THE POWER TO KNOW®

SAS® Enterprise Case Management 2.2

Administrator's Guide

SAS® Documentation

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Introduction to SAS Enterprise Case Management 2.2

Introduction to SAS Case Management 2.2

Overview

Case management is a business process that involves the coordination, research, and tracking of various documents and information for an incident that must be monitored and possibly investigated by a business. Case management can span business units and include various groups and investigators. Some industries (financial, banking) require government compliance and reporting of incidents and activities that are considered to be suspicious and may pose a risk to an organization. As a result, case management can include the process of filing regulatory reports to government agencies for financial crimes. In addition, the disposition of cases under investigation is critical to enhancing an organization's future monitoring and overall operational efficiencies.

SAS Enterprise Case Management provides a structured environment for managing investigation workflows, attaching comments or documentation, and recording financial information, such as exposures and losses. It enables investigators and operational risk managers to streamline processes and conduct more efficient, effective investigations. SAS Enterprise Case Management enables you to define processes and design a consistent workflow. You can create multiple customized workflows for various types of cases including fraud, physical security, and anti-money laundering. Cases can be classified by type, category, and subcategory and routed automatically to the appropriate individuals or groups. In addition, workflows can require users to complete specific actions prior to moving the case to the next step in the process. SAS Enterprise Case Management creates an audit record for management, examiners, or regulatory agencies that contains user identification, a time stamp, and the date when actions are performed.

Some of the benefits of SAS Enterprise Case Management include the following:

Enterprise Data Consumption
: SAS Enterprise Case Management can receive alerts about incidents that require investigation from multiple monitoring systems, and can import existing records and historical information. This enables the pre-population of customer fields and prevents data entry errors.

Incident Queue
: You can review work items sent to the system electronically prior to creating or linking the incident to a case.

E-filing Capabilities
: SAS Enterprise Case Management enables users to prepare batch files for uploading to complete regulatory reporting requirements.

Document Attachments
: Users can easily store documents with a case, including any digital media that might be needed for future viewing.

Chapter 2

Pre-installation Requirements and Tasks

Basic Pre-installation Steps For SAS Enterprise Case Management

Completing Pre-installation Tasks

Before you begin to install the SAS Intelligence Platform and SAS Enterprise Case Management, you must complete a set of pre-installation tasks. You must install various third-party components, confirm your operating system requirements, create the needed user accounts, address database requirements, and obtain your SAS software. Specifically you must complete the following tasks:

Installing the Java Development Kit

SAS Enterprise Case Management requires the installation of the Sun Java Development Kit. For further information see **`http://support.sas.com/resources/thirdpartysupport/v92/index.html`**.

Installing a Web Application Server

SAS Enterprise Case Management supports JBoss Application Server, IBM WebSphere Application Server, and BEA WebLogic Server 9.2. For more information about these Web application servers see **`http://support.sas.com/resources/thirdpartysupport/v92/index.html`**.

Verifying Your Operating System Requirements

Before you install SAS Enterprise Case Management, make sure that you meet the minimum system requirements that are described in the system requirements documentation. System requirements are unique for each operating system. Items that are addressed as system requirements include software requirements, hardware requirements, space requirements, specific product requirements, and graphics hardware and software compatibility.

Some specific items that you should check include the following settings:

- The recommended screen resolution setting for SAS Enterprise Case Management should be set no lower than 1024 x 768 in your systems display settings.
- Set your browser's Pop-up Blocker to allow pop-ups for your applications.

For more requirements information, see “SAS System Requirements” at **`http://support.sas.com/resources/sysreq/index.html.`**

Creating the SAS Enterprise Case Management User Accounts

As a pre-installation task, you must create an operating system account that will install and administer SAS Enterprise Case Management. This must be an operating system user. You can use an existing account if one already exists. A SAS Enterprise Case Management administrative user is specific to SAS Enterprise Case Management. This user must have a valid host operating system account, and as a post-installation task, you must associate that account with a metadata user in SAS Management Console. Product administrators have access to perform any action on any data in SAS Enterprise Case Management.

The SAS Spawned Servers account (sassrv) needs to be in the same user group as the installation user. In a windows environment, it must be included in the administrator's group to ensure stored processes can write to the SAS Enterprise Case Management config directories. Please refer to *SAS 9.2 Intelligence Platform Installation and Configuration Guide* for guidance in setting up the SAS Spawned Servers account (sassrv).

It is often necessary to change the name of the administrative user from admin to match an existing user name in your environment. For example, if you configure your Web application server so that the SAS Enterprise Case Management Web application authenticates users against an LDAP server, then you must change the name of the administrative user to the user name found in the LDAP user directory. That user can then log on as the administrator in SAS Enterprise Case Management. Be aware that a SAS

Enterprise Case Management product administrator account is not the same as a general administrator account, such as the SAS Administrator (sasadm@saspw).

See “Setting Up Users, Groups, and Ports” in the *SAS Intelligence Platform: Installation and Configuration Guide.*

Note: SAS Enterprise Case Management uses both regular user accounts and a product administrative user account. You can create regular user accounts for SAS Enterprise Case Management as a post-installation task.

Obtaining a Deployment Plan and SID File

Before you can install your SAS Software you must obtain a deployment plan and SID file. The deployment plan is a summary of the software that is installed and configured during your installation. A deployment plan file, named plan.xml, contains information about what software should be installed and configured on each machine in your environment. This plan serves as input to the SAS installation and configuration tools. A deployment plan can be a custom plan for your specific software installation or it can be a standard, predefined deployment plan that describes a common configuration. The SID file is used by the SAS system to install and license SAS software. It is a control file that contains license information that is required in order to install SAS. For more information about deployment plans and the SID file, see “SAS Deployment Wizard Options” and “About Deployment Plans” in the *SAS Intelligence Platform: Installation and Configuration Guide*.

Download your Software with the SAS Download Manager

Download the software that is listed in your SAS Software Order with the SAS Download Manager. You can then use the SAS Deployment Wizard to install your software.

Pre-installation: Database Information

Determining the Required Database Information

During the installation and configuration of SAS Enterprise Case Management, the SAS Deployment Wizard requires information about the database that SAS Enterprise Case Management uses. The following table provides information that you must have to complete the steps in the SAS Deployment Wizard.

