSAFPXL, which is in the same data set as the NMSAFPX sample exit.

The load module created by the link-edit step should be placed in the load library, or in another library concatenated to the load library through the STEPLIB DD statement in the started task JCL. Change the JCL parameters to include SEC=*name*, where *name* identifies the load module. This causes the security exit to be used.

Note: The supplied SEC=PARTSAF option is functionally equivalent to the NMSAFPX sample.

How You Write Your Own User ID Security Exit

The security exit is coded as an assembler language module, or suite of modules. These modules must be able to:

- Accept the various parameter lists passed to it
- Return the designated return codes associated with those parameter lists

When the exit has been written, you link it into a standalone load module. The name of this load module is arbitrary (for example, MYEXIT). The load module is placed in an APF authorized library or another library concatenated to the load library in the JCL STEPLIB DD statement. Change the JCL parameters to include SEC=*name*, where *name* identifies the load module (for example, SEC=MYEXIT).

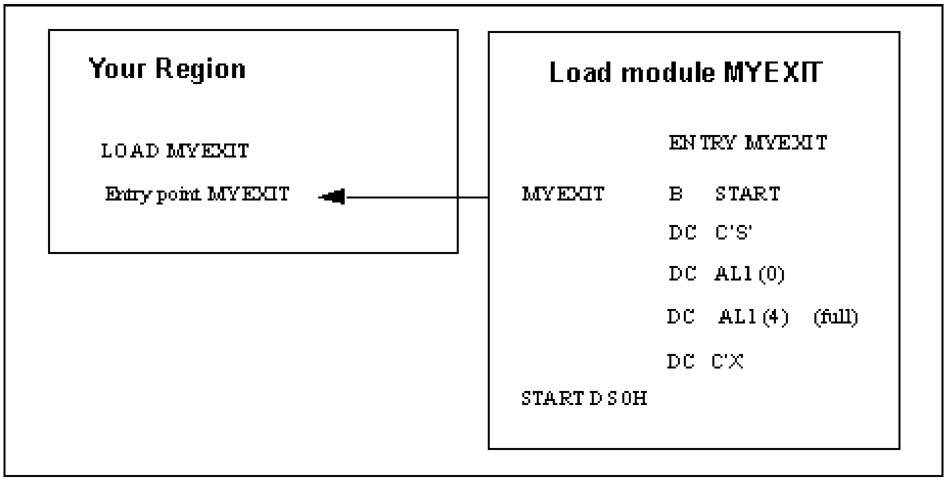
Your region determines the type (partial or full security) of exit being provided by examining the data at the entry point of the exit load module.

The entry point of the security exit load module must look like the following code:

```
ENTRY  B    SKIP-ENTRY(,R15)   Skip descriptor
       DC   C’S’               Required, constant ’S’
       DC   AL1 (0)            Required, interface version,
       DC   AL1 (type)         Required, exit type,
                                         0: partial
                                         4: full
       DC   C’X’               Required, constant ’X’
```

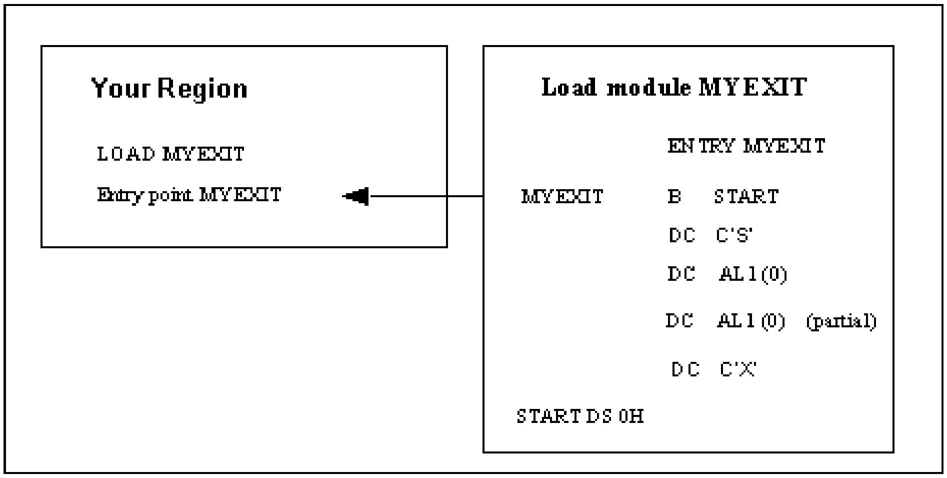
The security exit can be AMODE 24 or 31, and RMODE 24 or ANY. All data areas and parameter lists passed to it are located in storage below 16M.

This diagram shows how a region loads and identifies a full security exit and how your region locates the entry point of the exit’s code.



```
            ENTRY MYEXIT
MYEXIT      B    START
            DC   C'S'
            DC   AL1 (0)
            DC   AL1 (4)   (full)
            DC   C'X
START DS 0H
```

This diagram shows how a region loads and identifies a partial security exit and how your region locates the entry point of the exit’s code.



```
            ENTRY MYEXIT
MYEXIT      B    START
            DC   C'S'
            DC   AL1 (0)
            DC   AL1 (0)   (partial)
            DC   C'X'
START DS 0H
```

Exit Execution

The exit executes within an operating system subtask and can therefore issue WAITs or SVCs that suspend the task without affecting the primary task.

Note: In z/OS systems, the subtask is attached sharing subpool 50 with the main task. This allows other exits (which also use subpool 50) to share common storage areas with the security exit.

Calls to the exit are serialized across the system—if one call to the exit is in progress, any subsequent calls are queued and processed one-by-one, in request order. Serial request processing means that the exit does not have to be written as reentrant.

The exit is called for two reasons:

- Information—to keep the security system informed of developments or system changes
- Function request—to request that a function be performed

Important! If an abend occurs in the exit and the requested function cannot be performed it is regarded as a security exposure and the region terminates with the internal abend 268-01.

Supported Exit Calls

The following table lists the calls supported by the exit, their type, and their function codes:

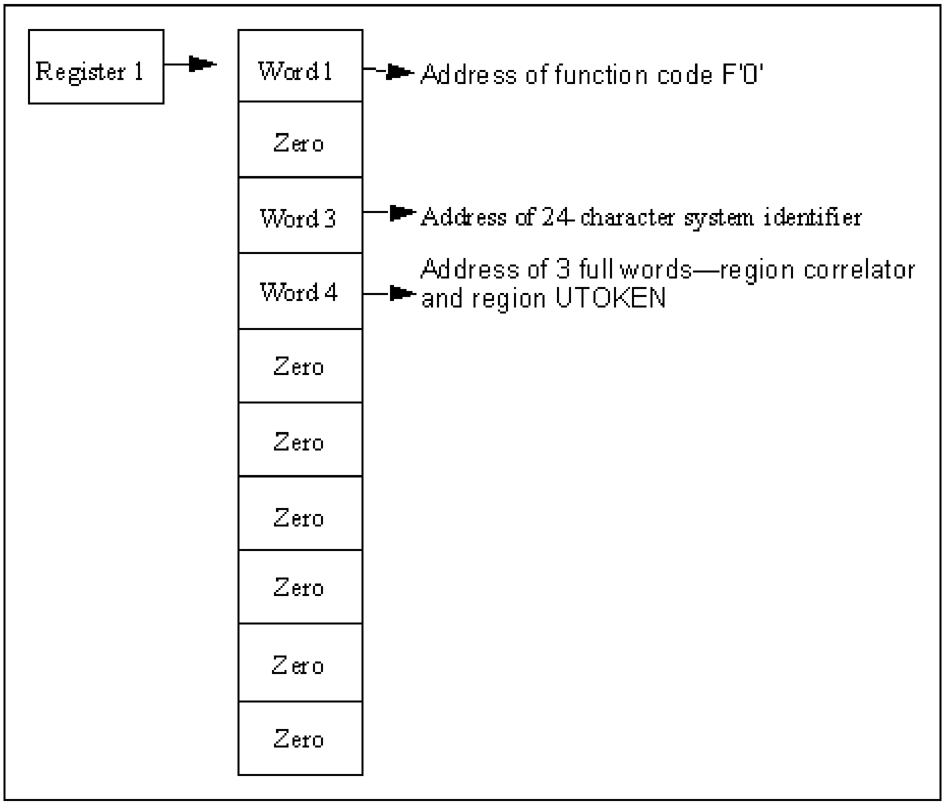
Call	Type	Function Code
System Initialization	information	0
System Close Down	information	4
User Logon Request	function request	8
User Logoff Request	information	12
Logon Verification	function request	16
Change Password	function request	20
Return User ID Information	function request	24
Update User ID	function request	28
&SECCALL EXIT	function request	32
Return Sequential User ID Information	function request	36

Call	Type	Function Code
Add User ID	function request	40
Delete User ID	function request	44

The following sections provide the parameter lists for each call.

System Initialization Parameter List

On entry to the security exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'0'
Zero
Word 3
Address of 24 character system identifier
Word 4
Address of 3 full words—region correlator and region UTOKEN
Zero
Zero
Zero
Zero
Zero
Zero

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F‘0’.

Word 2

Is set to zero.

Word 3

Is a 24-character area containing the following:

- The eight-character primary ACB name field (padded to the right with blanks if necessary). The primary ACB name is as specified on the PRI JCL initialization parameter.
- Four blanks
- The four-character system domain ID as coded on the NMDID initialization parameter. If the NMDID parameter is omitted, the domain ID defaults to one of the following values:
  - The first four characters of the primary ACB name used by your region (blank padded if necessary)
  - The ACB name itself if less than five characters long.
- The four-character system user prefix as coded on the NMSUP initialization parameter. If not coded, the value defaults to the NMDID value.
- The four-character product version, for example, V5.1.

These characters are passed to the exit to identify the region that is executing and can be regarded as the user ID of the system. The exit can use this value to determine whether, for example, it is a production region.

Word 4

Is the address of two full words:

- First word can contain any value. This value is returned in the system closedown call, so it can be used as a region correlator. The exit can use this word to relate this region to a set of control blocks or other information maintained by the exit in relation to the region.
- Second word is the region user token (UTOKEN) if one is available.

Words 5 through 10

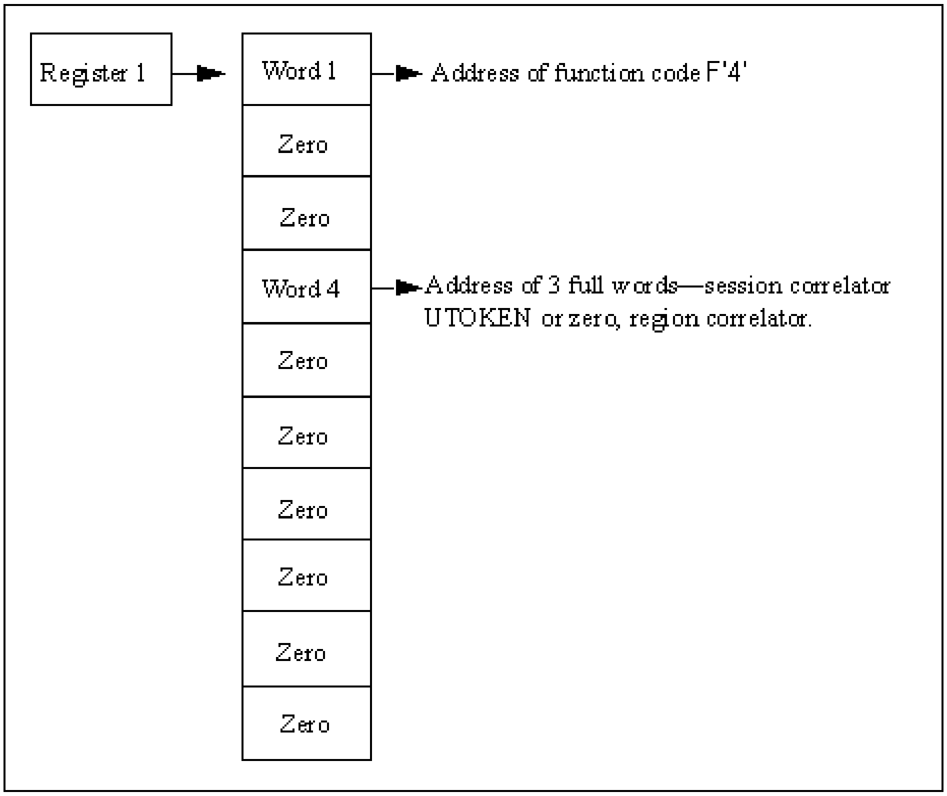
Are set to zeros.

Return Codes from Initialization Call

The exit must return a completion code in Register 15 on return. Successful initialization must be signified by return code F‘0’. Your product region terminates if any other value is returned in Register 15 on completion of this call.

System Close Down Parameter List

On entry to the security exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'4'
Zero
Zero
Word 4
Address of 3 full words—session correlator UTOKEN or zero, region correlator.
Zero
Zero
Zero
Zero
Zero
Zero

The contents of the parameter list as follows:

Word 1

Is a fullword containing the address of function code F‘4’.

Words 2 and 3

Are set to zeros.

Word 4

Is the address of three full words, each containing the information that was passed on the system initialization call.

Words 5 through 10

Are set to zeros.

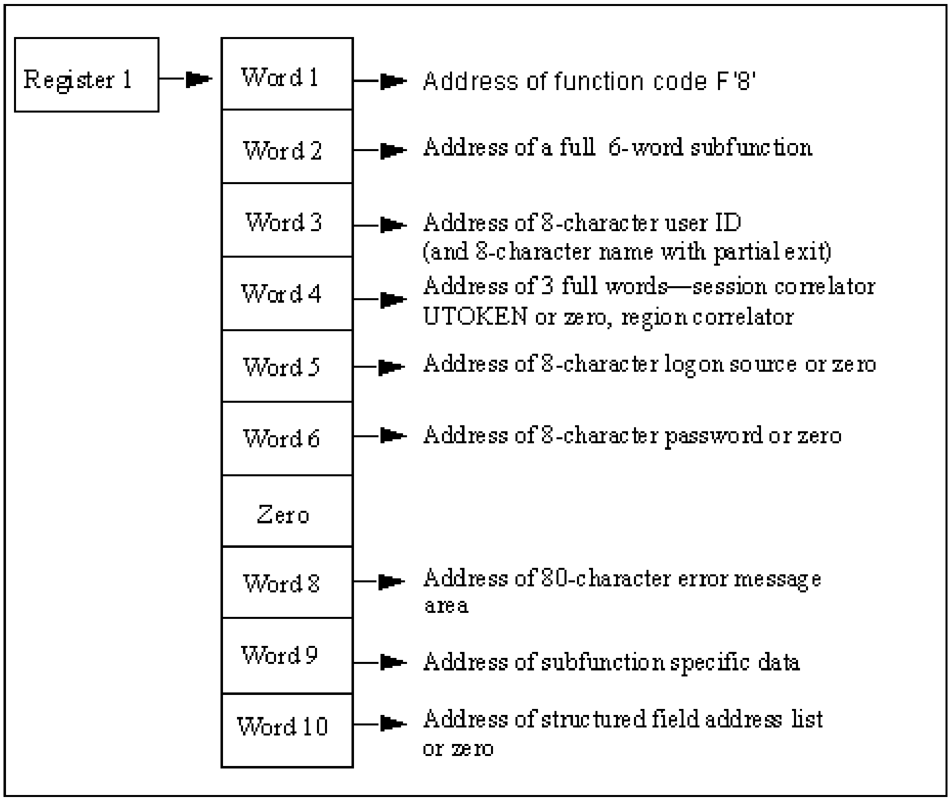
The processing associated with this call depends upon the environment maintained by the exit, but can include closing any data sets used by the exit.

Return Codes from Closedown Call

The exit must return a completion code in Register 15 on return. Successful processing of the close down call must be signified by return code F‘0’.

Logon Request Parameter List

On entry to the security exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'8'
Word 2
Address of a full 6-word subfunction
Word 3
Address of 8-character user ID
(and 8-character name with partial exit)
Word 4
Address of 3 full words—session correlator
UTOKEN or zero, region correlator
Word 5
Address of 8-character logon source or zero
Word 6
Address of 8-character password or zero
Zero
Word 8
Address of 80-character error message
area
Word 9
Address of subfunction specific data
Word 10
Address of structured field address list
or zero

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F‘8’.

Word 2

Is the address of a subfunction code. This code defines the type of logon request being processed and has values set as follows:

Subfunction Code	Value
F‘0’	Logon from native terminal
F‘4’	Logon from TSO interface component of EIP
F‘8’	Logon from ROF user
F‘12’	System console logon
F‘16’	System environment logon
F‘20’	Reserved
F‘24’	Reserved
F‘28’	APPC user region logon
F‘32’	Reserved

Word 3

Is the address of an eight-character field, blank padded, containing the user ID requesting the logon. If a partial security exit is installed then there is an additional, contiguous eight-character field, blank-padded containing the model user ID specified by the SYSPARMS MODLUSER operand. If no model user has been specified this field is set to blanks.

Word 4

Is the address of two full words:

- First word can contain any value to relate a user to a set of control blocks or other information maintained by the exit in relation to that user.
- Second word contains the address of the user token (UTOKEN) obtained from the SAF logon call.

These values are returned in all subsequent calls to the exit in reference to this user ID session, so that it can be used as a session correlator.