Table 2.1 *Oracle Database Information*

Property	**Description**
Database Type	Specifies the database vendor to use with SAS Enterprise Case Management. SAS Enterprise Case Management supports the Oracle, SQL Server, and PostgreSQL databases.

Property	Description
Username or Schema	Specifies the user name for the database used with your SAS Enterprise Case Management installation. *Note:* The schema user requires adequate permissions to create all objects required for the schem initialization. For Oracle these include sequences, tables, indexes and views.
Password	Specifies a valid password for the user name associated with the database account.
Port	Specifies the port used by the database. The default ports for the databases supported by SAS Enterprise Case Management are as follows: • Oracle:1521 • SQLServer:1433 • PostgreSQL:5432
Host Name	Specifies the host name of the machine where the database is installed.

Database Name	Specifies the database name. For SQL Server and PostgreSQL, there must be an ODBC connection with the same name as the database name.
	For Oracle databases, the Net Service Name and the Service Name fields that are configured in the tnsnames.ora file must be the same. You must use this value for the **Database Name** field in the SAS Deployment Wizard.
	For example, if you had the following entry in the tnsnames.ora file, you would type datahaus in the **Database Name** field in the SAS Deployment Wizard:
	`datahaus =`
	`(DESCRIPTION =`
	`(ADDRESS_LIST =`
	`(ADDRESS =`
	`(COMMUNITY = TCP_COMM)`
	`(PROTOCOL = TCP)`
	`(HOST = hostname.your.company.com)`
	`(PORT = 1521)`
	`)`
	`)`
	`(CONNECT_DATA =`
	`(SERVICE_NAME = datahaus)`
	`)`
	Note: The Net Service Name and Service Name in the above example are the same. This is required to build the correct libname statement in the SAS Enterprise Case Management stored processes.

Property	Description
DBMS JDBC JAR File	Specifies the location of the database vendor's JDBC JAR file to facilitate Java access. You must have this file available on the middle tier.

For SQL Server and PostgreSQL, there must be an ODBC connection with the same name as the database name.

Pre-installation: Oracle Database

Installing the Oracle Database

SAS Enterprise Case Management requires a database and a Web application server. You must install this third-party software before installing SAS Enterprise Case Management. Currently, the Oracle database is supported by SAS Enterprise Case Management. For further information, see **`http://www.oracle.com/index.html`**.

Create the Oracle User for Enterprise Case Management

SAS Enterprise Case Management will store transactional data in the Oracle database. Before installing SAS Enterprise Case Management, create a user in Oracle with the following privileges:

- CREATE SESSION
- CREATE SEQUENCE
- CREATE TABLE
- CREATE VIEW

In addition, that user will need adequate table space quota for its default and temporary table spaces.

Note: The schema user requires adequate permissions to create all objects required for the schema initialization. For Oracle these include sequences, tables, indexes and views.

Installing SAS Access for Oracle

SAS Enterprise Case Management supports the Oracle database. As a post-installation task, you must run several SAS scripts provided by SAS Enterprise Case Management. These database scripts assume that the SAS environment can already access the Oracle database.

Pre-installation: SQLServer Database

Installing the SQLServer Database

SAS Enterprise Case Management requires a database and a Web application server. You must install this third-party software before installing SAS Enterprise Case Management.

SQLServer is one of the databases supported by SAS Enterprise Case Management. For further information, see `http://www.microsoft.com/sqlserver`.

Create the SQLServer User for Enterprise Case Management

SAS Enterprise Case Management stores transactional data in the SQLServer database. Before installing SAS Enterprise Case Management, create a user in SQLServer with access to the target database. Create a schema and make the new user the owner of the schema. Set that as the default schema for the user for that database.

Installing SAS Access for ODBC or SAS Access for SQLServer

SAS Enterprise Case Management supports the SQLServer database. As a post-installation task, you must run several SAS scripts provided by SAS Enterprise Case Management. These database scripts assume that the SAS environment can already access the SQLServer database.

Configuring the SQLServer ODBC Connection

If you are using SAS Access for ODBC in Windows, you need to create a System DSN (Data Source Name).

1. From the Windows Start menu, select **Settings** ⇨ **Control Panel** ⇨ **Administrative Tools** ⇨ **Data Sources (ODBC)**. The ODBC Data Source Administrator window opens.
2. Select the **System DSN** tab and then click **Add**. The Create New Data Source window opens.
3. Select the SQL Server driver from the list and then click **Finish**. The SQLServer ODBC Driver Setup window opens.
4. Enter the driver information in the ODBC Driver Setup window. For example, complete the following:

1	Enter `casemgmt` in the **Name** box. The DSN name must be the same as the name of the database in SQLServer.
2	Optionally, enter ***`SAS Enterprise Case Management Transactional Schema`*** in the **Description** box.
3	Enter the database server hostname in the **Server** box.
4	Click **Next**.
5	Enter the appropriate authentication setting.
6	Enter username and password information to obtain the default settings. Enter `ecmdata` in the **User Name** box. Enter `ecmdata` in the **Password** box.
7	Click **Next**.
8	Click **Finish**.
9	Click **Test Data Source** to verify the data source information.

10	Click **OK** to save the driver information and to close the SQLServer ODBC Driver Setup window.
11	Click **OK** to close the ODBC Data Source Administrator window.

Test Access to the Database

To test SAS access to the SQLServer database, open an interactive SAS session and try to create a libref. For example, using the sample information given above, the LIBNAME statement would look like this:

```
libname ecmtest odbc dsn=casemgmt user=ecmdata password=ecmdata;
```

Pre-installation: PostgreSQL Database

Installing the PostgreSQL Database

SAS Enterprise Case Management requires a database and a Web application server. You must install this third-party software before installing SAS Enterprise Case Management. PostgreSQL is one of the databases supported by SAS Enterprise Case Management. For further information, see **`http://www.postgresql.org`**

Creating the Postgres User for SAS Enterprise Case Management

SAS Enterprise Case Management will store transactional data in the PostgreSQL database. Before installing SAS Enterprise Case Management, create a user in PostgreSQL and then create a database owned by that user.

Install SAS Access for ODBC

SAS Enterprise Case Management supports the PostgreSQL database. As a post-installation task, you must run several SAS scripts provided by SAS Enterprise Case Management. These database scripts assume that the SAS environment can already access the PostgreSQL database.

Configuring the PostgreSQL ODBC Connection

If you are using SAS Access for ODBC in Windows, you need to create a System DSN (Data Source Name).

1. From the Windows Start menu, select **Settings** ⇨ **Control Panel** ⇨ **Administrative Tools** ⇨ **Data Sources (ODBC)**. The ODBC Data Source Administrator window opens.
2. Select the **System DSN** tab and then click **Add**. The Create New Data Source window opens.
3. Select the PostgreSQL Unicode driver from the list and then click **Finish**. The SQLServer ODBC Driver Setup window opens.

4. Enter the driver information in the ODBC Driver Setup window. For example, complete the following:

1	Enter **`casemgmt`** in the **Data Source** box. The Data Source name must be the same as the name of the database name in PostgreSQL.
2	Optionally, enter **`SAS Enterprise Case Management Transactional Schema`** in the **Description** box.
3	Enter **`casemgmt`** in the **Database** box.
4	Enter the database server hostname in the **Server** box.
5	Enter **`ecmdata`** in the **User Name** box.
6	Enter **`ecmdata`** in the **Password** box.
7	Click **Test** to verify the data source information.
8	Click **Save** to save the driver information and to close the PostgreSQL Unicode ODBC Driver Setup window.
9	Click **OK** to close the ODBC Data Source Administrator window.

Test Access to the Database

To test SAS access to the PostgreSQL database, open an interactive SAS session and try to create a libref. For example, using the sample information given above, the LIBNAME statement would look like:

```
libname ecmtest odbc dsn=casemgmt user=ecmdata password=ecmdata;
```

Chapter 3

Installing SAS Enterprise Case Management

Installing SAS Enterprise Case Management

Selecting a Single-Tier or Multi-Tier Installation

You can install SAS Enterprise Case Management on one or several machines. This choice is determined at the time you order SAS Enterprise Case Management and is detailed in the order detail plan (plan.xml) file. You must first install SAS Enterprise Case Management on the server-tier machine. You can then install SAS Enterprise Case Management on other additional machines that are part of a middle tier in your configuration. For guidelines on installing SAS on multiple machines, see “Installation Order Rules for Multiple Machine Deployments” in the *SAS Intelligence Platform: Installation and Configuration Guide*.

The server tier consists of a set of SAS servers that are installed as a part of the SAS Intelligence Platform. These servers host (and can be used to load) the reporting data. In addition, they execute SAS analytical and reporting processes. The SAS Workspace Server, SAS Stored Process Server, and SAS Metadata Server enable this capability.

The middle tier hosts the Web application, which is deployed on a Java Web application server. The Web application sends data to and receives data from the Web browsers on the client tier and then organizes the data for storage on the data tier and for use on the server tier.

The client tier is also part of the SAS Enterprise Case Management configuration. On the client tier, users collect and load data and perform day-to-day operational risk tasks via the Web application. In addition, although reports are configured on the server tier, they are visible in the user interface to users who have access only to the machines on the client tier.

SAS Deployment Wizard Tasks

The SAS Deployment Wizard is used to install and configure the SAS software and related products that are included in your deployment plan file. When you execute the SAS Deployment Wizard, you select the deployment type that you are performing. You can choose to install and configure the software in the same instance, or you can configure the software at a later point.

Depending on your specific deployment plan and the SAS products that you are installing, the SAS Deployment Wizard can prompt you to perform a variety of tasks, including the following items:

- specify your order plan and SAS software products that you are installing and configuring
- specify third-party products that you have installed, such as JBOSS or the Java Development Kit
- specify any required machine information
- specify server information for any SAS servers that you are installing
- specify user account information
- specify the database that you are installing
- install the server tier for SAS Enterprise Case Management on the server machine in your configuration
- install the middle tier for SAS Enterprise Case Management on other machines in your configuration

For further information, see “Preparing to Install and to Configure” in the *SAS Intelligence Platform: Installation and Configuration Guide*. In addition, see the *SAS Deployment Wizard User’s Guide* at **`http://support.sas.com/documentation/installcenter/`**.

Installed SAS Products

SAS Enterprise Case Management installation includes the installation of various SAS products. During installation, the SAS Deployment Wizard prompts you for the installation and possibly the configuration of each of these SAS products. Some of the products that are installed as part of the SAS Enterprise Case Management installation include the following:

- SAS Foundation 9.2
- SAS Management Console
- SAS Shared Services
- SAS Table Server

SAS Enterprise Case Management: Specifying Database Mangement System Credentials

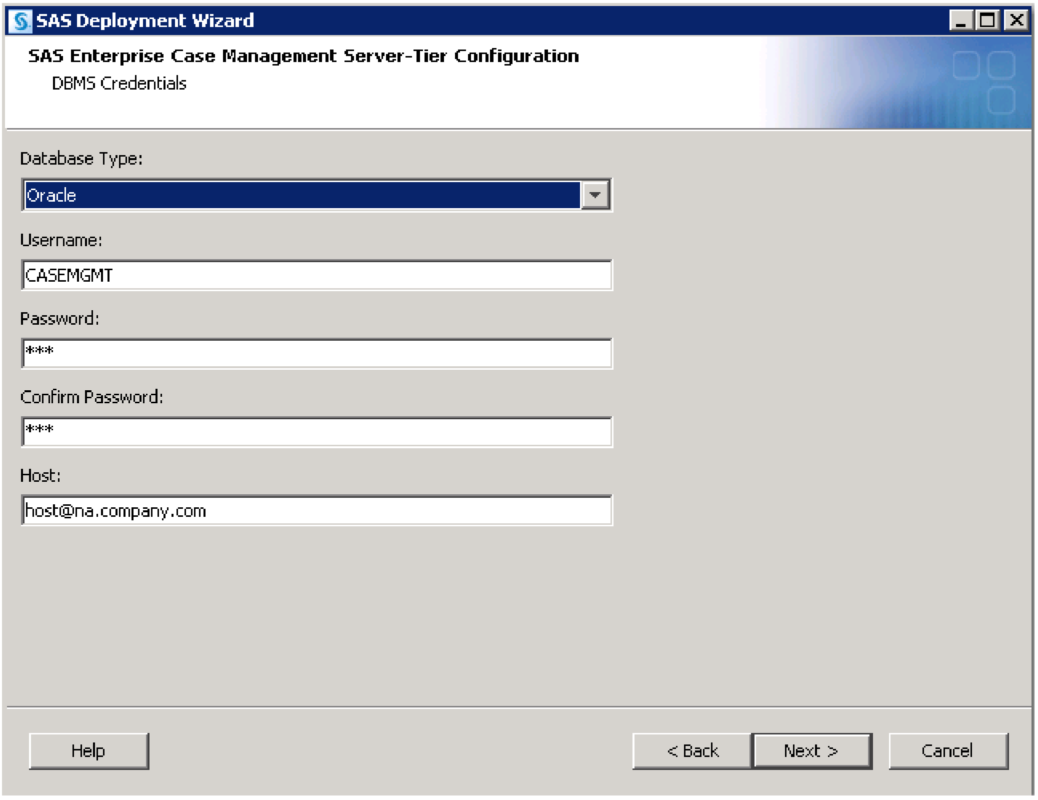
During your SAS Enterprise Case Management installation you must enter Database Mangement System (DBMS) information for the server tier and middle tiers of your configuration. You must enter specific information for the database that is used with SAS