Word 5

Varies according to subfunction code.

Subfunction Code	Value
F‘0’	Word 5 contains the address of an eight-character field, blank-padded, which contains the name of the terminal at which the user wants to logon.
F‘4’	Word 5 contains the address of an eight-character field, blank-padded, which contains the name of the VTAM APPL name used by the TSO interface for this session.
F‘8’	Word 5 is set to zero.
F‘12’	Word 5 contains the address of an eight-character field holding the word CONSOLE, or the generated user ID for multiple console support (OS/VS systems only).
F‘16’	Word 5 contains the address of an eight-character field containing the name of the pseudo-terminal with which the system environment logon is associated.
F‘28’	Word 5 is set to zero.

Word 6

Varies according to subfunction code.

Subfunction Code	Value
F‘0’	Word 6 contains the address of an eight-character field, blank-padded, containing the password entered with the user ID.
F‘4’	Word 6 is set to zero.
F‘8’	Word 6 contains the address of an eight-character field, blank-padded, holding the password entered on a SIGNON command from the remote region. If no password was entered, this word is zero.
F‘12’	Word 6 is set to zero.
F‘16’	Word 6 is set to zero.
F‘28’	Word 6 contains the address of an eight-character field, blank-padded, holding the password specified on the APPC NCL verb that started this region. If no password was entered, this word is zero.

F’36’	Web user logon.

Word 7

Is set to zero.

Word 8

Is the address of an 82-character area into which the exit can place any error message text if the logon request is denied. Any text placed in this area is displayed to the user in response to the logon attempt. If an error message is returned in this area it must be formatted as follows:

Bytes 00 and 01

Specifies the hexadecimal length of the message text (excluding these two bytes).

Bytes 02 through *nn*

Specifies the error message text.

Limits: 80 characters

Message text is converted to uppercase.

Word 9

Varies according to subfunction code.

Subfunction Code	Value
F‘0’	Word 9 set to zero.
F‘4’	Word 9 set to zero.
F‘8’	Address of 12-character area holding the INMC link name of the region from which a ROF logon request has been received. Following this address is a four-character field that is either zero or contains the domain ID of the region from which the SIGNON request originated. Following this field is a one-byte binary field with flag settings as follows: ■ X‘01’—A character domain ID is present after the 12-character link name. ■ X‘02’—Is set if the system represented by domain ID is different from the system represented by the link name.
F‘12’	Word 9 set to zero.
F‘16’	Word 9 set to zero.
F‘28’	Word 9 set to zero.

Word 10

Depends on whether you have a full or partial security system:

- Full security exit—the logon is accepted and the exit must provide the address of a list of full words in this field, terminated by X‘FFFFFFFF’.

  Each word in this list contains the address of a structured field defining an item of information for this user ID. Your region processes all these structured fields to determine the privileges and other information to be associated with the user ID.

- Partial security exit—set to zero, or the address of a variable length list of full words, ended by a fullword of X‘FFFFFFFF’.

  Each word in the area points to a single structured field, representing one attribute of the current UAMS definition for the user ID pointed to by word 3 of the parameter list.

If the requesting user ID is not defined on UAMS, Word 10 is zero.

Return Codes from Logon Call

The exit must return a completion code in Register 15 on return. Completion codes are supported as described below. Specific causes for logon rejection are identified by error message text returned in the area addressed by word 8 of the Logon Call parameter list.

These return codes are the only codes that are accepted in response to a logon call. Any other return code is treated as indicating that the logon is rejected.

0

Indicates that logon is accepted without error.

4

Indicates that logon is accepted but password has expired. Your product region must enforce password renewal before the user has access to any other functions.

8

Indicates that logon is accepted but this is a new user ID. Your product region must enforce password change before allowing the user access to any other functions.

12

Is reserved and cannot be used as a return code.

16

Indicates that logon is rejected. Password is incorrect, but your product region is to allow a retry.

20

Indicates that logon is rejected. Password is incorrect and no retry is to be permitted. A violation message is logged.

24

Indicates that logon is rejected. An error message explaining the cause of rejection is available in the 82-character area addressed by word 8 of the parameter list. The format of this area must be a 2-byte length field set to contain the length of the error message text, followed by up to 80 characters of error message text. If the logon was from a TSO user, the error message is not displayed; the normal product region logon panel is presented for entry of user ID and password and the user is not classified as a TSO interface user.

Note: Return codes 16 and 20 are provided to give compatibility with the standard UAMS functions, which provide a maximum number of password retries before rejecting the logon attempt and logging a violation message.

Return codes 4 and 8 provide compatibility with the UAMS convention of enforcing password change at logon time if the user’s password has expired, or for the first logon of a new user ID.

The exit might not be able to determine that a user ID is new, depending upon the information available to it from the external security system in use. If required, the exit can be written to provide two return codes only, 0 or 24, with an appropriate error message if the logon is rejected.

The ability to deny a logon with return code 24 and an error message of the exit's choice allows the installation to extend the security exit's function beyond that of simple password validation. For example, the exit might deny logons after a certain time of day or reject ROF logons from certain remote systems.

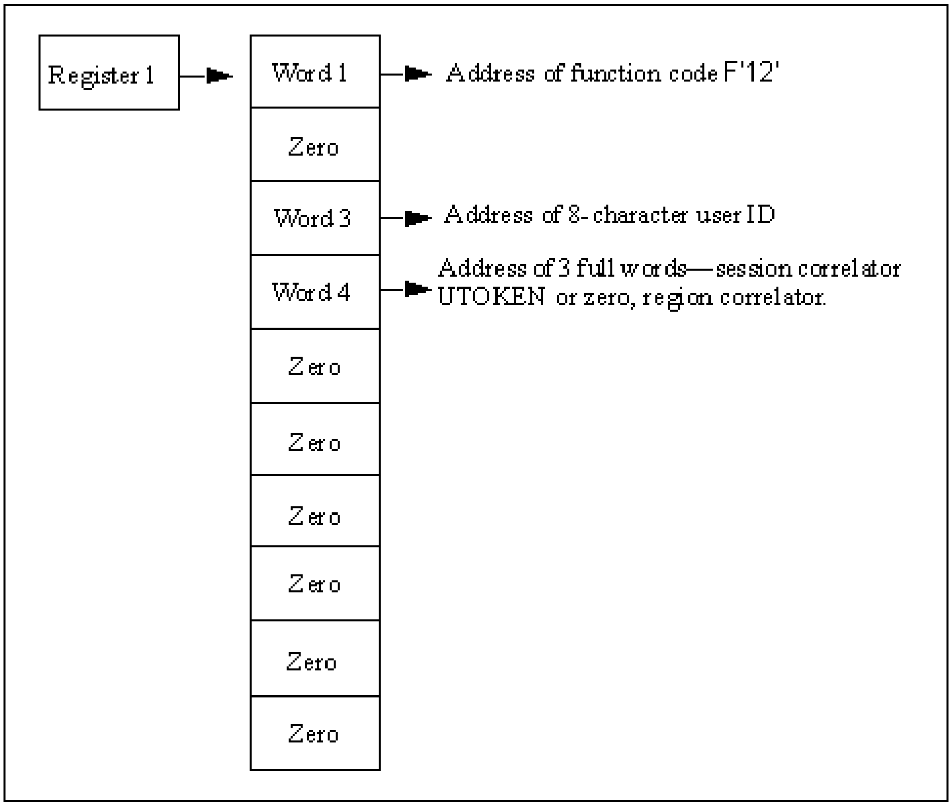
System console and system environment logon calls take default attributes if the exit causes the logon to fail.

More information:

Access to Your Region (see page 60)

Logoff Request Parameter List

On entering the security exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'12'
Zero
Word 3
Address of 8-character user ID
Word 4
Address of 3 full words—session correlator UTOKEN or zero, region correlator.
Zero
Zero
Zero
Zero
Zero
Zero

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F‘12’.

Word 2

Is set to zero.

Word 3

Is the address of an eight-character field, blank-padded, containing the user ID logging off.

Word 4

Is the address of three full words containing the user session correlator (if any) and the user token (UTOKEN) address, set by the exit when this user ID logged on, or zero.

Words 5 through 10

Are set to zero.

Return Codes from Logoff Calls

The exit must return a completion code in register 15 on return. The only valid completion code is F‘0’.

Note: It is possible for the exit to receive a logoff call for a user who has never successfully logged on. This might occur when a user abandons their logon attempt due to a forgotten password. The exit must be written to accept such calls and to ignore them.

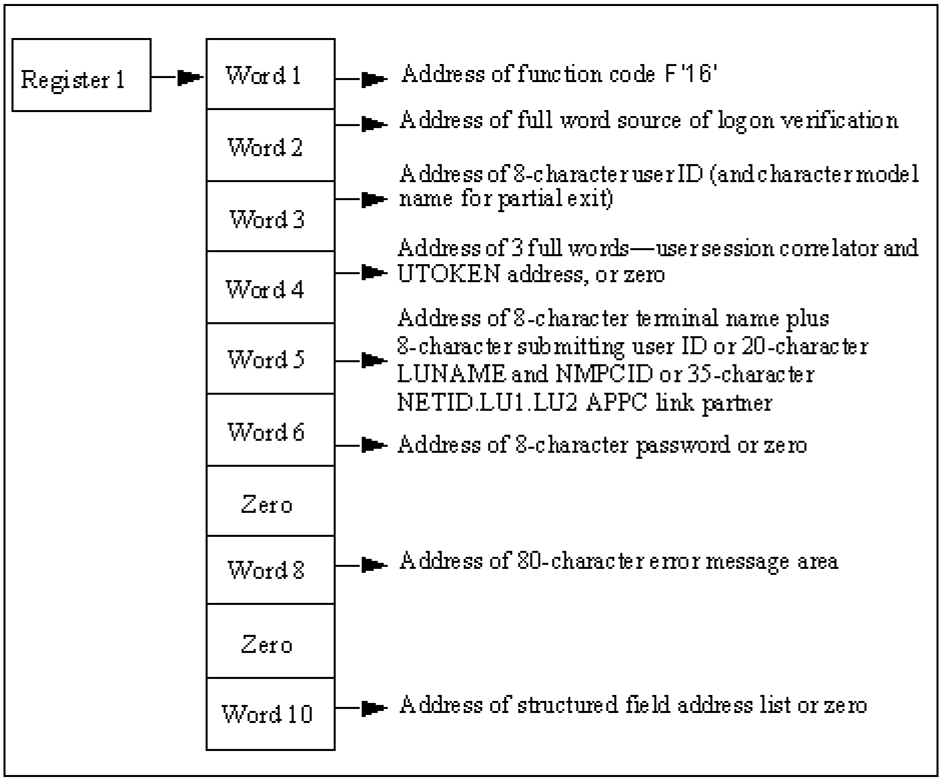
Your system services generate a logoff call during DISCONNECT processing on behalf of an internally created environment. Because there was no logon request call for this environment, there is no session correlator created, and it is, therefore, null.

When a users logs back on to reconnect, a logon request call is made to the security exit. A new session correlator is created at this time. When the user selects a RECONNECT or CANCEL of all disconnected environments, a logoff request call is made to the security exit with the original user session correlator. The reconnected or new session continues with a new user session correlator that is presented to the security exit upon that session’s logoff.

A zero user session correlator on a logoff request call to the security exit is valid for a DISCONNECT request only.

Logon Verification Call Parameter List

On entry to the security exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'16'
Word 2
Address of full word source of logon verification
Word 3
Address of 8-character user ID (and character model name for partial exit)
Word 4
Address of 3 full words—user session correlator and UTOKEN address, or zero
Word 5
Address of 8-character terminal name plus 8-character submitting user ID or 20-character LUNAME and NMPCID or 35-character NETID.LU1.LU2 APPC link partner
Word 6
Address of 8-character password or zero
Zero
Word 8
Address of 80-character error message area
Zero
Word 10
Address of structured field address list or zero

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F‘16’.

Word 2

Is the address of a subfunction code. This code defines the source of the logon verification call and has values set as follows:

Subfunction Code	Value
F‘0’	Call is from an &SECCALL CHECK verb, the LOCK facility, or APPC region validation.
F‘4’	Call is from INMC link activation.
F‘8’	Call is from APPC link activation.

Word 3

Is the address of a 16-character field, blank-padded. The field contains the eight-character user ID whose password and logon capability is to be verified. The ID is followed by the eight-character system default MODLUSER name, or blanks if no model user has been defined.

Word 4

Is the address of three full words containing the user session correlator and the address of the user token (UTOKEN) of the submitter of the logon verification call, or zero if called from EASINET.

Word 5

Varies according to subfunction code:

Subfunction Code	Value
F‘0’	Address of the eight-character terminal ID, followed by the eight-character user ID of the submitting user. This field can be blank; if so, treat the user ID being checked as the submitting user.
F‘4’	Address of the 8-character LU name of the link, followed by the 12-character NMPCID.
F‘8’	Address of the 35-character APPC link partners. The format of the link session partners is NETID.LU1.LU2 where NETID.LU1 is the source partner and LU2 is the destination LU of the APPC link.

Word 6

Varies according to subfunction code:

Subfunction Code	Value
Subfunction F‘0’	Address of the 8-character, blank-padded user ID password.
Subfunction F‘4’	Word 6 is set to zero.
Subfunction F‘8’	Address of an eight-character area into which the exit can place the session key for this APPC link.

Word 7

Is set to zero.

Word 8

Is the address of an 82-character area into which the exit can place an error message. If an error message is returned, it must be formatted as follows:

Bytes 00 and 01

Specifies the hexadecimal length of the message text (excluding these two bytes).

Bytes 02 through *nn*

Specifies the error message text.

Limits: 80 characters

Message text is converted to uppercase. An error message might be returned in this area for return codes 20 or 24. A message set in this area for any other return code is ignored.

Word 9

Is set to zero.

Word 10

If you have a full security exit, this word is set to zero.

If you have a partial security exit this word is set to zero if the user ID is not defined on the UAMS data set. Otherwise word 10 points to a list of full words, ended by a fullword of X‘FFFFFFFF’. Each address in the list points to a single structured field representing one attribute of the user ID to verify. This list therefore provides the exit with access to the entire current definition of this user ID.

Return Codes from Logon Verification Call

The exit must return a completion code in Register 15 on return. Completion codes are supported as described below.

The return codes listed below are for subfunction codes 0 and 4. They are the only codes that are accepted in response to a Logon Verification call. Any other return code is rejected and set to 24.

0

Indicates that the password is valid. Logon is successful.

4

Indicates that the password is valid but expired. This is not a new user ID. The user is prompted to change the password before logon is successful.

8

Indicates that the password is valid but this is a new user ID. The user is prompted to change the password before logon is successful.

16

Indicates that the password is wrong.

20

Indicates that the password is correct but logon is rejected. The exit might return an explanatory message in the error message area addressed by word 8 of the parameter list.

24

Indicates that the request failed or function is not supported by the exit. The exit might return an explanatory message in the error message area addressed by word 8 of the parameter list.

The return codes listed below are for subfunction code 8. They are the only codes that are accepted in response to an APPC link establishment Logon Verification call. Any other return code is rejected and set to 24.

0

Indicates that link activation is successful. The session key is addressed by word 6 of the parameter list.

4

Indicates that link activation is successful. No session key is available.

8

N/A

16

Indicates that link activation is unsuccessful.

20

N/A

24

Indicates that the function is not supported. The link establishment is to continue without a session key.

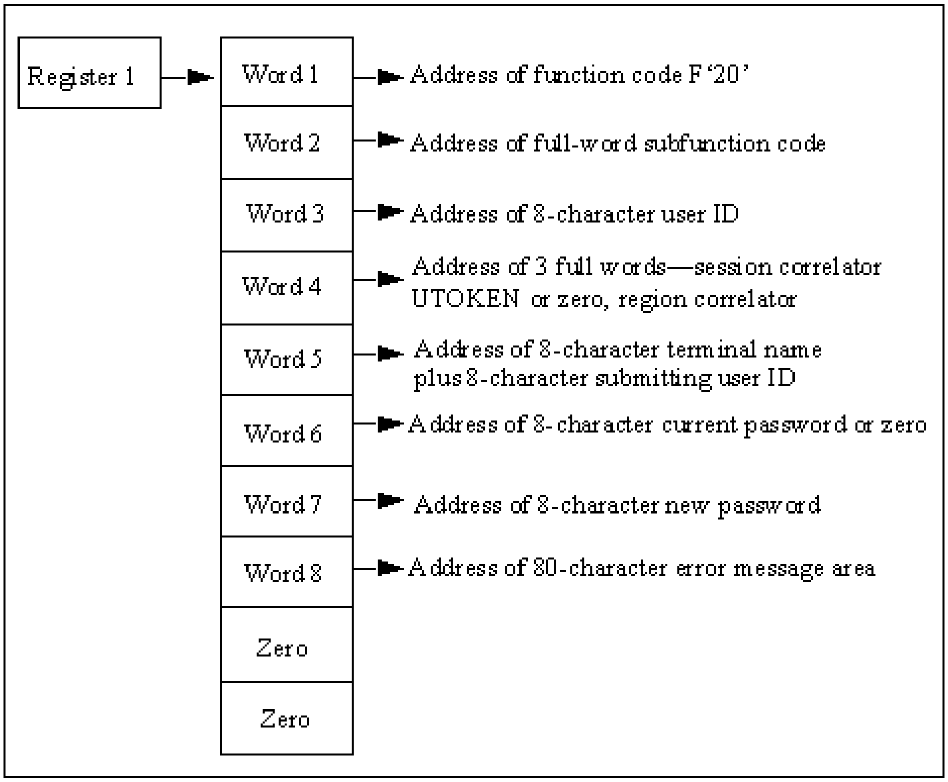
Notes:

- When a Logon Verification Call to the exit is made by a &SECCALL CHECK statement or by NMPC link activation, no user correlator information can be provided. Word 4 of the parameter list is set to zero.
- The Logon Verification Call return codes do not strictly correlate with the &SECCALL CHECK return code values. For an explanation of &SECCALL CHECK return codes, see the *Network Control Language Reference.*
- If the Logon Verification call is made by the LOCK facility, the call is being made on behalf of a logged-on user. Consequently, the parameter list provides the address of the appropriate user session correlator.

The Logon Verification Call is primarily a means of querying the validity of a password, and the exit can be written to provide only this function. The option of supporting return code 20 is provided to complement support of return code 24 from the Logon Request Call, which allows the exit to refuse a logon request for reasons other than password error.

Change Password Parameter List

On entry to the security exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'20'
Word 2
Address of full-word subfunction code
Word 3
Address of 8-character user ID
Word 4
Address of 3 full words—session correlator UTOKEN or zero, region correlator
Word 5
Address of 8-character terminal name plus 8-character submitting user ID
Word 6
Address of 8-character current password or zero
Word 7
Address of 8-character new password
Word 8
Address of 80-character error message area
Zero
Zero

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F‘20’.

Word 2

Is the address of a subfunction code. This code defines the source of the change password request and has values set as follows:

Subfunction Code	Value
F‘0’	User has requested password change
F‘4’	Change required because password expired
F‘8’	Forced change by UAMS user
F‘12’	&SECCALL CHANGE request issued from an EASINET procedure

Word 3

Is the address of an eight-character field, blank-padded, containing the user ID whose password is to change.

Word 4

Varies according to subfunction code:

Subfunction Code	**Value**
F‘0’	Word 4 is the address of two full words. The first contains the correlator and the second the user token (UTOKEN) of the user issuing the change request.
F‘4’	As for subfunction F‘0’.
F‘8’	As for subfunction F‘0’.
F‘12’	Word 4 is zero.
F‘16’	As for subfunction F‘0’.

Word 5

Is the address of an eight-character terminal name followed by the eight-character user ID of the user issuing the change request.

Word 6

Varies according to subfunction code:

Subfunction Code	**Value**
F‘0’	Word 6 contains the address of an eight-character field, blank-padded, which contains the current user ID password.
F‘4’	As for subfunction F‘0’.
F‘8’	Word 6 is set to zero.
F‘12’	As for subfunction F‘0’.
F‘16’	Web user logon.

Word 7

Is the address of an eight-character field containing the new password to assign to the user ID.

Word 8

Is the address of an 82-character area into which the exit can place any error message text if the change request is denied or failed. Any text placed in this area is displayed to the user in response to the change request. If an error message is returned in this area it must be formatted as follows:

Bytes 00 and 01

Specifies the hexadecimal length of the message text (excluding these two bytes).

Bytes 02 through *nn*

Specifies the error message text.

Limits: 80 characters

Words 9 and 10

Are set to zero.

Return Codes from Change Call

The exit must return a completion code in Register 15 on return. The supported completion codes are described below. Specific causes for change rejection are identified by error message text returned in the area addressed by word 8 of the Change Call parameter list.

The return codes listed below are the only codes that are accepted in response to a Change Call. Any other return code is regarded as indicating that the password was not changed.

0

Indicates that the password has been changed.

4

Indicates that subfunction is not supported by exit or other error. A message explaining the cause of error might be placed in the 80-character area addressed by word 8 of the parameter list.

8

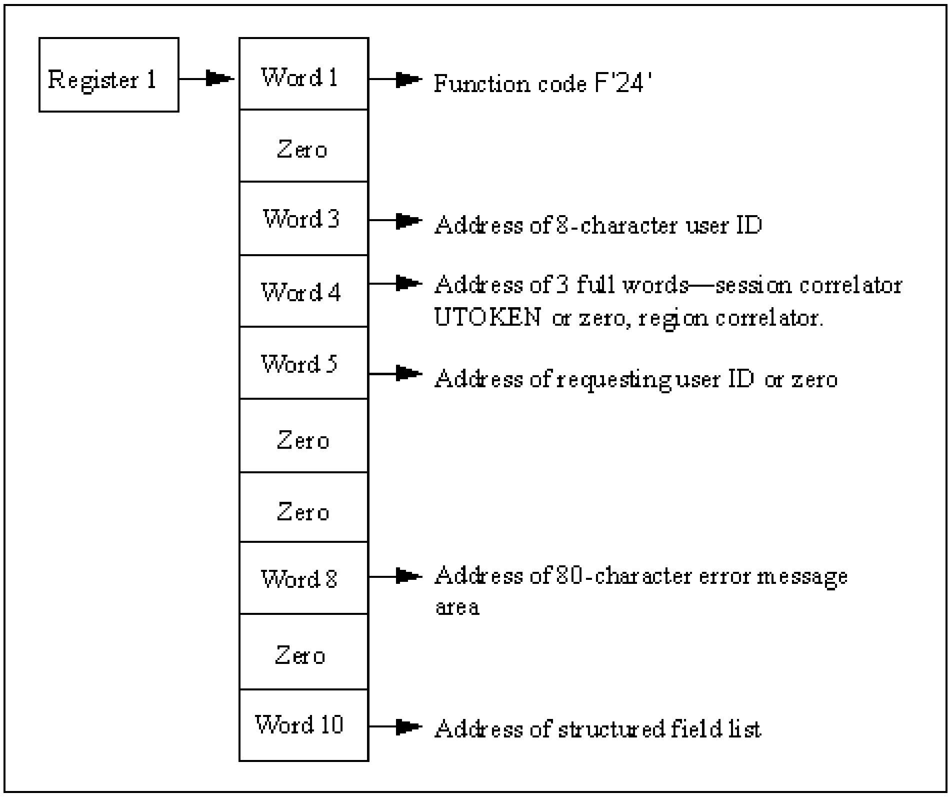
Indicates that the password has not been changed. A message explaining the cause of rejection is available in the 80-character area addressed by word 8 of the parameter list.

Notes:

- Your product region does not apply minimum password length checks, nor is automatic password expiry provided. The exit is responsible for all maintenance and knowledge of passwords.
- A user’s current password is provided as a parameter for the change call only for subfunctions 0, 4, and 12. That is, when the change request is made by the user after logging on, when the user is required to change the password because it has expired or by EASINET using the &SECCALL CHECK statement.
- For subfunction 8, when a UAMS privileged user requests a forced password change for another user ID it is almost certainly because the current password for that user ID has been forgotten, and is therefore not available for presentation as a parameter for this call.

Return User ID Information Parameter List

On entry to the security exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Zero
Word 3
Word 4
Word 5
Zero
Zero
Word 8
Zero
Word 10
Function code F'24'
Address of 8-character user ID
Address of 3 full words—session correlator UTOKEN or zero, region correlator.
Address of requesting user ID or zero
Address of 80-character error message area
Address of structured field list

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F‘24’.

Word 2

Is set to zero.

Word 3

Is the address of an eight-character field, blank-padded, containing the user ID for which information is required.

Word 4

Is the address of three full words containing the session correlator and the user token (UTOKEN) associated with the user issuing the request (not necessarily the correlator for the user ID whose information is being requested).

Word 5

Is the address of an eight-character field, blank-padded, containing the user ID requesting the information (or zero).

Word 6

Is set to zero.

Word 7

Is set to zero.

Word 8

Is the address of an 82-character area into which the exit can place any error message text if the function request is denied or failed. Any text placed in this area is displayed to the user in response to the command that caused this request. If an error message is returned it must be formatted as follows:

Bytes 00 and 01

Specifies the hexadecimal length of the message text (excluding these two bytes).

Bytes 02 through *nn*

Specifies the error message text.

Limits: 80 characters

Word 9

Is set to zero.

Word 10

Is set differently depending on the type of exit you have:

- Full security exit—if the request is honored, the exit must place in this word the address of a list of full words, terminated by X‘FFFFFFFF’. Each fullword in this list in turn points to a structured field that defines an item of information relevant to the user ID.
- Partial security exit—the address of a list of full words, terminated by X‘FFFFFFFF’. Each fullword in this list in turn points to a structured field that defines an item of information relevant to the user ID.

More information:

Structured Fields (see page 149)

Return Codes from Return User ID Information Call

The exit must return a completion code in Register 15 on return. Completion codes are supported as described below. Causes for rejection are identified by error message text returned in the area addressed by word 8 of the Information Call parameter list.

The return codes listed below are the only codes that are accepted in response to an Information Call. Any other return code is treated as information not available.

0

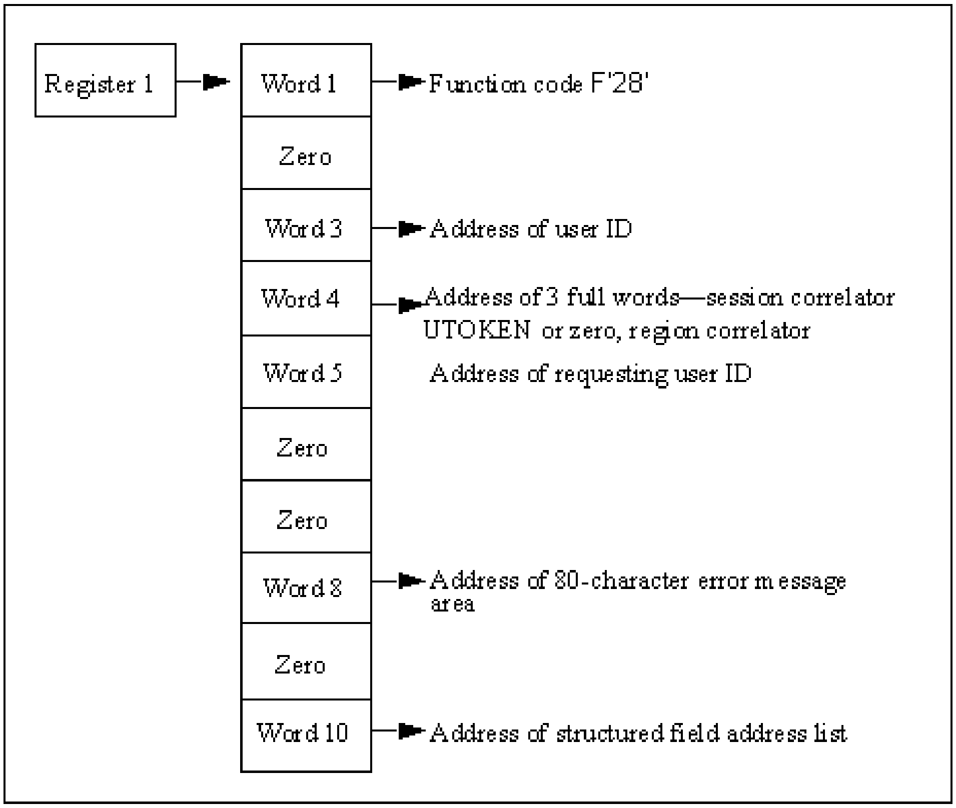
Indicates that information is available. Word 10 of the parameter list points to an address list that provides pointers to structured fields describing the user ID.

4

Indicates that information is not available. An error message should be available in the 80-character area addressed by word 8 of the parameter list.

Update User ID Parameter List

On entry to the security exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Function code F'28'
Zero
Word 3
Address of user ID
Word 4
Address of 3 full words—session correlator
UTOKEN or zero, region correlator
Word 5
Address of requesting user ID
Zero
Zero
Word 8
Address of 80-character error message area
Zero
Word 10
Address of structured field address list

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F‘28’.

Word 2

Is set to zero.

Word 3

Is the address of an eight-character field, blank-padded, containing the name of the user ID to update.

Word 4

Is the address of three full words containing the session correlator and the user token (UTOKEN) associated with the user issuing the request.

Word 5

Is the address of an eight-character field containing the user ID of the user making the update request.

Word 6

Is set to zero.

Word 7

Is set to zero.

Word 8

Is the address of an 82-character area into which the exit can place any error message text if the function request is denied or failed. Any text placed in this area is displayed to the user in response to the command that caused this request. If an error message is returned in this area it must be formatted as follows:

Bytes 00 and 01

Specifies the hexadecimal length of the message text (excluding these two bytes).

Bytes 02 through *nn*

Specifies the error message text.

Limits: 80 characters

Message text is converted to uppercase.

Word 9

Is set to zero.

Word 10

Is set to the address of a list of full words, terminated by X'FFFFFFFF'. Each fullword in this list in turn points to a structured field that defines an item of user ID information to change.

More information:

Structured Fields (see page 149)

Return Codes from Update User ID Information Call

The exit must return a completion code in Register 15 on return. Completion codes are supported as described below. Causes for update rejection are identified by error message text returned in the area addressed by word 8 of the Update Call parameter list.

The return codes listed below are the only codes that are accepted in response to an Update Call. Any other return code is regarded as update rejected.

0

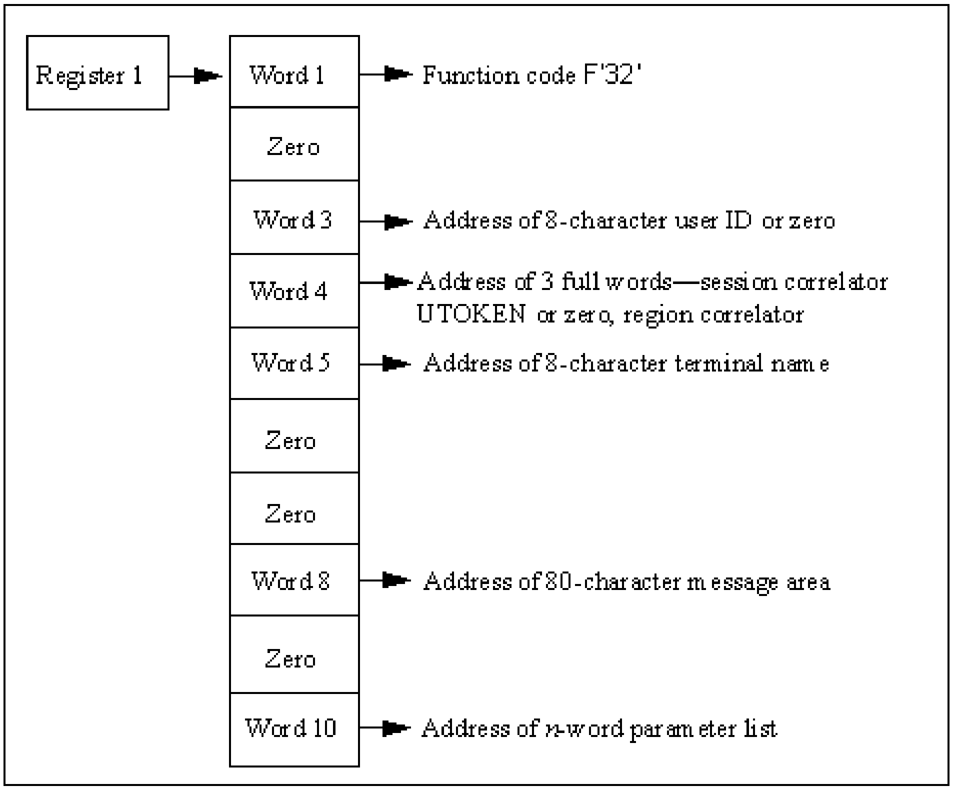
Indicates that update has completed.

4

Indicates that update is rejected. An error message might be available in the 80-character area addressed by word 8 of the parameter list.

&SECCALL EXIT Parameter List

On entry to the security exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Function code F'32'
Zero
Word 3
Address of 8-character user ID or zero
Word 4
Address of 3 full words—session correlator UTOKEN or zero, region correlator
Word 5
Address of 8-character terminal name
Zero
Zero
Word 8
Address of 80-character message area
Zero
Word 10
Address of *n*-word parameter list

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F‘32’.

Word 2

Is set to zero.

Word 3

Is the address of an eight-character field, blank-padded, containing the user ID executing the procedure in which &SECCALL EXIT was issued. If &SECCALL EXIT was issued from an EASINET procedure, this word is set to zero.

Word 4

Is the address of three full words containing the session correlator and the user token (UTOKEN) associated with the user issuing the &SECCALL EXIT statement. If no user ID is involved because the &SECCALL EXIT statement has been issued from an EASINET procedure, this word is set to zero.

Word 5

Is the address of eight-character terminal name.

Word 6

Is set to zero.

Word 7

Is set to zero.

Word 8

Is the address of an 82-character area into which the exit can place any message text. If a message is placed in this area it is returned to the issuing NCL procedure in the system variable &SYSMSG. If a message is returned in this area it must be formatted as follows:

Bytes 00 and 01

Specifies the hexadecimal length of the message text (excluding these two bytes).

Bytes 02 through *nn*

Specifies the error message text. Message text is converted to uppercase.

Limits: 80 characters

Word 9

Is set to zero.

Word 10

Is the address of a variable length list of contiguous full words, ended by a fullword containing a value of X‘FFFFFFFF’. Each word in the list points at an area that represents an NCL variable, where the format of this area is always:

Bytes 00 and 01

Specifies the length of parameter data present (excluding these two bytes).