Enterprise Case Management. The following databases can be selected and configured during the SAS Deployment Wizard session for SAS Enterprise Case Management.

Oracle Database

The following page prompts you for the user information and host information for your Oracle database.

Display 3.1 *SAS Enterprise Case Management Server-Tier Configuration – DBMS Credentials*



Database Type: Oracle

Username: CASEMGMT

Password: ***

Confirm Password: ***

Host: host@na.company.com

You must enter information for the following text boxes:

Database Type
specifies the type of database that you are configuring.

Username
specifies the username for the Oracle database.

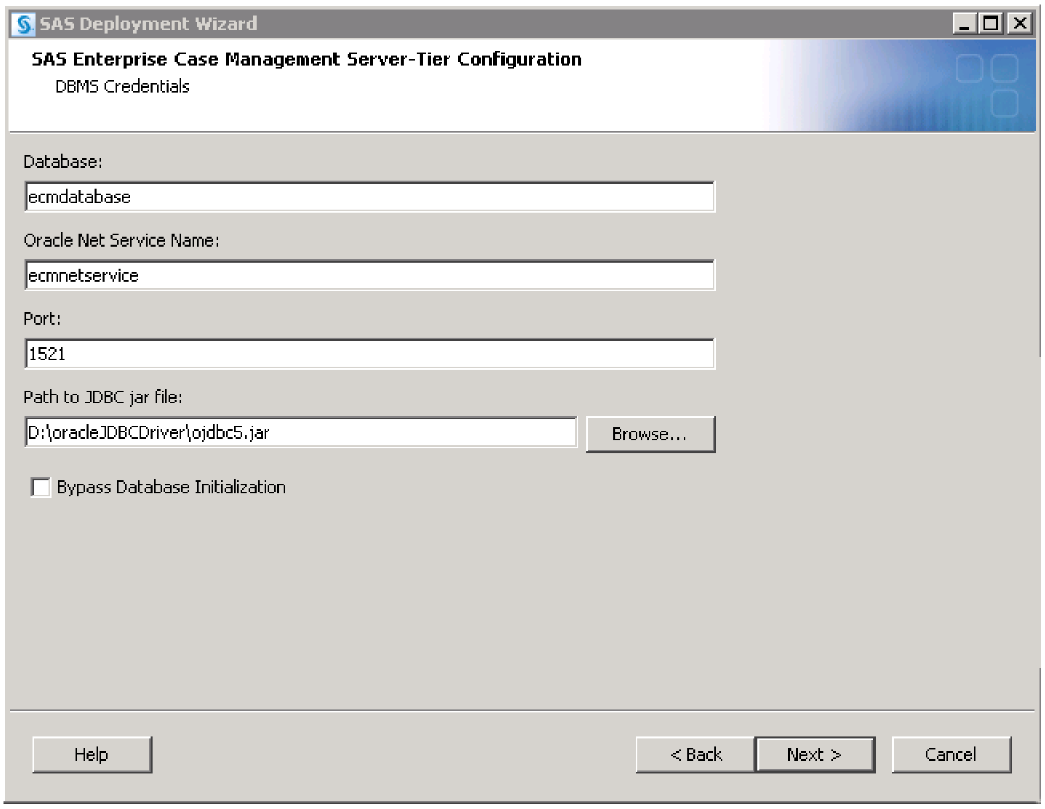
Password
specifies a valid password for the username that is associated with the Oracle database.

Confirm Password
confirms the password for the username for the Oracle database.

Host
specifies the host name of the machine that the database is installed on.

The following page prompts you for your Oracle database information.

Display 3.2 SAS Enterprise Case Management Server-Tier Configuration – DBMS Credentials



Database: ecmdatabase

Oracle Net Service Name: ecmnetservice

Port: 1521

Path to JDBC jar file: D:\oracleJDBCDriver\ojdbc5.jar

☐ Bypass Database Initialization

You must enter information for the following text boxes:

Database
specifies the database name.

Oracle Net Service Name
specifies the Oracle Net Service name. This is the same name as the database name.