Bytes 02 through 257

Specifies the parameter data, padded to 256 bytes with blanks.

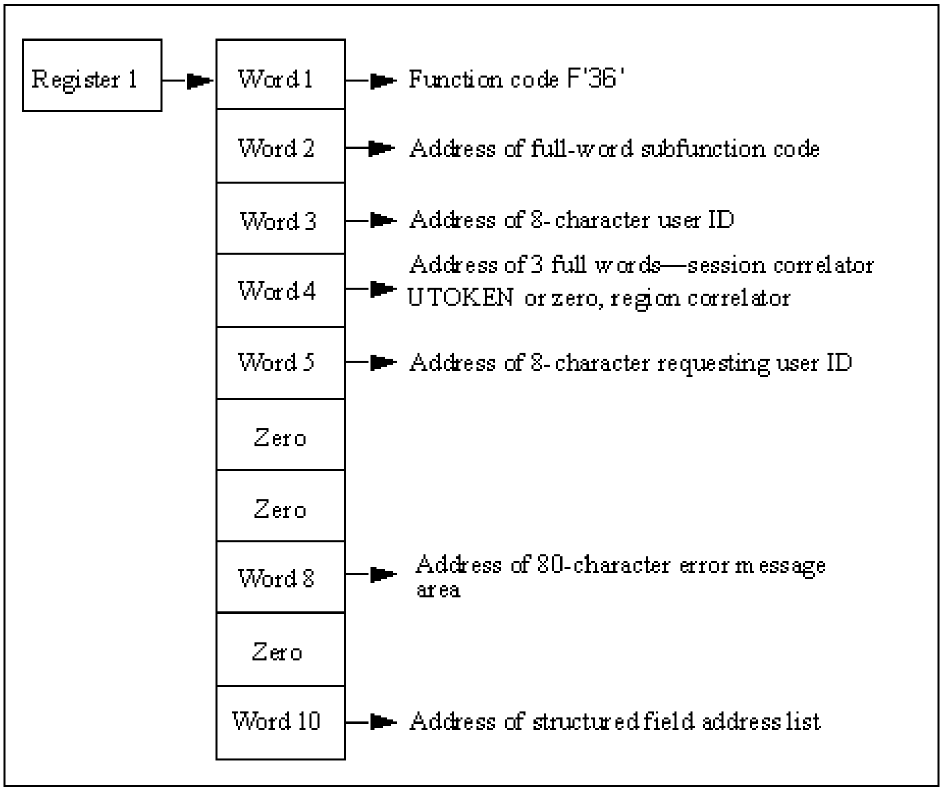
Return Codes from &SECCALL EXIT Call

The exit can pass information back to the calling NCL procedure in the following ways:

- A return code can be set by the exit in Register 15 on exit. Valid return codes are 0 to 99. Any other return code is forced to 99. The return code is available to the procedure in the system variable &RETCODE after the &SECCALL EXIT statement.
- A message (error or otherwise) can be returned in the 82-character message area addressed by word 8 of the parameter list, as described above.
- Information can be returned in the parameter areas addressed by word 10 of the &SECCALL EXIT parameter list. The exit can return information only in those areas originally passed in the parameter list.

Return Sequential User ID Information Parameter List

On entry to the security exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Function code F'36'
Word 2
Address of full-word subfunction code
Word 3
Address of 8-character user ID
Word 4
Address of 3 full words—session correlator UTOKEN or zero, region correlator
Word 5
Address of 8-character requesting user ID
Zero
Zero
Word 8
Address of 80-character error message area
Zero
Word 10
Address of structured field address list

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F'36'.

Word 2

Is the address of a subfunction code. The code defines the type of sequential call being requested and has values set as follows:

Subfunction Code	Value
F‘0’	Retrieve the next user definition following the key user ID (provided in word 3). The user ID for which information is being requested is the next user ID in the collating sequence.
F‘4’	Retrieve the previous user definition preceding the key user ID (provided in word 3). The user ID for which information is being requested is the previous user ID in the collating sequence.

Word 3

Is the address of an eight-character field, blank-padded. The field contains the key user ID for the call, or set to zero if the request is issued for the first (next), or last (previous) user ID in the collating sequence.

Word 4

Is the address of three full words containing the session correlator and the user token associated with the user issuing the request (not necessarily the correlator for the user ID whose information is being requested).

Word 5

Is the address of an eight-character field containing the requesting user ID.

Word 6

Is set to zero.

Word 7

Is set to zero.

Word 8

Is the address of an 82-character area into which the exit can place any error message text if the function request is denied or failed. Any text placed in this area is returned to the issuing procedure in the &SYSMSG system variable. If an error message is returned it must be formatted as follows:

Bytes 00 and 01

Specifies the hexadecimal length of the message text (excluding these two bytes).

Bytes 02 through *nn*

Specifies the error message text.

Limits: 80 characters

Message text is converted to uppercase.

Word 9

Is set to zero.

Word 10

If the request is honored, the exit must place in this word the address of a list of full words, terminated by X'FFFFFFFF'. Each fullword in this list in turn points to a structured field that defines an item of information relevant to the user ID.

More information:

Structured Fields (see page 149)

NWM--Return Codes from Return Next User ID Information Call

The exit must return a completion code in Register 15 on return. Completion codes are supported as described below. Causes for rejection are identified by error message text returned in the area addressed by word 8 of the parameter list.

The return codes listed below are the only codes that are accepted in response to the call. Any other return code is treated as return code 4.

0

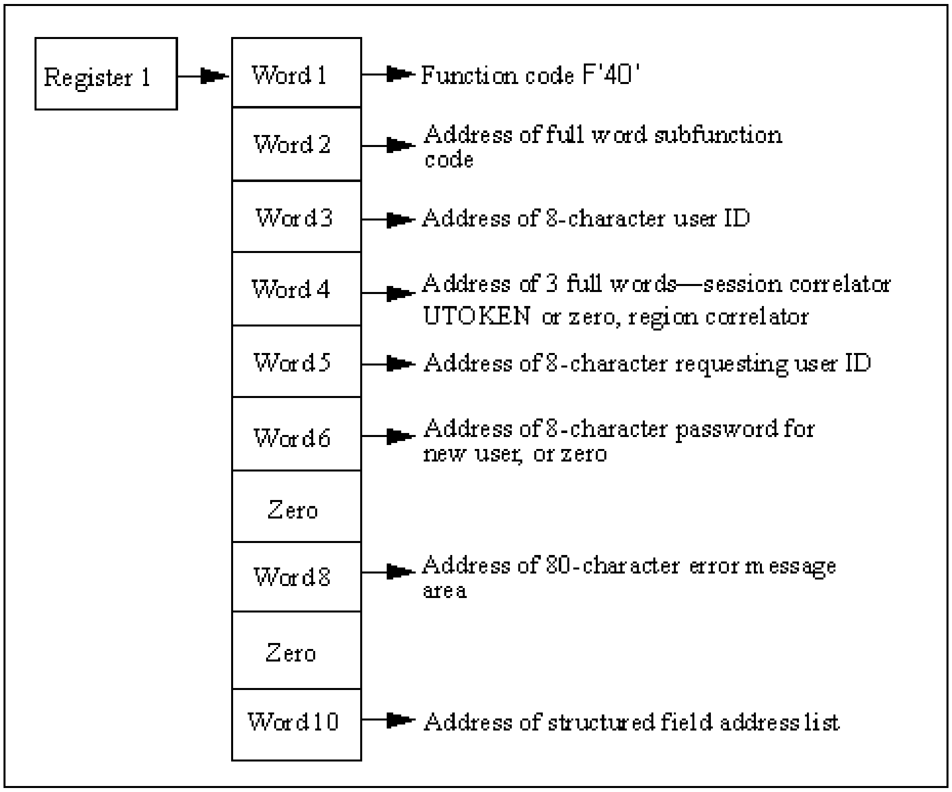
Indicates that information is available. Word 10 of the parameter list points to an address list that provides pointers to structured fields describing the user ID.

4

Indicates that information is not available. An error message might be available in the 80-character area addressed by word 8 of the parameter list.

Add User ID Parameter List

On entry to the security exit, Register 1 (R1) points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Function code F'40'
Word 2
Address of full word subfunction code
Word 3
Address of 8-character user ID
Word 4
Address of 3 full words—session correlator UTOKEN or zero, region correlator
Word 5
Address of 8-character requesting user ID
Word 6
Address of 8-character password for new user, or zero
Zero
Word 8
Address of 80-character error message area
Zero
Word 10
Address of structured field address list

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F‘40’.

Word 2

Is the address of a subfunction code. The code defines the type of user to add and has values set as follows:

Subfunction Code	Value
F‘0’	Add a USER definition.
F‘4’	Add a GROUP definition.

Word 3

Is the address of an eight-character field, padded with blanks, containing the user definition to add.

Word 4

Is the address of three full words containing the session correlator and the user token (UTOKEN) associated with the user issuing the request.

Word 5

Is the address of an eight-character field containing the user ID of the user issuing the ADD request.

Word 6

Is the address of an eight-character field containing the initial password of the user to add or set to zero if a password is not provided.

This field is optional on the &SECCALL ADD function when using a security exit. The site is responsible to take appropriate action on the requirement for this password.

Word 7

Is set to zero.

Word 8

Is the address of an 82-character message area into which the exit can place any error message text if the add request is denied or failed. Any text placed in this area is displayed to the user in response to the command that caused this request. If an error message is returned in this area, it must be formatted as follows:

Bytes 00 and 01

Specifies the hexadecimal length of the message text (excluding these two bytes).

Bytes 02 through *nn*

Specifies the error message text.

Limits: 80 characters

Message text is converted to uppercase.

Word 9

Is set to zero.

Word 10

Is set to the address of a list of full words, terminated by X‘FFFFFFFF’. Each fullword in this list in turn points to a structured field that defines an item of user ID information to add.

More information:

Structured Fields (see page 149)

Return Codes from the Add User ID Call

The exit must return a completion code in Register 15 (R15) on return. Completion codes are supported as described below. Causes for rejection of add calls are identified by error message text returned in the area addressed by word 8 of the add call parameter list.

The return codes listed below are the only codes that are accepted in response to an add call. Any other return codes are regarded as a rejection of the add call.

0

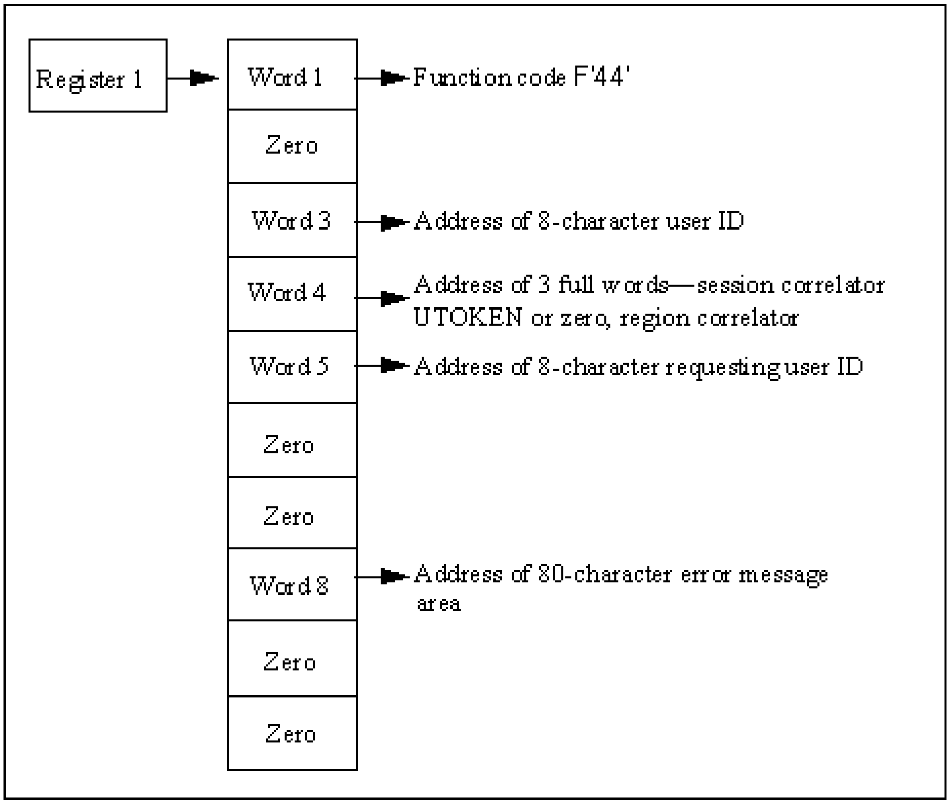
Indicates that ADD is complete.

4

Indicates that ADD is rejected. An error message might be available in the 80-character area addressed by word 8 of the parameter list.

Delete User ID Parameter List

On entry to the security exit, Register 1 (R1) points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Function code F'44'
Zero
Word 3
Address of 8-character user ID
Word 4
Address of 3 full words—session correlator UTOKEN or zero, region correlator
Word 5
Address of 8-character requesting user ID
Zero
Zero
Word 8
Address of 80-character error message area
Zero
Zero

The contents of the parameter list are as follows:

Word 1

Is a fullword containing the address of function code F‘44’.

Word 2

Is set to zero.

Word 3

Is the address of an eight-character field, blank-padded, containing the user definition to delete.

Word 4

Is the address of three full words containing the session correlator and the user token (UTOKEN) associated with the user issuing the DELETE request.

Word 5

Is the address of an eight-character field containing the user ID of the user issuing the DELETE request.

Word 6

Is set to zero.

Word 7

Is set to zero.

Word 8

Is the address of an 82-character message area into which the exit can place any error message text if the delete request is denied or failed. Any text placed in this area is displayed to the user in response to the command that caused this request. If an error message is returned in this area, it must be formatted as follows:

Bytes 00 and 01

Specifies the hexadecimal length of the message text (excluding these two bytes).

Bytes 02 through *nn*

Specifies the error message text.

Limits: 80 characters

Message text is converted to uppercase.

Word 9

Is set to zero.

Word 10

Is set to zero.

Return Codes from the Delete User ID Call

The exit must return a completion code in Register 15 (R15) on return. Completion codes are supported as described below. Causes for delete rejection are identified by error message text returned in the area addressed by word 8 of the DELETE call parameter list.

The following return codes are the only codes that are accepted in response to a delete call. Any other return codes are regarded as a rejection of the delete call.

0

Indicates that Delete is complete.

4

Indicates that Delete is rejected. An error message might be available in the 80-character area addressed by word 8 of the parameter list.

Appendix E: Data Set Authorization Exits Support

This section contains the following topics:

Data Set Access Authorization Exit

The authorization exit is attached and operates as a subtask. Therefore, complex processing, WAITs, or SVCs do not impact overall performance.

Review the source code for the sample data set access authorization exit NMDSNCHK and use it as a guide to writing your own exit.

Registers on Entry to the Exit

When the exit is invoked, Register 1 contains the address of a communication area containing various parameters. This communication area can be mapped using the macro $NMDSNCK, supplied in the distribution libraries. This macro provides a DSECT expansion to perform the mapping, and detailed information on the content of each field.

Standard linkage conventions apply. On entry, the exit must save the contents of all registers (Register 13 contains the address of a save area), and on exit all registers must be restored to their content on entry, with the exception of Register 15 which should contain a return code.

Parameters Passed to the Exit

The data set access authorization exit is provided so that the installation can determine whether access to a data set is to be permitted.

- When invoked as a result of an ALLOCATE command, a communication area containing the following information is passed to the exit:
  - Data set name
  - User ID of requestor
- When invoked as a result of a CA SOLVE:FTS operation, a communication area containing the following information is passed to the exit:
  - Data set names
  - DD statement names
  - Class of transmission
  - Type of access required (READ at the sending end, READ/WRITE at the receiving end)
  - Whether this request is a SYSTEM or PRIVATE request
  - Type of data set allocation (NEW, SHR, and so on)
  - CA SOLVE:FTS ID
  - Transmission Definition password
  - CA SOLVE:FTS user ID of requestor
  - Space allocation and volume information, if this is a NEW data set

The format of this area is mapped by the supplied $NMDSNCK DSECT.

Calls Made to the Exit

Whenever you use the ALLOCATE command to allocate a data set, a call is made to the authorization exit. A call is also made to the authorization exit when CA SOLVE:FTS identifies the data set that is to be transmitted or received. Calls are therefore made both at the transmitting and at the receiving end of a transmission operation.

On return from the initial call, the exit may set indicator flags (see the DSNCFLG field in the $NMDSNCK DSECT) that determine which subsequent calls CA SOLVE:FTS is to make to the exit during the progress of the transmission operation.

The following additional calls are made as requested by the exit:

- **Preallocation call**—made before the target data set is dynamically allocated
- **Pre-open call**—made just before the target data set is opened
- **Pre-deallocation call**—made just before the target data set is dynamically deallocated

Types of Call

The DSNSTYPE field in the exit communication area identifies the type of call being made to the exit:

F’0’

Indicates a call for CA SOLVE:FTS access authorization.

F’4’

Indicates a call for the CA SOLVE:FTS allocation subtask.

F’8’

Indicates a call for the CA SOLVE:FTS open subtask or file.

F’12’

Indicates a call for the CA SOLVE:FTS deallocation subtask.

F’16’

Indicates a call for an ALLOCATE command.

If your site uses RACF security software, the exit can call RACF to associate the allocation with the requesting user ID rather than with your product region.

Modifying Transmission Information

Note: This section only applies to CA SOLVE:FTS.

In the initial access authorization call to NMDSNCHK, at the receiving end of a transmission, you can use the exit to overwrite some of the values passed to it in $NMDSNCK, and use these new values for the transmission, thereby enforcing your organization's security, naming, and allocation standards on incoming transmissions.

You can overwrite the following fields:

DSNCDSN

The receiving data set name

For new data sets only, you can overwrite the following fields:

DSNCVOL

The volume on which the data set is to be allocated

DSNCDEVT

The device type on which the data set is to be allocated

DSNCSPCE

The space allocation units to be used (CYLS, BLKS, or TRKS)

DSNCPRIM

The primary allocation amount

DSNCSECN

The secondary allocation amount

DSNCDIR

The directory blocks to be allocated

If you change any of these fields, you must set the DSNMODR flag to indicate that the changed values are to be substituted for the defined values for this transmission. If invalid values are returned in any field, the transmission will be terminated.

Note: You can only change these fields on the initial call for incoming transmissions. If the above fields are modified or the DSNMODR bit set at any other time, the modifications will be ignored.

Return Codes From the Exit

A return code is set in Register 15 on return from all calls to the exit, indicating the action that should be taken:

0

Indicates that access is permitted. Allocation can proceed.

4

Indicates that access is denied. An error message can be placed in the field DSNCTMSG, and its length in the field DSNCLMSG, in the communication area.

If the authorization exit is called by CA SOLVE:FTS and elects to receive the calls subsequent to the initial authorization call, return code 4, set in register 15 on return from any of those calls, will cause termination of the transmission at that point. The exit indicates which, if any, of the subsequent calls are required.

The additional calls to the exit allow greater control over the significant data set-specific operations that are involved in a transmission, letting the exit perform ENQ/DEQ functions to prevent duplicate access to data sets.

For RACF security software, the exit may call RACF at these times to associate the security responsibility for the action against the requesting user ID, rather than against CA SOLVE:FTS itself.

Install the Data Set Access Authorization Exit

When you have created your own data set access authorization load module, place it in your product's load library, or in another library concatenated to the load library through the STEPLIB DD statement in the started task JCL.

To identify your exit to your product region

1. Enter **/PARMS** at the command prompt. The Customizer : Parameter Groups list is displayed.
2. Enter **U** beside the NMSECURITY parameter group. The Customizer : Parameter Group panel for the NMSECURITY parameter group is displayed.
3. Enter the name of your load module in the Dataset Access Authorization Exit (NMDSNCHK) field.
4. Press F6 (Action) to set the changes; press F3 (File) to save the changes and exit.

Data Set Services Authorization Exit

The data set services authorization exit is loaded by a data set services subtask and is called synchronously by the subtask. The exit can issue WAIT or other SVCs without impacting your product region's main task.

Review the source code for the sample data set services authorization exit NMDSSCHK and use it as a guide to writing your own exit.

The exit load module must be link edited as AMODE 24, RMODE 24. The exit procedure can be coded as reentrant; however, this is not required because an explicit load is performed for each task using the exit. The exit is always called in 24-bit address mode.

Function Calls Made to the Exit

There are three main types of calls made to the exit:

- **Exit Initialization**—performs any initialization required.
- **Logical Function**—represents a function that has been requested by the user. For example, a data set allocation request or an OPEN request for a data set.
- **Exit Termination**—allows the exit to clean up any allocated storage areas and, if applicable, break the connection with any security subsystem that is being used.

Check the DSSCFUNC field to determine the type of call being made.

Exit Environment

The exit is loaded separately by each invocation of the Data Services subtask. For example, a subtask is created to allocate or free a data set, or to open a data set, and so on.

The exit receives (per subtask invocation) one initialization call, possibly one or more logical function calls, and possibly one termination call. For example, copying a data set from A to B would result in the logical calls shown below:

```
ALLOC Atask init
ALLOC AALLOC call
ALLOC Atask terminate
ALLOC Btask init
ALLOC BALLOC call
ALLOC Btask terminate
READ A  task init
READ A  open check
WRITE Btask init
WRITE Bopen check
READ A  task terminate
WRITE Btask terminate
FREE A  task init
FREE A  ALLOC call
FREE A  task terminate
FREE B  task init
FREE B  ALLOC call
FREE B  task terminate
```

If the exit is defined as reentrant you can use the DSSCXCOR field to anchor any private storage required by the subtask.

Note: Do not use shared (SP 50) storage as an exit work area.

More information:

Exit Termination Call (see page 266)

Registers on Entry to the Exit

On entry to the exit, Register 1 contains the address of a parameter list area that is used to pass information to the exit. This communication area is mapped by the $NMDSSCK macro, that is distributed with your product. This macro provides a DSECT expansion to perform mapping and contains detailed information on the contents of each field.

Standard module linkage conventions apply; on entry, the exit must save the contents of all registers (Register 13 contains the address of a save area that can be used by the exit) and on exit all registers must be restored to the value they had on entry with the exception of Register 15 that should contain a return code relevant to the function call.

Exit Initialization Call

This call allows the exit to perform any initialization required. This could include authorizing the subtask against the authority level of the user. This call is not specific to any request from the user: logical function calls identify the functions that have been requested by a user and you can perform more specific processing for these calls.

The parameter area passed to the exit contains the user ID of the user, any User Token or Security Exit Correlator associated with the user (drawn from the main security exit, if one is being used) and information about the region in which the exit is running (for example, the NMID).

The exit must return with Register 15 set to a return code that indicates the success or failure of exit initialization. A return code can be set to indicate that no more security processing is required for the function.

The following return codes are allowed for this call:

0

Indicates that exit initialization completed successfully.

4 (see page 265)

Indicates that exit initialization completed successfully. No more logical function calls are required for this user—note that the termination call is still performed, however.

8

Indicates that exit initialization failed.

If Register 15 is set to 8, you can use the DSSCLMSG and DSSCTMSG fields to return a message indicating the reason for the failure. See the $NMDSSCK macro for full details. If no message is returned, data set services sets a default message. The message returned by the exit is recorded on the activity log.

More information:

Return Code 4 (see page 265)

Return Code 4

If you set return code 4 on initialization, this means that the host does not need to participate on any subsequent logical function authorization.

You can set the return code, for example, if you issue a RACINIT during initialization to register the subtask as relating to a specific user ID (that is, when you have a security exit installed). In this case, for example, an OPEN DATASET call would result in an S913 OPEN ABEND because RACF does the security checking.

Note: Data set services handles this situation correctly.

Return Code 0

If you set return code 0, but still connect the subtask to the security system, you can do additional checking on some calls (for example, rename PDS member) that the security system does not specifically check.

Logical Function Call

This call represents a function that has been requested by the user. For example, a data set allocation request or a request to open a data set. The DSSCTYPE field is used to indicate the function to be performed.

The parameter area passed to the exit contains all information passed on the exit initialization call as well as any specific information requested by the user for the function. For example, if the call is for an allocation request the data set name, disposition, volume name, and so on, might be available. The $NMDSSCK macro contains a full description of each logical function call and the parameters that are passed on each call.

The exit can return with Register 15 set to a return code that indicates whether the function is permitted.

The following return codes are allowed for this call:

0

Indicates that the function is authorized.

4

Indicates that the function is not authorized.

If Register 15 is set to 4, a message indicating the reason for the failure can be returned using the DSSCLMSG and DSSCTMSG fields. See the $NMDSSCK macro for full details. If no message is returned by the exit, data set services sets a default message. The message returned by the exit is recorded on the activity log.

Exit Termination Call

This call allows the exit to clean up any allocated storage areas and, if applicable, break the connection with any security subsystem that is being used. The exit load module is deleted from storage on return from this call.

Note: This call may not occur. If, for example, an NCL process using data set services is flushed, the subtask(s) are force detached. You should be aware of this and allocate any private storage in a non-shared subpool (this can include subpool SP0 but not SP50), which results in the storage being automatically freed.

The parameter passed to the exit contains all information passed on the exit initialization call. Register 15 must contain 0 on return from this call.

Install the Data Set Services Authorization Exit

When you have created your own data set services authorization load module, place it in your product's load library, or in another library concatenated to the load library through the STEPLIB DD statement in the started task JCL.

To identify your exit to your product region

1. Enter **/PARMS** at the command prompt. The Customizer : Parameter Groups list is displayed.
2. Enter **U** beside the NMSECURITY parameter group. The Customizer : Parameter Group panel for the NMSECURITY parameter group is displayed.
3. Enter the name of your load module in the Dataset Services Authorization Exit (NMDSSCHK) field.
4. Press F6 (Action) to set the changes; press F3 (File) to save the changes and exit.

Appendix F: INMC Security Exit Support

This section contains the following topics:

INMC Security Exit

You must write a primary and secondary exit for each system that is to be controlled by the INMC security exit when connected by an INMC link.

The exits must be assembled and linked to form an executable load module and must be placed in a load library accessible to your product region during execution.

When the exit is called, standard assembler language linkage conventions apply.

When invoked, the exit operates under your product region's main task, and therefore extensive processing, I/O operations, or WAITs issued within the exit can impact the overall performance of the system.

Identify the Primary Exit

One INMC primary exit is available for any one region and must be identified.

To identify the primary exit, include the following command in the INIT initialization procedure or issue the command before a link is activated:

```
SYSPARMS INMCEX01=exitname
```

exitname

Is the load module of the primary exit.

When an INMC link is activated, INMC attempts to load a copy of the exit. If the load fails for any reason it is regarded as a security exposure and the link is disabled automatically. Write the exit to be reentrant if possible because a load is issued for each link that is activated.

Identify the Secondary Exit

One INMC secondary exit is available for any one system and must be identified.

To identify the secondary exit, include the following command in the INIT initialization procedure or issue the command before a link is activated:

```
SYSPARMS INMCEX02=exitname
```

exitname

Is the load module of the secondary exit.

When an INMC link is activated, INMC attempts to load a copy of the exit. If the load fails for any reason the primary exit of the remote system is notified that no secondary exit exists in this system. In this case the remote primary exit decides whether to allow link activation.

Change Exit Names Dynamically

The name of the load module that forms either the primary or secondary INMC exit can be changed dynamically at any time.

To change an exit name, reissue one of the following commands to identify the new name:

```
SYSPARMS INMCEX01=new_primary_exitname
```

```
SYSPARMS INMCEX02=new_secondary_exitname
```

To disable an exit at any time, issue one of the following commands:

```
SYSPARMS INMCEX01=NONE
```

```
SYSPARMS INMCEX02=NONE
```

Registers on Entering INMC Exits

Both primary and secondary exits are called using conventional linkage. The registers on entry to either exit contain values as follows:

Register	Value
0	Unpredictable
1	Address of parameter list
2	Unpredictable
3	Unpredictable
4	Unpredictable
5	Unpredictable
6	Unpredictable
7	Unpredictable
8	Unpredictable
9	Unpredictable
10	Unpredictable
11	Unpredictable
12	Unpredictable
13	Address of standard save area
14	Product region return address
15	Entry point of INMC primary or secondary exit

The exit must save registers on entry and perform standard save area linkage. On return, registers must be restored and control returned to the address held in Register 14 on entry.

Primary Exit

Your product region calls the exit with Register 1 containing the address of a parameter list which is always ten consecutive full words in length.

Depending upon the reason for the call, some of these words are set to binary zeros.

The first word of the parameter list is always the address of a fullword that contains a function code identifying the type of call being made.

The other parameters passed depend upon the value of this function code, and the exit must therefore determine the function code first to decide which parameters to expect.

The parameter list passed to the exit is also used as a parameter list returned from the exit. The exit can thus indicate the processing required and pass the appropriate information to your product region.

Note: On a call to the exit, addresses of various fields are included in the parameter list. Only these fields can be used to return information from the exit; the exit cannot pass parameters back to your product region in any other locations.

Initialization Processing

Initialization processing notifies the primary exit of two things:

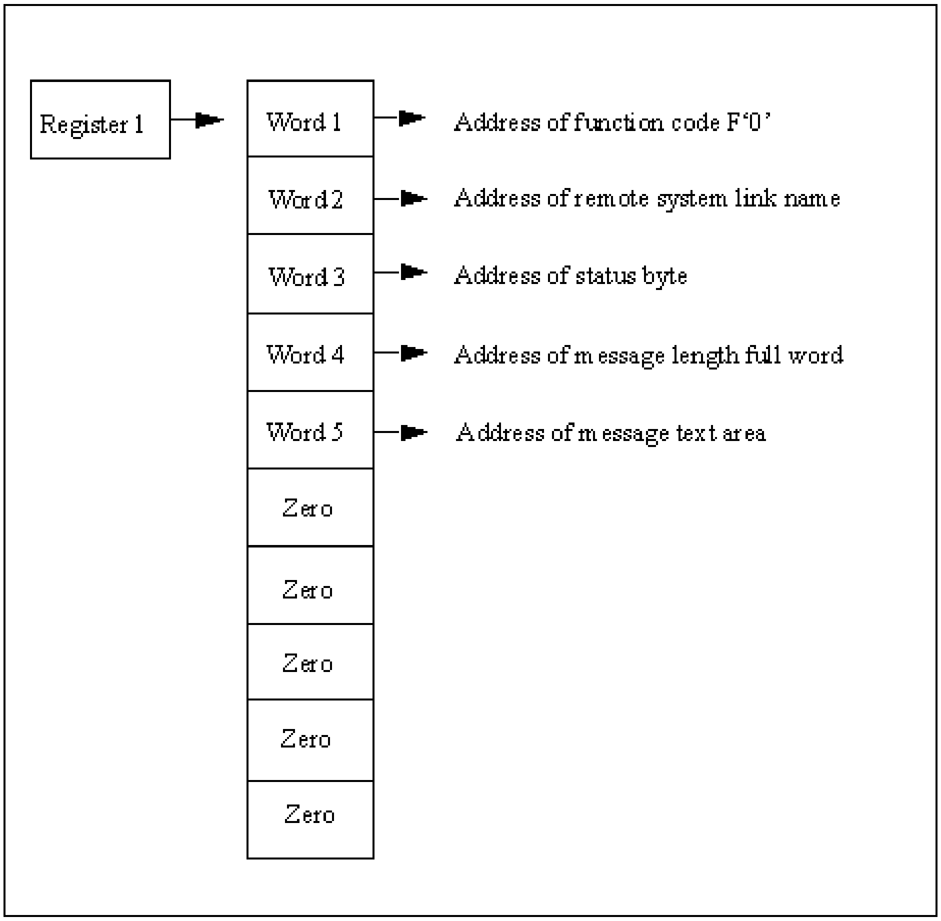
- The INMC link to the specified remote region activated
- Whether the remote region is configured with a secondary exit to which the primary exit can send messages

To provide this functionality in your exit, you code the initialization call to correspond with the parameter list in the following section.

Consider any special processing you want to perform, such as, password exchange between the connecting systems.

Initialization Call Parameter List

On entry to the Primary exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'0'
Word 2
Address of remote system link name
Word 3
Address of status byte
Word 4
Address of message length full word
Word 5
Address of message text area
Zero
Zero
Zero
Zero
Zero

Word 1

Points to a full word containing function code X'00000000'. Other words in the parameter list point to additional parameters.

Word 2

Is the address of the 1 to 12 character link name of the remote system with which a link has been established.

Word 3

Is the address of a 1-byte field that specifies the status of the secondary exit in the remote system. Values of this field and the meanings are as follows:

Field Value	Definition
X‘00’	A secondary exit is available for communications.
X‘04’	The remote system does not have a secondary exit defined. No SYSPARMS INMCEX02 command has been issued in the remote system.
X‘08’	The remote system has a secondary exit defined but the load module (or phase) was not loaded successfully.

Word 4

Is the address of a full word, value F‘0’. The primary exit can place in this field the length of a message that is to be sent to the secondary exit in the remote system. The maximum length is 256 bytes (decimal). If a longer length is specified it is truncated to 256. If a negative length is specified it is forced to 256.

Word 5

Is the address of an area in which the primary exit can place the text of a message that is to be sent to the secondary exit in the remote system. The message is assumed to be left aligned in this message area. The maximum message text length is 256 (decimal) bytes. The data in the message can be binary or character and is transparent to your region. The meaning and format of the message sent to the secondary exit is determined by the installation.

Words 6 to 10

Are set to zero.

Return Codes from Initialization Call

On return from the initialization call, the primary exit signals what it wants done next. The choices that are available are:

- Send a message to the secondary exit in the remote system.
- Terminate exit processing.

The exit indicates which option is required by using the same ten full words of the parameter list with which it was called, to pass back its own instructions to your region. When the exit returns therefore, the ten full word parameter list must be formatted as follows:

Word 1

Is the address of a function code specifying the action that the exit wishes your region to take. Values of this function code and their meanings are as follows:

Function Code	Definition
F‘0’	A message is to be sent to the secondary exit in the remote system.
F‘4’	Exit processing is to terminate.

Word 2

Is unchanged and not used.