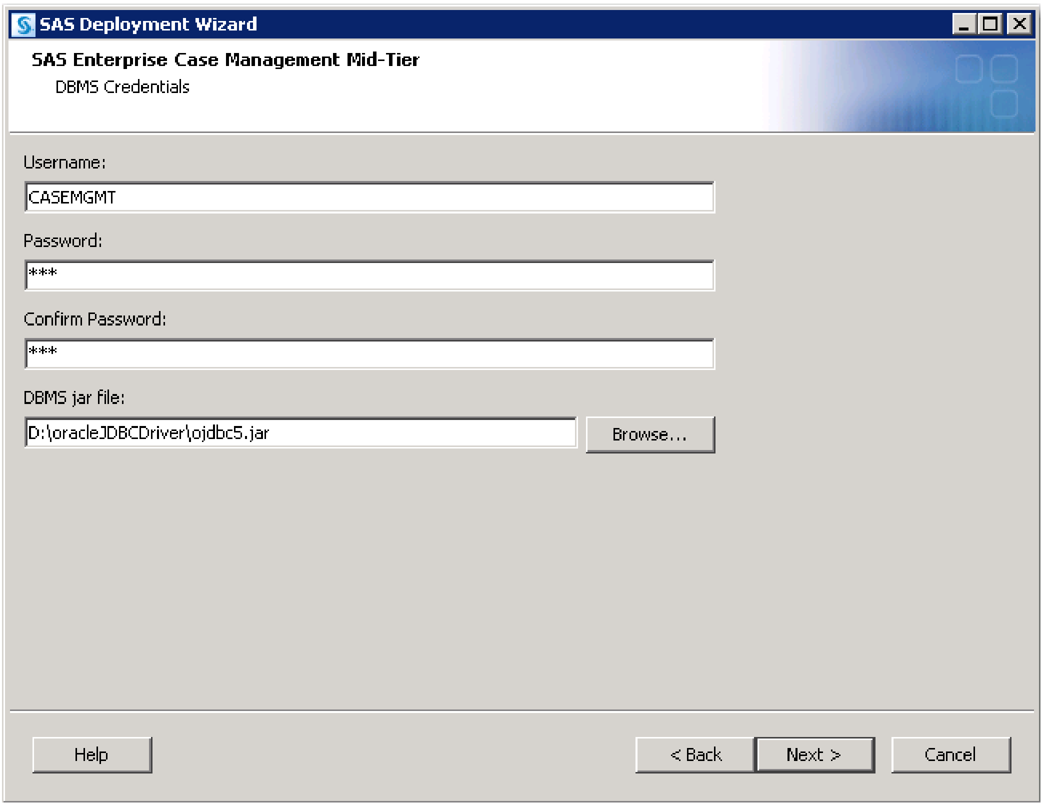
Port
specifies the port used by the database.

Path to JDBC Jar File
specifies the path to the JDBC JAR file that is provided by the database vendor. This file facilitates Java access and must be available on this host in order for configuration to occur.

Bypass Database Initialization
when selected, specifies to bypass the initialization of the database.

The following page prompts you for middle-tier information.

Display 3.3 *SAS Enterprise Case Management Mid-Tier Configuration – DBMS Credentials*



Username: CASEMGMT
Password: ***
Confirm Password: ***
DBMS jar file: D:\oracleJDBCDriver\ojdbc5.jar

You must enter information for the following text boxes:

Username
specifies the username for the Oracle database.

Password
specifies a valid password for the username for the Oracle database.

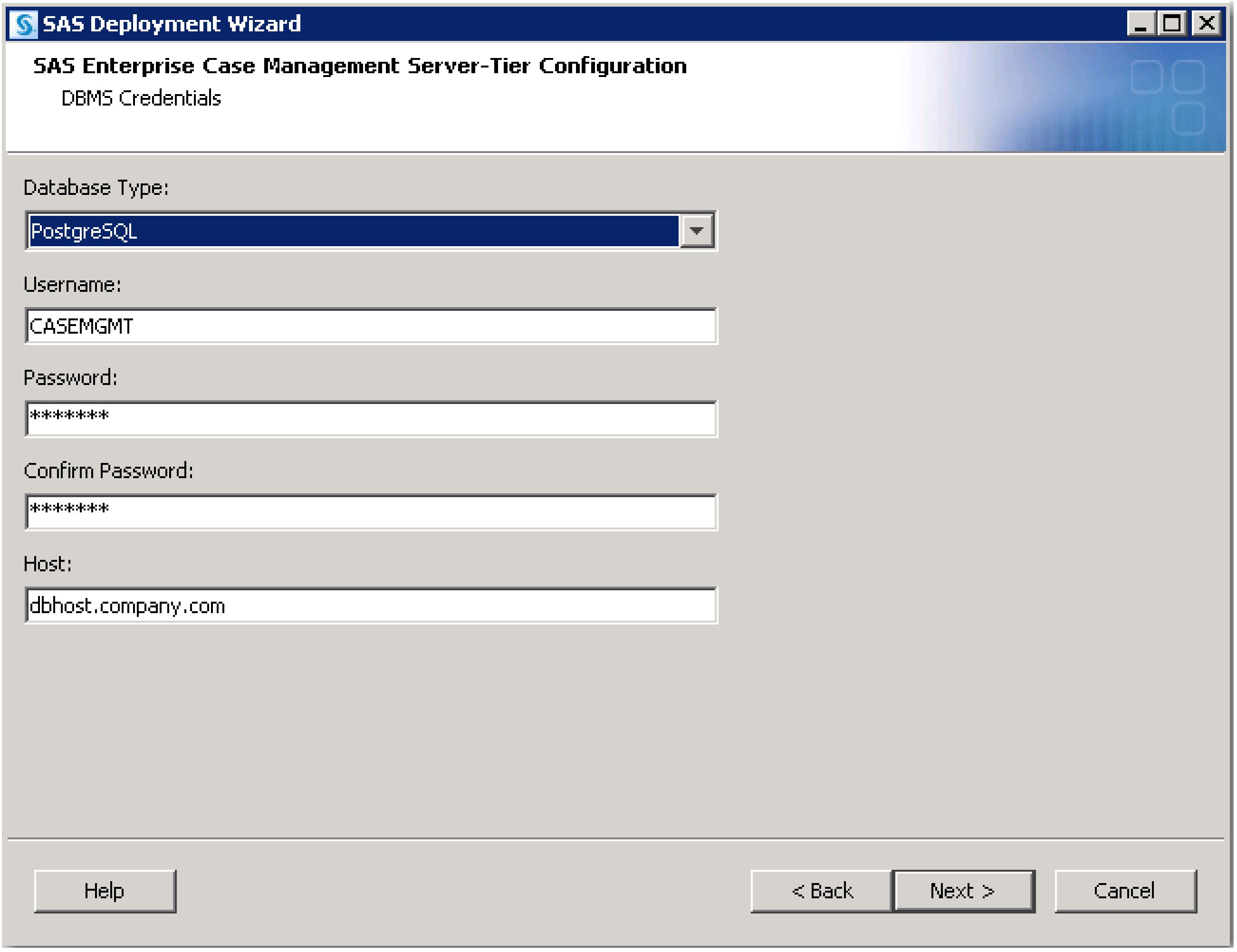
Confirm Password
confirms the password for the username for the Oracle database.

DBMS jar file
specifies the location of the database vendor’s JDBC JAR file to facilitate Java access. Use the same JAR file that you specified for the server tier. You must have this file available on the server tier for configuration to take place.

PostgreSQL Database

The following page prompts you for the user information and host information for your PostgreSQL database.

Display 3.4 *SAS Enterprise Case Management Server-Tier Configuration – DBMS Credentials*


SAS Deployment Wizard

SAS Enterprise Case Management Server-Tier Configuration

DBMS Credentials

Database Type: PostgreSQL

Username: CASEMGMT

Password: *******

Confirm Password: *******

Host: dbhost.company.com

You must enter information for the following text boxes:

Database Type
specifies the type of database that you are configuring.

Username
specifies the username for the PostgreSQL database.

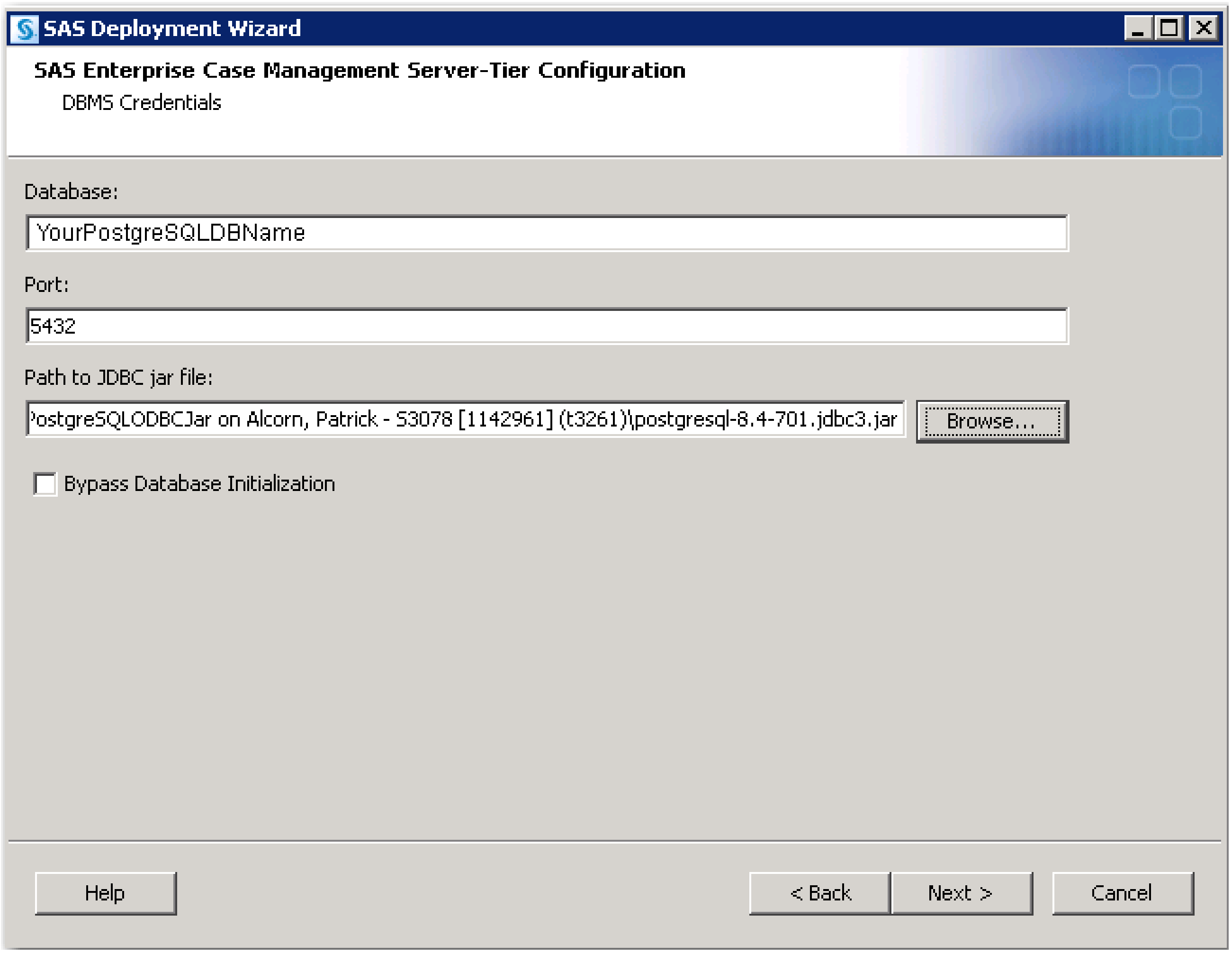
Password
specifies a valid password for the username that is associated with the PostgreSQL database.

Confirm Password
confirms the password for the username for the PostgreSQL database.

Host
specifies the host name of the machine that the database is installed on.

The following page prompts you for your PostgreSQL database information.

Display 3.5 *SAS Enterprise Case Management Server-Tier Configuration – DBMS Credentials*



Database: YourPostgreSQLDBName

Port: 5432

Path to JDBC jar file: ostgreSQLODBCJar on Alcorn, Patrick - S3078 [1142961] (t3261)\postgresql-8.4-701.jdbc3.jar

[ ] Bypass Database Initialization

You must enter information for the following text boxes:

Database
specifies the database name.