Word 3

Is the address of a 1-byte field. This is the same address as was passed to the exit in word 3 of the parameter list. The value of this 1-byte field depends upon the function code returned by the exit in word 1. Valid values and their meanings are:

Function Code		Meaning
F‘0’		Function code not used.
F‘4’	X‘00’	Allow normal link activation
	X‘04’	Allow link to remain open but allow no traffic to flow
	X‘08’	Close the link

Word 4

Is not used for function code F‘4’. For function code F‘0’ this word holds the address of a full word in which the primary exit can place the binary length of a message that is to be sent to the secondary exit in the remote system. The maximum length is 256 bytes (decimal). If a longer length is specified it is truncated to 256. If a negative length is specified it is forced to 256. This is the same address as passed to the exit in word 4 of the parameter list.

Word 5

Is not used for function code F‘4’. For function code F‘0’ this word holds the address of an area in which the primary exit can place the text of a message that is to be sent to the secondary exit in the remote system. The message is assumed to be left aligned in this message area. The maximum message text length is 256 (decimal) bytes. The data in the message can be binary or character and is transparent to your region. The meaning and format of the message sent to the secondary exit is determined by the installation. This is the same address as passed to the exit in word 5 of the parameter list.

Words 6 to 10

Are set to zero.

Message Delivery Processing

When the primary exit sends a message to the secondary exit in a remote system, the secondary exit always responds with a reply. That reply can be a null message of zero length. The reply message is presented to the primary exit for processing by using a Deliver Call.

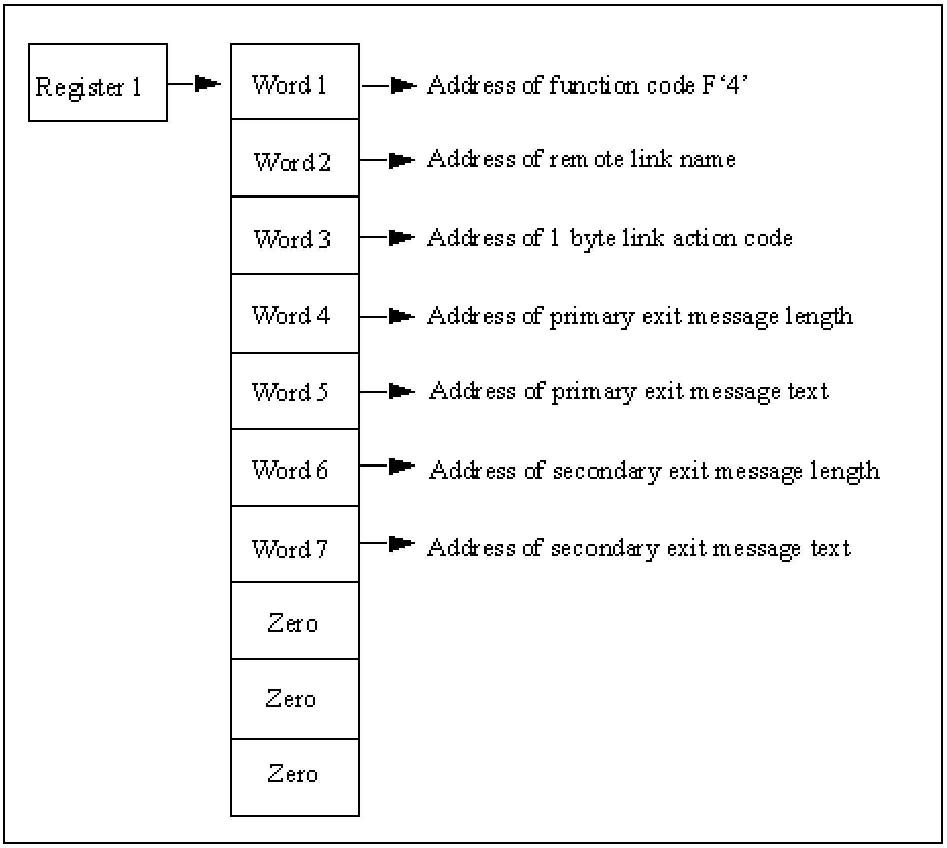
The primary exit performs whatever processing is required and then returns to your region with the ten fullword parameter list set to indicate the processing required next.

On return, the exit can request one of two options:

- Terminate exit processing.
- Send a message to the secondary exit.

Delivery Call Parameter List

On entry to the primary exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'4'
Word 2
Address of remote link name
Word 3
Address of 1 byte link action code
Word 4
Address of primary exit message length
Word 5
Address of primary exit message text
Word 6
Address of secondary exit message length
Word 7
Address of secondary exit message text
Zero
Zero
Zero

Word 1

Points to a full word containing function code X‘00000004’.

Word 2

Is the address of the link name of the remote system with which a link has been established.

Word 3

Is the address of a full word in which the primary exit can return a code indicating whether the link is to be opened for normal INMC traffic.

Word 4

Is the address of a full word, value F‘0’. The primary exit can place in this field the length of a message that is to be sent to the secondary exit in the remote system. The maximum length is 256 bytes (decimal). If a longer length is specified it is truncated to 256. If a negative length is specified it is forced to 256.

Word 5

Is the address of an area in which the primary exit can place the text of a message that is to be sent to the secondary exit in the remote system. The message is assumed to be left aligned in this message area. The maximum message text length is 256 bytes (decimal). The data in the message can be binary or character and is transparent to your region. The meaning and format of the message sent to the secondary exit is determined by the installation.

Word 6

Is the address of a full word containing the length of a message sent from the secondary exit in the remote system. The maximum length is 256 bytes (decimal), minimum is zero (which would be a null message).

Word 7

Is the address of the message sent from the secondary exit.

Words 8 to 10

Are set to zero.

Return Codes from Delivery Call

When the primary exit completes its processing of the message returned from the secondary exit it formats the ten word parameter list to indicate the processing required next and then returns to your region.

The parameter list must be set exactly.

More information:

Return Codes from Initialization Call (see page 275)

Termination of Link Notification Processing

If a link to a remote region is lost before a reply is received from the secondary exit, your region indicates this condition to the primary exit through a notify call. This call tells the primary exit that no further communications can be received from the secondary exit and that the INMC link to the remote region has been lost.

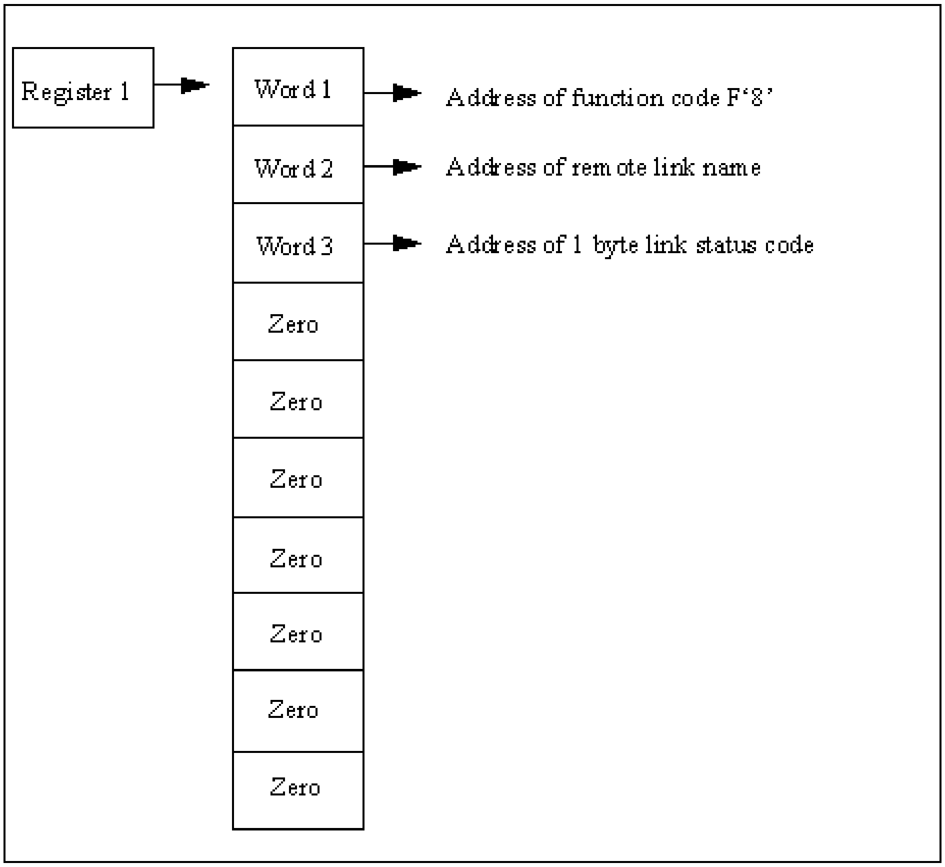
A notify call is also made if the primary exit attempts to communicate with a secondary exit under the following conditions:

- The remote region is not configured with a secondary exit.
- The secondary exit failed to initialize.

When the exit is notified of a lost link, it performs any required termination processing and then return to your region, indicating that exit processing is to terminate. Any other action results in repetitive notify calls until the exit signals that exit processing is to end.

Notify Call Parameter List

On entry to the primary exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F‘8’
Word 2
Address of remote link name
Word 3
Address of 1 byte link status code
Zero
Zero
Zero
Zero
Zero
Zero
Zero

Word 1

Points to a full word containing function code X‘00000008’.

Word 2

Is the address of the link name of the remote system with which contact has been lost.

Word 3

Is the address of 1-byte field containing a notify code. Valid values are as follows:

Field Value	Definition
X‘04’	The remote system does not have a secondary exit defined. No SYSPARMS INMCEX02 command has been issued in the remote system.
X‘08’	The remote system has a secondary exit defined but the load module (or phase) was not loaded successfully.
X‘0C’	The link has been lost.

Words 4 to 10

Are set to zero.

Return Codes from Notify Call

When the primary exit completes its processing of the notify call it should format the ten word parameter list as follows:

Word 1

Is the address of a function code specifying the action that the exit requires your region to take. The values of this function code must be F’4’ (Exit processing is to terminate).

The remaining nine full words should be returned unchanged.

Secondary Exit

Your product region calls the exit with Register 1 containing the address of a parameter list which is always ten consecutive full words in length.

Depending upon the reason for the call, some of these words are set to binary zeros.

The first word of the parameter list is always the address of a fullword that contains a function code identifying the type of call being made.

The other parameters passed depend upon the value of this function code, and the exit must therefore determine the function code first to decide which parameters to expect.

The parameter list passed to the exit is also used as a parameter list returned from the exit. The exit can thus indicate the processing required and pass the appropriate information to your product region.

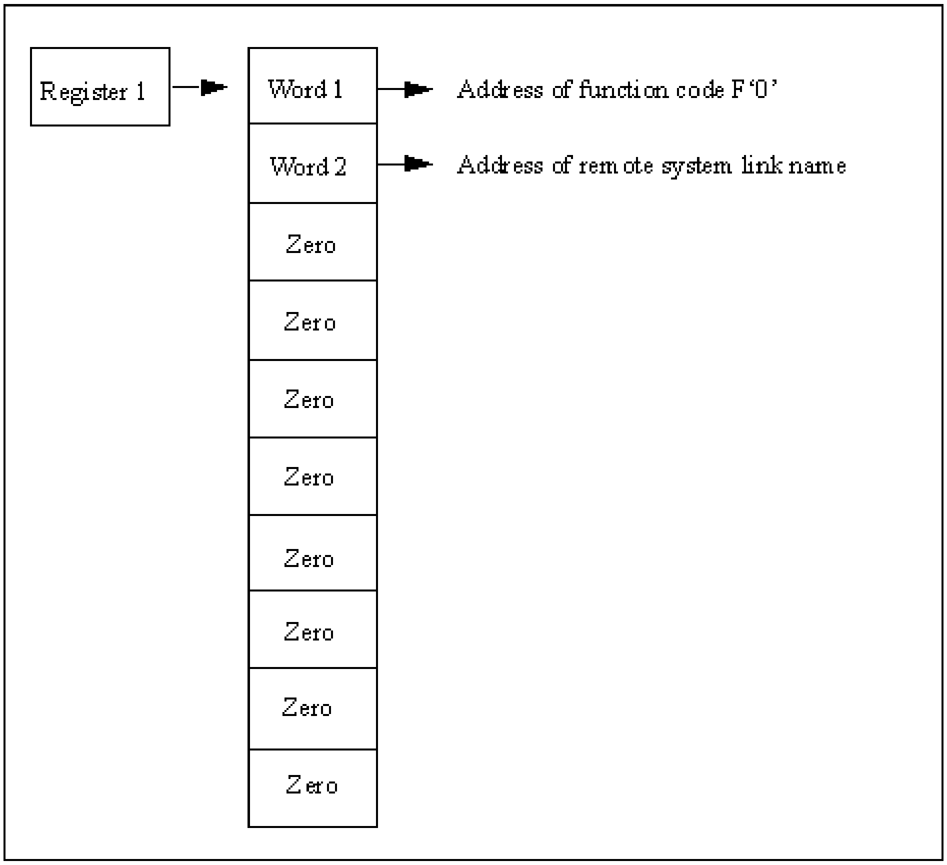
Note: On a call to the exit, addresses of various fields are included in the parameter list. Only these fields can be used to return information from the exit; the exit cannot pass parameters back to your product region in any other locations.

Initialization Processing

Initialization processing indicates to the secondary exit that a link has become active. There is no indication whether a primary exit exists in the remote system, or, if there is, whether that exit is going to attempt to communicate with the secondary exit. The secondary exit must therefore be written to expect whatever processing is implemented in the remote primary exit.

Initialization Call Parameter List

On entry to the secondary exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'0'
Word 2
Address of remote system link name
Zero
Zero
Zero
Zero
Zero
Zero
Zero
Zero

Word 1

Points to a full word containing function code X‘00000000’. Other words in the parameter list point to additional parameters.

Word 2

Is the address of the link name of the remote system with which a link has been established. There may or may not be a primary exit defined for that system. If there is, it is up to the primary exit to determine whether it wants to communicate with this secondary exit.

Words 3 to 10

Are set to zero.

Return Codes from the Initialize Call

The secondary exit does not have an opportunity to respond to the initialize call. On completion of any processing it chooses to perform when passed control, the secondary exit should return to your region with its ten full word parameter list unchanged.

Message Delivery Processing

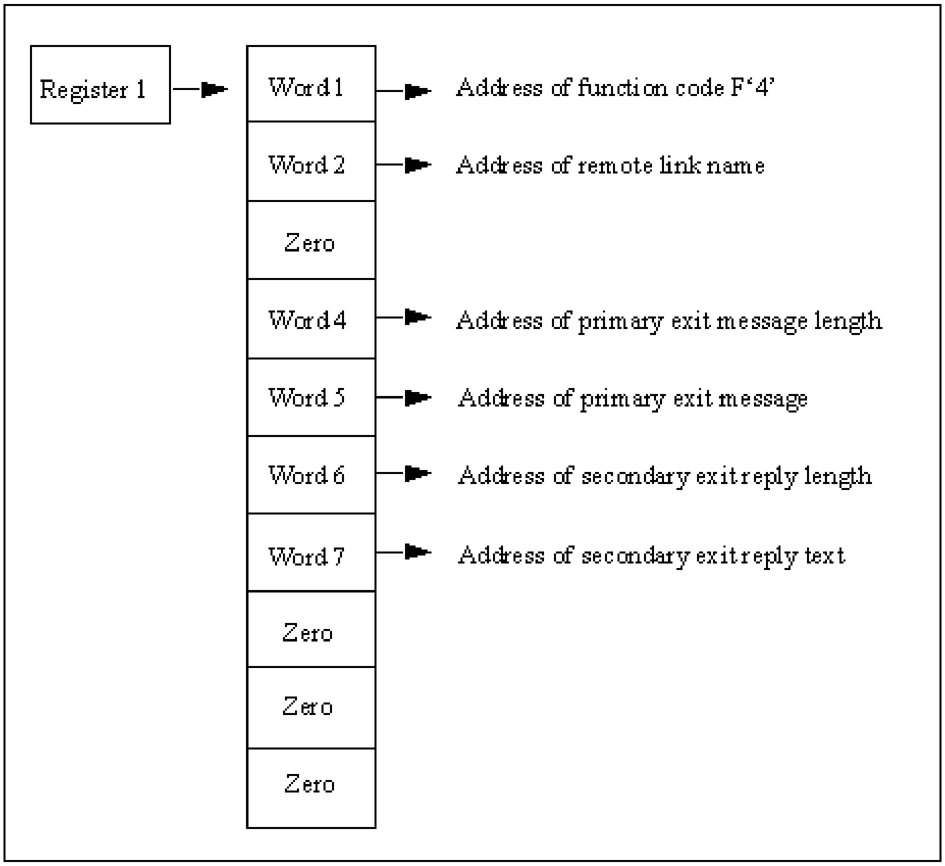
When the primary exit sends a message to the secondary exit the message is presented to the secondary exit for processing using the Deliver Call.

The secondary exit performs whatever processing is required and then returns to your region. On return, your region expects the secondary exit to have set the message-length and message-text areas pointed to by words 6 and 7 of the parameter list with which it was called.

The secondary exit can, if necessary, indicate that a null message is to be returned to the primary exit, perhaps as an acknowledgment to the message sent by the primary.

Deliver Call Parameter List

On entry to the secondary exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'4'
Word 2
Address of remote link name
Zero
Word 4
Address of primary exit message length
Word 5
Address of primary exit message
Word 6
Address of secondary exit reply length
Word 7
Address of secondary exit reply text
Zero
Zero
Zero

Word 1

Points to a full word containing function code X‘00000004’.