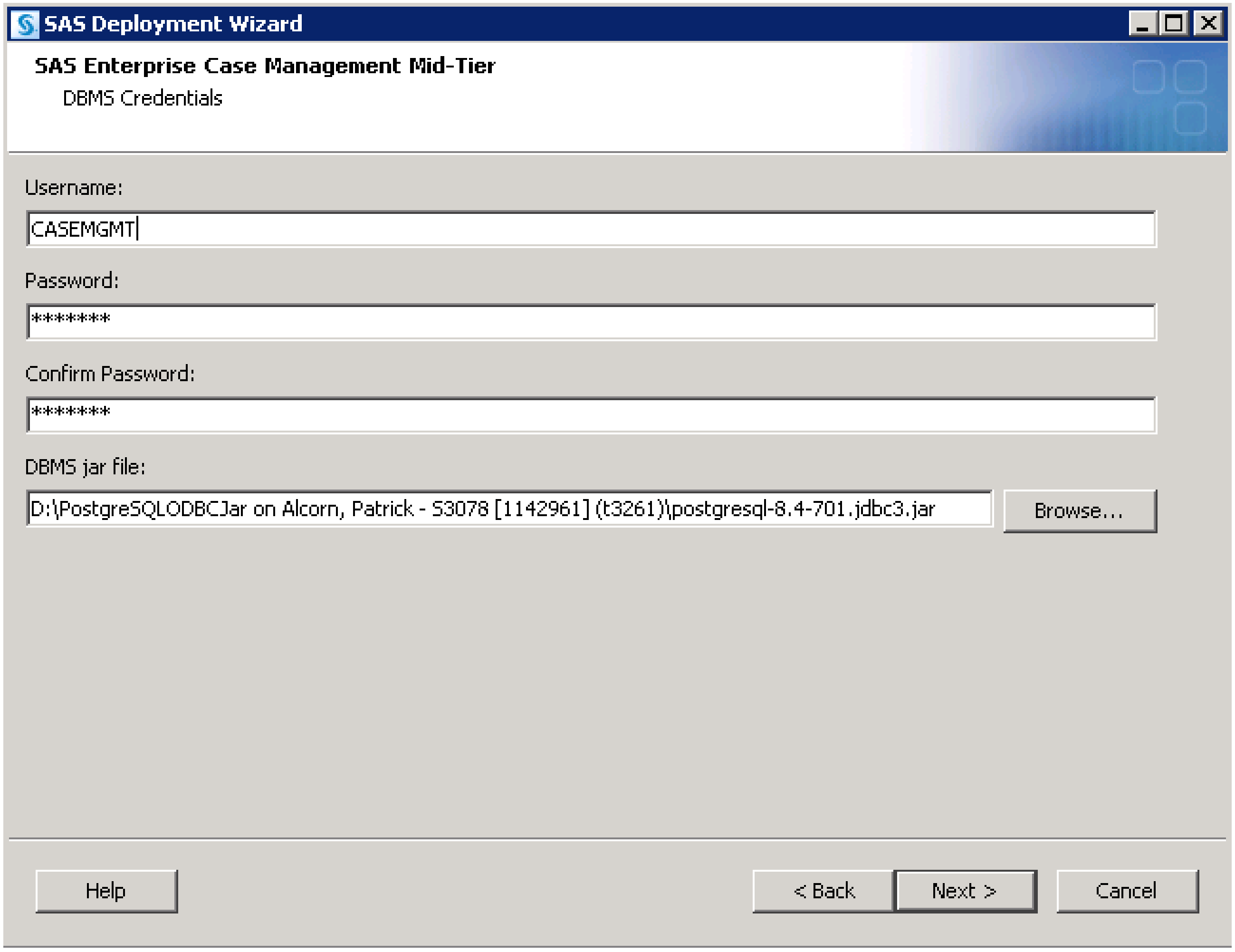
Port
specifies the port used by the database.

Path to JDBC Jar File
specifies the path to the JDBC JAR file that is provided by the database vendor. This file facilitates Java access and must be available on this host in order for configuration to occur.

Bypass Database Initialization
when selected, specifies to bypass the initialization of the database.

The following page prompts you for middle-tier information.

Display 3.6 *SAS Enterprise Case Management Mid-Tier Configuration – DBMS Credentials*



SAS Deployment Wizard

SAS Enterprise Case Management Mid-Tier

DBMS Credentials

Username: CASEMGMT

Password: *******

Confirm Password: *******

DBMS jar file: D:\PostgreSQLODBCJar on Alcorn, Patrick - S3078 [1142961] (t3261)\postgresql-8.4-701.jdbc3.jar

You must enter information for the following text boxes:

Username
specifies the username for the PostgreSQL database.

Password
specifies a valid password for the username for the PostgreSQL database.

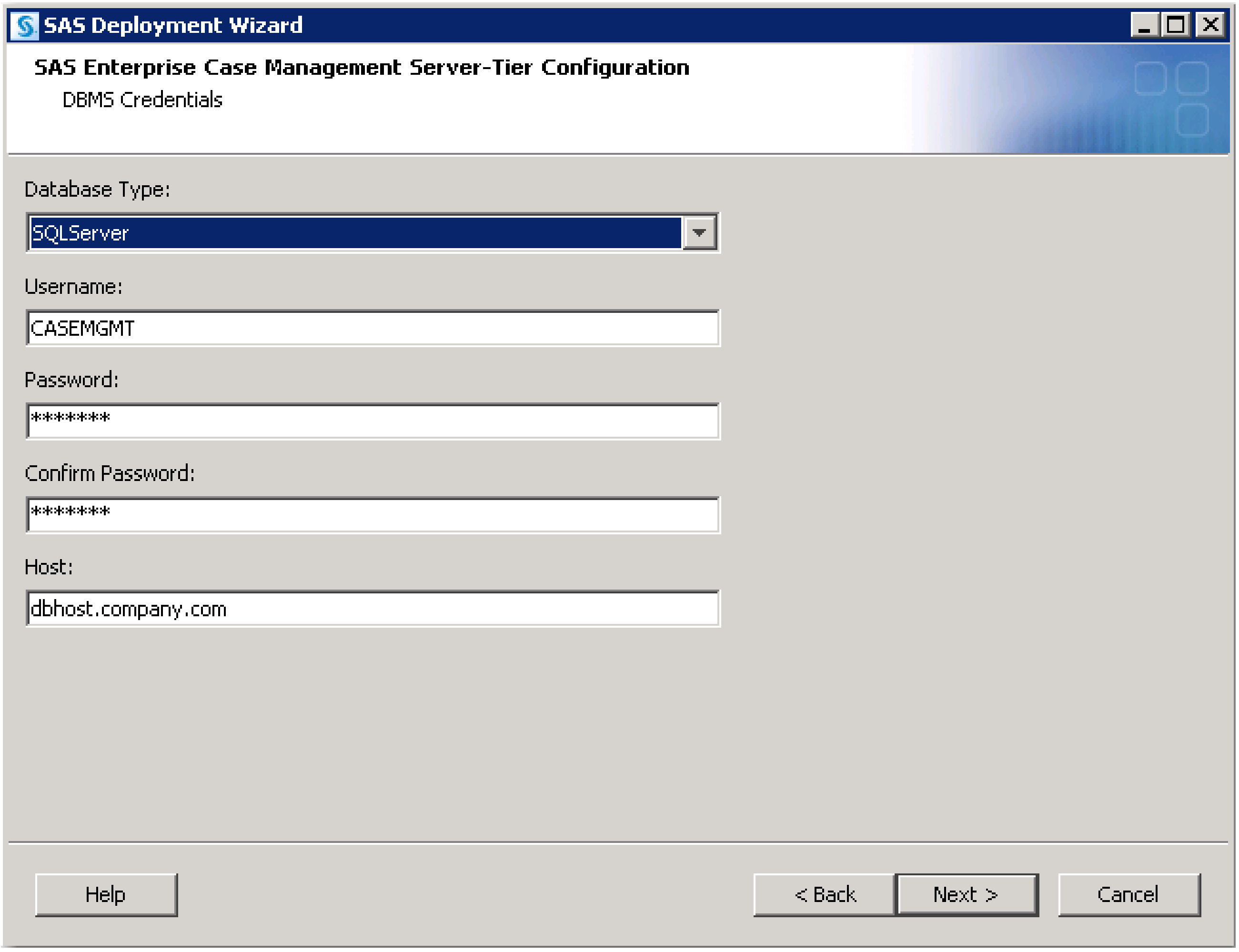
Confirm Password
confirms the password for the username for the PostgreSQL database.