Word 2

Is the address of the link name of the remote system from which the message has been received.

Word 3

Is set to zero.

Word 4

Is the address of a full word containing the length of a message sent from the primary exit in the remote system. The maximum length is 256 bytes (decimal), minimum is zero (which would be a null message).

Word 5

Is the address of the message sent from the primary exit.

Word 6

Is the address of a full word, value F‘0’. The secondary exit can place in this field the length of a message that is to be sent to the primary exit in the remote system. The maximum length is 256 bytes (decimal). If a longer length is specified it is truncated to 256. If a negative length is specified it is forced to 256.

Word 7

Is the address of an area in which the secondary exit can place the text of a message that is to be sent to the primary exit in the remote system. The message is assumed to be left aligned in this message area. The maximum message text length is 256 bytes (decimal). The data in the message can be binary or character and is transparent to your region.

The meaning and format of the message sent to the primary exit is determined by the installation.

Words 8 to 10

Are set to zero.

Return Codes from Secondary Exit Deliver Call

The secondary exit should set the full word pointed to by word 6 of the call parameter list to the length of the message text that is to be returned to the primary exit as a reply to the message just delivered.

The message length has a range of 0 to 256 in hexadecimal. Any text outside the specified range is truncated to 256 bytes decimal. A zero length is accepted. Negative length settings are forced to a zero value.

Word 7 of the call parameter list points to a 256-byte area in which the secondary exit can place the text of the message to be returned to the primary exit. The format and content of the message returned is decided by the installation.

No other return information is accepted from the secondary exit.

Termination Processing

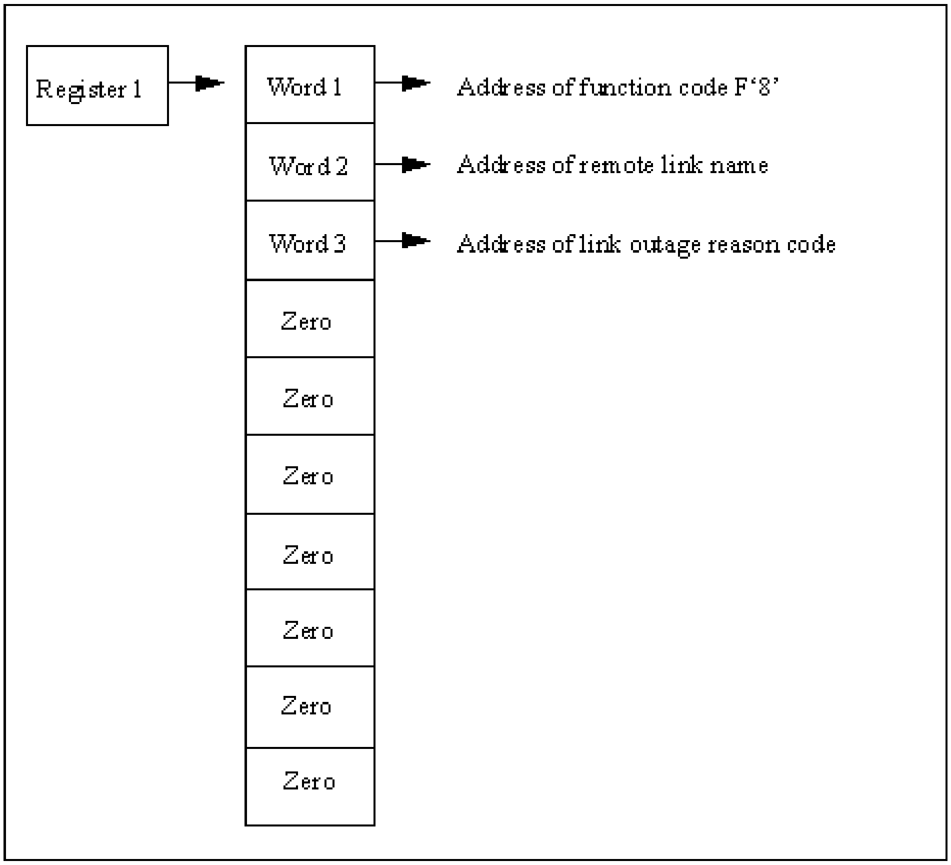
When the primary exit in a remote region decides that the exchange of information between the primary and secondary exits is complete, it returns to your region. The exit indicates that exit processing is to terminate, and specifies whether to activate or close down the link.

The decision to finish communication is reported to the secondary exit as a disconnect call. The secondary exit determines that no further messages are to be received from the primary exit and releases any exit-dependent resources it acquired.

The disconnect call is also issued when the link to the primary exit's remote system is lost.

Disconnect Call Parameter List

On entry to the secondary exit, Register 1 points to a list of ten full words, as shown in this diagram.


Register 1
Word 1
Address of function code F'8'
Word 2
Address of remote link name
Word 3
Address of link outage reason code
Zero
Zero
Zero
Zero
Zero
Zero
Zero

Word 1

Points to a full word containing function code X‘00000008’.

Word 2

Is the address of the link name of the remote system from which the message has been received.

Word 3

The address of 1 byte disconnect reason code. Valid values are:

Field Value	Definition
X‘00’	Orderly termination of communication by choice of the primary exit.
X‘04’	Disconnection caused by loss of contact.

Words 4 to 10

Are set to zero.

Return Codes from the Disconnect Call

The secondary exit should clean up any resources allocated during the conversation with the primary exit and perform any required termination processing. No further communication is possible with the primary exit.

No parameters can be returned to your region.

On return to management service, the link either is out of action (if caused by a link outage) or is activated or deactivated according to the choice of the primary exit in the remote system.

Appendix G: NMSAF Public Correlator

This section contains the following topics:

Overview

The NMSAF solution is built around the partial security exit facility.

Your product provides the security exit with the ability to supply the following information for each user that logs on:

- A security correlator—This correlator is typically used to anchor useful control blocks (such as an ACEE).
- A UTOKEN pointer—This pointer (if used) must point to a valid SAF UTOKEN that your product region can use.

Source for the NMSAF exit is not supplied. However, to allow you to write other exits that can take advantage of the information that it associates with a user, part of the security correlator information is made public.

For example, you can write an NCLEX01 exit that performs resource checking using the ACEE associated with a user.

The NMSAF solution also allows you to set various global options by using the USER*xxx* options in the SXCTL file. A facility is provided that allows you to locate this information.

More information:

SXCTL Parameters (see page 131)

Security Correlator

When you are using NMSAF, any exit for your product region (such as NMDSNCHK and NMDSSCHK) that receives the security correlator can access the public information.

The security correlator includes:

- A storage area, mapped by the DSECT in the $NMUCORH macro

  This area contains data such as the product region user ID and the SAF user ID (which can be different), the ACEE address, and the user logon type.

- A global area, mapped by a provided DSECT

  This area contains the values of the global user flags and fields.

$NMUCORH Macro

With the NMSAF security facility, you can use the $NMUCORH macro to map the area pointed to by the security correlator field provided in many exits in your product region.

The first part of the area is regarded as public but is read-only. Each logged on user has a separate area (if a user ID is logged on more than once, each instance has a separate area).

Important! Do not alter any of the fields.

DSECTs in the $NMUCORH Macro

The $NMUCORH macro expands into two DSECTs:

- A UCOR DSECT (if you place a label on the macro request, that label is used as the DSECT name instead of UCOR)
- A UGIN DSECT, which maps the global information area (see below)

Fields in the UCOR DSECT

The UCOR (or renamed) DSECT contains the following fields. For more information about these fields, including equated values, see the source code of the $NMUCORH macro.

Important! This list shows only the public header portion of the area. Other fields follow the header. However, they are not documented and must not be altered.

UCOREYEC

Specifies an eye catcher.

Type: Character

UCORUID

Specifies the user ID.

Type: Character

UCORSUID

Specifies the SAF user ID, which is normally UCRUID, except when a system region and a common SAF user ID is used, or when system regions are not SAF validated (in which case this field is blank).

Type: Character

UCORUTYP

Specifies the user logon type. It can have various equated values.

Type: Number

UCOR@ACE

Specifies the address of the SAF ACEE for this user (0 if no SAF user ID).

Type: Address

UCOR@TOK

Specifies the address of the UTOKEN area (generally provided as a parameter to the exit as well).

Type: Address

UCORUGIN

Specifies the address of the UGIN global area. This is a constant value and points to the area mapped by the UGIN DSECT.

Type: Address

UCOR@USX

Specifies the address of a site-specific extension area. It is initially zero.

Type: Address

UCORLUSX

Specifies the length of a site-specific extension area. It is initially zero.

Type: Number

UCORUSER

Specifies anything that can be used by user exits.

Limits: Six full words (24 bytes)

Type: *

You can use the UCOR@USX and UCORLUSX fields to provide the address and length of a site-specific extension:

- If they are *both* set, then the NMSAF exit issues a FREEMAIN when the user correlator is freed (during logoff processing). The storage *must* be allocated in your product region shared subpool (SP 50).
- Setting only the address does not cause a FREEMAIN; this is handy for anchoring, for example, some global area.

More information:

Fields in the UGIN DSECT (see page 293)

Fields in the UGIN DSECT

The UGIN DSECT contains the following fields. This is a common area that contains global information. Some of it is system information and some is available for your use.

UGINEYEC

Is an eye catcher.

Type: Character

UGINSFLG

Is the system flag area (eight flags).

Type: Bits

UGINSFL1 to **UGINSFL8**

Are the system flags.

Type: Bits

UGINSCFL

Is the system character field area (8-byte fields).

Type: Character

UGINSCF1 to **UGINSCF8**

Are the character fields.

Type: Character

UGINUPT1 to **UGINUPT4**

Are the pointer fields (4-byte fields) that are available for installation use (any storage anchored must be obtained in SP 50).

Type: Pointer

UGINUFL1 to **UGINUFL8**

Are eight user flags set by the USERFLAG*n* input file statements in SXCTL (corresponding to the 8 bits in the byte 80..01).

Type: Bits

UGINUCF1 to **UGINUCF8**

Are the eight-character fields that can be set by SXCTL for input file statements by using NMSAF.

UGINUCF1 to UGINUCF4 are user names, as set by USERNAME*n*.

UGINUCF5 to UGINUCF8 are user IDs, as set by USERUID*n*.

Appendix H: External Security Definitions for Modeled Users

This section contains the following topics:

Define Resources in CA ACF2

To define and activate the resources in CA ACF2, issue the following commands in TSO:

```
[ACF]
SET RESOURCE(FAC)
COMPILE *
$KEY(NETMASTR) TYPE(FAC)
ADMIN UID(USER1) SERVICE(READ) ALLOW
OPER  UID(USER2) SERVICE(READ) ALLOW
NOPER UID(USER3) SERVICE(READ) ALLOW
MON   UID(*)     SERVICE(READ) ALLOW
STORE
[END]
```

Note: Instead of using TSO, you can use the ACFBATCH utility in JCL. If you use the utility, omit the [ACF] and [END] lines.

Define Resources in CA Top Secret

To define and activate the resources in CA Top Secret, issue the following commands in TSO:

```
TSS  ADD(dept)     IBMFAC(NETMASTR)
TSS  PER(USER1)    IBMFAC(NETMASTR.ADMIN)
TSS  PER(USER2)    IBMFAC(NETMASTR.OPER)
TSS  PER(USER3)    IBMFAC(NETMASTR.NOPER)
TSS  PER(USERPROF) IBMFAC(NETMASTR.MON)
```

Define Resources in RACF

To define and activate the resources in RACF

1. Issue the following RACF commands:

   ```
   RDEFINE FACILITY NETMASTR.ADMIN UACC(NONE)
   RDEFINE FACILITY NETMASTR.OPER  UACC(NONE)
   RDEFINE FACILITY NETMASTR.NOPER UACC(NONE)
   RDEFINE FACILITY NETMASTR.MON   UACC(READ) (see note)
   SETROPTS RACLIST(FACILITY) REFRESH
   ```

   Note: If you do not want to allow general browse access, specify:

   ```
   RDEFINE FACILITY NETMASTR.MON   UACC(NONE)
   ```

2. To connect users to the resources, issue commands like the following:

   ```
   PERMIT NETMASTR.ADMIN  CLASS(FACILITY)  ID(USER1)
   PERMIT NETMASTR.NOPER  CLASS(FACILITY)  ID(USER2)
   ```

   Note: The default access is READ, which is sufficient.

Appendix I: Command Authority Levels

Each product command has a default authority level that is required for execution.

This section contains the following topics:

Overview

Each product command has an assigned authority level in the range 0 through 255. For a user to execute a particular command, their corresponding command authority level must be equal to or higher than the authority level assigned to the command. Command authority levels for users are allocated in their user ID definition.

Default command authority levels have been allocated to each product command according to the importance or power associated with each command. For example, VTAM display commands have an authority level of 0. A user with a command authority level of 0 can execute display commands. They cannot execute commands that affect or change the status of the network because those commands require a higher authority.

The default command authority level of product commands can be changed.

Command Authority Summary

The following list describes the available commands and their default authority level. Where a special authority applies to certain operands of a command, the authority levels are expressed as normal/special, for example, 0/2. You can use the *opauth* subparameter of the SYSPARMS CMDAUTH operand on these commands.

Note: For more information about using this operand, see the *Reference Guide*.

The TCP/IP access level governs commands with an authority level of T. Resource-level security governs commands with an authority level of R.

Note: For more information about each product command, see the online help.

ACT

Activates a VTAM network node.

Authority level: 1

ACTLOGON

Activates previously suspended logon paths.

Authority level: 3

AFTER

Issues commands or a message after the specified time interval.

Authority level: 0/2

ALLOCATE

Allocates a cataloged, SYSOUT, or VSAM data set.

Authority level: 0/3

AOM GO

Restarts the local AOM operating system after a pause.

Authority level: 2

AOM NEWTAB

Compiles and (optionally) loads a new AOM Screening Table.

Authority level: 2

AOM PAUSE

Suspends the local AOM operating system interface.

Authority level: 2

AOM START

Starts the local AOM operating system interface.

Authority level: 2

AOM STOP

Terminates the local AOM operating system interface.

Authority level: 2

AT

Issues commands or a message AT the specified time of day.

Authority level: 0/2

ATF DEFINE

Defines a new translation name

Authority level: 2

ATF LOAD

Loads translation tables for a specific translation name into storage.

Authority level: 2

ATF UNLOAD

Unloads translation tables for a specific translation name.

Authority level: 2

AUTOHOLD

Determines the OCS screen display line mode.

Authority level: 0

CANCEL

Cancels a nominated user or user region or window

Authority level: 0/1

CLEAR

Clears the current logical screen window.

Authority level: 0

CLSDST

Closes the sessions with the specified terminals.

Authority level: 1/0

CNM

Starts and stops the VTAM CNM interface.

Authority level: 3

CNMTRACE

Defines the CNM records to trace.

Authority level: 3

CONNECT

Connects a terminal using XNF.

Authority level: 1

CS-

Retrieves the command from the bottom of the command stack.

Authority level: 0

CS+

Retrieves the command from the top of the command stack.

Authority level: 0

D

Displays a specific VTAM resource.

Authority level: 0

DEBUG

Controls the execution and debugging of NCL processes.

Authority level: 0/3

DEFALIAS

Defines an alias entry for the Alias Name Translation Facility of NEWS.

Authority level: 4

DEFCLASS

Defines RTM, SAW, Session, or Resource classes.

Authority level: 4

DEFLINK

Maintains the Dynamic Link Table, or DLT, used by LU6.2 services.

Authority level: 3

DEFLOGON

Defines the logon information for the EASINET and MAI features.

Authority level: 4

DEFMODE

Defines an entry in the Mode Control Table used by LU6.2 services.

Authority level: 4

DEFMSG

Defines delivery options for PPO messages.

Authority level: 4

DEFOPSET

Defines an entry in the Option Set Control Table (OSCT).

Authority level: 4

DEFTERM

(VOS3 only) Defines terminal type.

Authority level: 2

DEFTRANS

Defines an entry in the Transaction Control Table (TCT) used by LU6.2 services.

Authority level: 4

DELALIAS

Deletes an alias entry used by the Alias Name Translation Facility.

Authority level: 4

DELCLASS

Deletes an NTS class definition.

Authority level: 4

DELLINK

Deletes a dynamic link definition.

Authority level: 3

DELLOGON

Deletes an entry form EASINET/MAI appl table.

Authority level: 4

DELMODE

Deletes an APPC MCT table entry.

Authority level: 4

DELOPSET

Deletes an APPC OSCT entry.

Authority level: 4

DELTERM

(VOS3 only) Deletes terminal definition.

Authority level: 2

DELTRANS

Deletes an APPC TCT entry.

Authority level: 4

DISCONN

Disconnects either the current or the nominated processing region.

Authority level: 0/1

DNR

Defines or modifies parameters for the Domain Name Resolver (DNR).

Authority level: 4

DOMAIN

Uniquely defines a domain.

Authority level: 3

EDB

Defines, starts, stops, or deletes an EDB connection.

Authority level: 4

END

Terminates a paused NCL process without further processing.

Authority level: 0/2

ENTER

Defines the Enter key.

Authority level: 0

EQUATE

Assigns a text value to a unique string.

Authority level: 0

EVERY

Issues a command or series of commands at a specified time frequency.

Authority level: 0/2

EXEC

Schedules an NCL process for serial execution.

Authority level: 0

F

Issues a VTAM modify (F) command.

Authority level: 1

FLUSH

Terminates an NCL process without further processing.

Authority level: 0/2

FORCE

Forcibly inactivates a VTAM network node.

Authority level: 1

FSPROC

Executes an NCL procedure in OCS full-screen mode.

Authority level: 0

FSTOP

Forces an immediate shutdown of the system.

Authority level: 3

FTS

Invokes File Transmission Services.

Authority level: 0

FTSINIT

Modifies the status of FTS initiators.

Authority level: 0

FTSMOD

Modifies the status of incoming or outgoing FTS transmissions.

Authority level: 0

GO

Resumes processing for a paused NCL process.

Authority level: 0/2

INACT

Inactivates a VTAM network node.

Authority level: 1

INTQUE

Passes data to an &INTREAD statement in an NCL procedure.

Authority level: 0/2

ISR

Changes the status of ISR (Inter-System Routing) conversations.

Authority level: 2

JOURNAL

Controls the journal data set.

Authority level: 2

K

Clears the current OCS window.

Authority level: 0

LIBPATH

Controls library path definitions.

Authority level: 4

LIBRARY

Controls library definitions.

Authority level: 4

LINK

Defines or changes the status of the INMC/NVS/APPC links

Authority level: 3

LINK START

Defines the attributes and then starts a link to a domain.

Authority level: 3

LIST

Lists statements in a specific member of the procedure library.

Authority level: 0

LOAD

Preloads copies of procedures, ASN.1 maps, or load modules into storage.

Authority level: 4

LOCK

Suspends current screen processing.

Authority level: 0

LOG

Writes messages to the activity log.

Authority level: 0

LOGSWAP

Swaps logging to the next available log.

Authority level: 3

LSRPOOL

Sets attributes for the VSAM shared resource pool.

Authority level: 2

LTITLE

Sets the title for your product region logo panel.

Authority level: 4

LUTRACE

Traces session traffic to selected terminals.

Authority level: 4

MAIDISC

Forces disconnection of an MAI-OC session.

Authority level: 0

MAIINT

Interrupts an MAI-OC application.

Authority level: 0

MAILOGON

Creates an MAI-OC session with another application.

Authority level: 0

MAISEND

Sends data to an application connected by an MAI-OC session.

Authority level: 0

MAISESS

Provides functions for the control of MAI/FS sessions.

Authority level: 0/4

MAXUSERS

Displays and limits the maximum number of concurrent users.

Authority level: 3

MSG

Sends a message to the specified OCS operators.

Authority level: 0

NCLCHECK

Tests syntax for an NCL procedure without execution.

Authority level: 0

NCLTEST

Sets, resets, or displays NCL test status for this window.

Authority level: 0

NCLTRACE

Dynamically alters the trace status of an executing NCL process.

Authority level: 0/2

NDB ALTER

Builds, rebuilds, or validates the key indexes for an NDB, or a field.

Authority level: 2

NDB CREATE

Initializes a new NCL database.

Authority level: 2

NDB FIELD

Enables the addition, deletion, or update of a database field definition.

Authority level: 2

NDB PURGE

Frees up a locked or halted database.

Authority level: 2

NDB RESET

Deletes all data from an NCL database.

Authority level: 2

NDB START

Starts an NCL database.

Authority level: 2

NDB STOP

Flags an NCL database as stopping.

Authority level: 2

NDB UNLOAD

Unloads a copy of an NCL database.

Authority level: 2

NETM

(VOS3 only) Passes a command to NETM for execution.

Authority level: 2

NETMCNTL

(VOS3 only) Controls communication with NETM.

Authority level: 2

NETSTAT

Invokes the TCP/IP NETSTAT command.

Authority level: T

NOTIFY

Sends a message to TSO/TSS users or CMS users.

Authority level: 0

NOTRACE

Terminates a VTAM network trace.

Authority level: 1

NPTAB

Changes the status of a user's NPF table.

Authority level: 0/4

NRDRET

Restores all non-roll delete messages for an OCS window.

Authority level: 0

NSBRO

Creates and sends a general or specific broadcast.

Authority level: 3

NSPCONN

Controls connections to CA NetSpy address spaces.

Authority level: 4

NSLOOKUP

Uses the name service to find the name or address of a host.

Authority level: T

NTSDBMOD

Alters database records or session keep counts on the NTS database.

Authority level: 4

NTSMOD

Alters session trace and logging parameters of active sessions.

Authority level: 4

OBEYFILE

Invokes the TCP/IP for MVS OBEYFILE command.

Authority level: T

OCSID

Sets or resets OCS window identifiers.

Authority level: 0

OPNDST

Connects a specific terminal.

Authority level: 1/0

OPSYS

Passes a command to the operating system for execution.

Authority level: 2

ORDER

Reorders your OCS window display from top to bottom.

Authority level: 0

PAGE

Starts the display of output messages at the top of the OCS window.

Authority level: 0

PF

Displays and sets terminal Function keys.

Authority level: 0

PING

Sends echo requests to a remote host.

Authority level: T

PPO

Starts and stops the VTAM PPO interface.

Authority level: 3

PROFILE

Displays or modifies a user profile.

Authority level: 0/2

PROFILE EDS

Enables or disables event notification.

Authority level: 0

PURGE

Purges and deletes current timer-initiated commands or NCL locks.

Authority level: 0/2

RECONN

Reconnects the current terminal session with a disconnected region.

Authority level: 0

REPALIAS

Replaces an alias name entry used NEWS.

Authority level: 4

REPCLASS

Replaces an existing SAW, RTM, Session, or Resource class definition.

Authority level: 4

REPLINK

Replaces or defines a DLT definition.

Authority level: 3

REPLOGON

Replaces an existing application logon entry.

Authority level: 4

REPLY

Issues a VTAM REPLY command.

Authority level: 1

REPMODE

Replaces or defines an APPC Mode Control Table (MCT) entry.

Authority level: 4

REPOPSET

Replaces or defines an APPC OSCT entry.

Authority level: 4

REPTRANS

Replaces or defines an APPC TCT entry.

Authority level: 4

REQMS

Sends data across the CNM interface.

Authority level: 2

RETURN

Exits from any mode or function and returns to the primary menu.

Authority level: 0

ROUTE

Sends a command string to a remote system.

Authority level: 0

SAWARE

Controls NTS activity.

Authority level: 4

SCRIPT

Starts or flushes an MAI-FS script procedure.

Authority level: 0

SECUSER

Issues a command to a z/VM service machine.

Authority level: 2

SHOW AIF

Displays AIF users.

Authority level: 0

SHOW ALLOC

Displays data sets allocated by the ALLOC command.

Authority level: 0

SHOW AOMABEND

Displays diagnostic information if AOM abends.

Authority level: 0

SHOW AOMSTAT

Displays AOM statistics.

Authority level: 0

SHOW APPC

Displays the status of all or selected APPC conversations

Authority level: 0

SHOW ATF

Displays information about the ATF tables.

Authority level: 0

SHOW BRO

Displays the current general broadcast messages.

Authority level: 0

SHOW BUFF

Displays the current system storage and buffer use.

Authority level: 0

SHOW CNMTRACE

Shows active CNM trace requests.

Authority level: 0

SHOW COMMANDS

Displays commands available to user or system.

Authority level: 0

SHOW COMP

Displays 3270 data stream compression statistics.

Authority level: 0

SHOW CONSOLES

Displays the consoles currently allocated for use by AOM.

Authority level: 0

SHOW DEBUG

Displays NCL debug sessions.

Authority level: 0/2

SHOW DEFALIAS

Displays one or more DEFALIAS entries.

Authority level: 0

SHOW DEFCLASS

Displays NTS class definitions.

Authority level: 0

SHOW DEFLINK

Displays current dynamic link definitions.

Authority level: 0

SHOW DEFLOGON

Displays the current entries in the DEFLOGON table.

Authority level: 0

SHOW DEFMODE

Displays APPC MCT entries.

Authority level: 0

SHOW DEFMSG

Displays the current DEFMSG delivery options.

Authority level: 0

SHOW DEFOPSET

Displays APPC OSCT entries.

Authority level: 0

SHOW DEFTERM

(VOS3 only) Displays terminal definitions.

Authority level: 0

SHOW DEFTRANS

Displays APPC TCT entries.

Authority level: 0

SHOW DNR

Displays parameters or statistics for the DNR.

Authority level: 0

SHOW DOMAINS

Displays the domain information of connected systems.

Authority level: 0

SHOW EDB

Displays information about external database connections.

Authority level: 0

SHOW EDBSTAT

Displays statistics about currently defined EDB connections.

Authority level: 0

SHOW EDBUSER

Displays information about EDB users.

Authority level: 0

SHOW EDBUSTAT

Displays statistics about EDB users.

Authority level: 0

SHOW EDS

Displays current Event Distribution Services PROFILE definitions.

Authority level: 0

SHOW EPS

Displays EndPoint Services information.

Authority level: 0

SHOW EQUATES

Displays the current EQUATE strings available to this user.

Authority level: 0

SHOW EXEC

(OS/VS only) Displays the names of members in a procedure library.

Authority level: 0

SHOW FTS

Displays the status of file transmissions.

Authority level: 0

SHOW ISR

Displays ISR status information.

Authority level: 0

SHOW ISRSTATS

Displays ISR statistics.

Authority level: 0

SHOW LIB

Displays libraries which have been defined to the system.

Authority level: 0

SHOW LICENSE

Displays the active licensing details and expiry dates.

Authority level: 0

SHOW LINK

Displays the status of INMC or APPC links.

Authority level: 0

SHOW LOCKS

Displays the status of all locks held within the system.

Authority level: 0

SHOW LOGS

Displays the status of the system activity logs.

Authority level: 0

SHOW LSR

Displays LSR status information.

Authority level: 0

SHOW LUTRACE

Displays the status of all LUTRACE requests.

Authority level: 0

SHOW MAI

Displays information about MAI sessions for this user or all users.

Authority level: 0

SHOW MAISTAT

Displays information about the status of MAI subtasks.

Authority level: 0

SHOW MAP

Displays information about defined Mapping Services maps.

Authority level: 0

SHOW MSGQ

Displays message queue depths.

Authority level: 0

SHOW NCL

Displays the status of active NCL processes.

Authority level: 0/2

SHOW NCLGLBL

Displays the names of any defined NCL global variables.

Authority level: 2

SHOW NCLLOCKS

Displays the status of all NCL locks held within the system.

Authority level: 0

SHOW NCLSTAT

Displays the status of NCL procedures currently in storage.

Authority level: 0

SHOW NCLVARS

Displays information about the variables in use by NCL procedures.

Authority level: 0/4

SHOW NDB

Displays information about currently active or halted NDBs.

Authority level: 0

SHOW NDBUSER

Displays a list of all users currently signed on to NCL databases.

Authority level: 0

SHOW NETMCNTL

(VOS3 only) Displays the status of NETM connectivity.

Authority level: 0

SHOW NPF

Displays the NPF table definitions for the user.

Authority level: 0

SHOW NPTAB

Displays the status of NPF resource tables.

Authority level: 0

SHOW NRD

Displays the current queue of non-roll delete messages.

Authority level: 0

SHOW NSPCONN

Displays the status of connections to CA NetSpy address spaces.

Authority level: 0

SHOW NTS

Displays NTS resource or session information.

Authority level: 0

SHOW NTSDBMOD

Displays currently executing NTSDBMOD & SHOW SKEEP processes.

Authority level: 0

SHOW NTSSTATS

Displays NTS statistics.

Authority level: 0

SHOW NTSUSER

Displays NTS users.

Authority level: 0

SHOW OCS

Displays information about OCS users.

Authority level: 0

SHOW PANELS

Displays panel queue information.

Authority level: 0

SHOW PARM

Displays startup parameters.

Authority level: 0

SHOW PATH

Displays current panel library path definitions.

Authority level: 0

SHOW PAUSE

Displays the current PAUSE or WAIT status.

Authority level: 0/2

SHOW PPIUSERS

Displays PPI user statistics.

Authority level: 0

SHOW PPOSTAT

Displays PPO/SPO statistics.

Authority level: 0

SHOW REPLY

Displays VTAM messages that require a reply.

Authority level: 0

SHOW SCNT

Displays the current session count.

Authority level: 0

SHOW SERVER

Displays the status of registered server processes.

Authority level: 0

SHOW SESS

Displays the terminals that are in session.

Authority level: 0

SHOW SKEEP

Displays the NTS session keep counts for historical sessions.

Authority level: 0

SHOW SNAMS

Displays SNA information.

Authority level: 0

SHOW SOCKETS

Displays information about the use of TCP/IP services.

Authority level: T

SHOW SSISTATS

Displays Subsystem Interface (SSI) statistics.

Authority level: 0

SHOW SSIUSERS

Displays information about SSI users.

Authority level: 0

SHOW STRACE

Displays NTS session trace activity.

Authority level: 0

SHOW SUBSYS

Displays user subsystem status.

Authority level: 0

SHOW SYSCONS

Displays a list of currently logged on operating system consoles.

Authority level: 0

SHOW SYSPARMS

Displays the current SYSPARMS settings.

Authority level: 0

SHOW TCPIP

Displays information about the use of TCP/IP services.

Authority level: T

SHOW TERM

Displays the terminals that are in session.

Authority level: 0

SHOW TIMER

Displays current timer initiated commands.

Authority level: 0

SHOW TIMEZONE

Displays current time zones and the system time zone offset.

Authority level: 0

SHOW TSO

Displays current TSO users.

Authority level: 0

SHOW TSS

Displays current TSS users.

Authority level: 0

SHOW UDB

Displays VSAM data set information.

Authority level: 0

SHOW UDBUSER

Displays NCL user database (UDB) user information.

Authority level: 0

SHOW USERS

Displays the current signed on users.

Authority level: 0

SHOW VARTABLES

Displays information about VARTABLES.

Authority level: 0

SHOW VMOP

Displays VMOPERATOR active sessions.

Authority level: 0

SHOW VSAM

Displays extended VSAM data set information.

Authority level: 0

SHOW XMIT

Displays the status of all or selected FTS Transmission Requests.

Authority level: 0

SHOW XNFTRACE

Displays the status of all XNFTRACE requests.

Authority level: 0

SHUTDOWN

Commences or cancels an orderly shutdown of the system.

Authority level: 3

SIGNOFF

Signs off from a remote system.

Authority level: 0

SIGNON

Signs on to a remote system.

Authority level: 0/2

SPLIT

Opens or adjusts size of an OCS window.

Authority level: 0

SPO

Starts and stops the VTAM Secondary Program Operator interface.

Authority level: 3

SSI

Signs off or stops Subsystem Interface (SSI).

Authority level: 0/3

START

Starts executing an asynchronous NCL process.

Authority level: 0

STATUS

Displays current general system status.

Authority level: 0

STRACE

Starts and stops session trace activity.

Authority level: 4

SUBMIT

Passes a command to a background environment for processing.

Authority level: 0/2

SUBSYS

Defines, starts, stops, and deletes subsystems.

Authority level: 3

SUSLOGON

Suspends an entry or entries in the DEFLOGON table.

Authority level: 3

SWAP

Swaps current logical windows.

Authority level: 0

SYNCTIME

Synchronizes the date and time of the region with the local system.

Authority level: 2

SYSCMD

Sends a command to the operating system.

Authority level: 2

SYSLOG

Issues VMOPERATOR log browse commands.

Authority level: 2

SYSMON

Sends data to System Monitor in 3600/4700.

Authority level: 1

SYSPARMS

Defines or changes system default values.

Note: For more information, see the *Administration Guide.*

Authority level: 4/9

TERMINAL

Provides extended color, highlighting data streams, or both to terminals.

Authority level: 0

TCPIP MODIFY

Alters the current trace options setting.

Authority level: 4

TCPIP QUIESCE

Stops the interface when all the sockets are closed.

Authority level: 4

TCPIP START

Initiates TCP/IP services.

Authority level: 4

TCPIP STOP

Terminates TCP/IP services.

Authority level: 4

TELNET

Starts a Telnet connection.

Authority level: T

TIME

Displays the current date and time.

Authority level: 0

TIMEZONE

Maintains time zone names and offsets.

Authority level: 3

TITLE

Sets the title to display on the top line of the OCS window.

Authority level: 4

TNCMD

Sends a Telnet command on a connection to a remote host.

Authority level: T

TNDISC

Disconnects a Telnet connection.

Authority level: T

TNSEND

Sends data on a Telnet connection.

Authority level: T

TRACE

Initiates a VTAM network trace.

Authority level: 1

TRACEROUTE

Traces the route taken by TCP/IP packets to a remote host.

Authority level: T

TRANSMIT

Requests a data set transmission.

Authority level: 0

UDBCTL

Controls the status of UDBs.

Authority level: 3/4

UNALLOC

Deallocates a closed data set.

Authority level: 0/3

UNLOAD

Unloads copies of procedures, ASN.1 maps, load modules, or panels from storage.

Authority level: 4

USS

Issues a shell command to USS.

Authority level: R

V

Issues a VTAM VARY command.

Authority level: 1

X

Exits from OCS screen mode.

Authority level: 0

XLATE

Tests alias name translation.

Authority level: 1

XNF

Stops all XNF connections.

Authority level: 3

XNFTRACE

Initiates or terminates tracing of XNF connectivity.

Authority level: 4

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