DBMS jar file
specifies the location of the database vendor's JDBC JAR file to facilitate Java access. Use the same JAR file that you specified for the server tier. You must have this file available on the server tier for configuration to take place.

SQLServer Database

The following page prompts you for the user information and host information for your SQLServer database.

Display 3.7 *SAS Enterprise Case Management Server-Tier Configuration – DBMS Credentials*



SAS Enterprise Case Management Server-Tier Configuration

DBMS Credentials

Database Type: SQLServer

Username: CASEMGMT

Password: *******

Confirm Password: *******

Host: dbhost.company.com

You must enter information for the following text boxes:

Database Type
: specifies the type of database that you are configuring.

Username
: specifies the username for the SQLServer database.

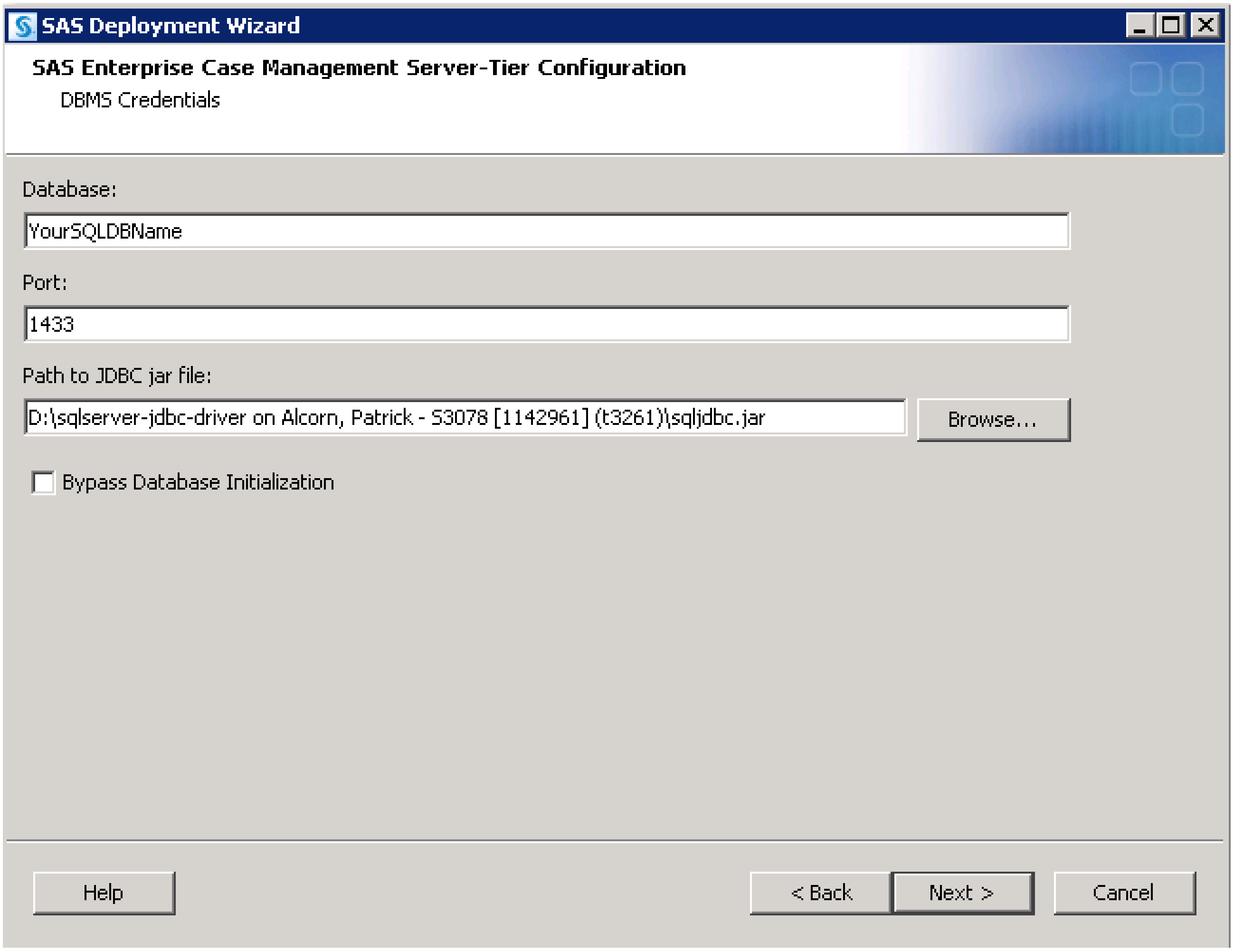
Password
: specifies a valid password for the username that is associated with the SQLServer database.

Confirm Password
: confirms the password for the username for the SQLServer database.

Host
: specifies the host name of the machine that the database is installed on.

The following page prompts you for your SQLServer database information.

Display 3.8 *SAS Enterprise Case Management Server-Tier Configuration – DBMS Credentials*



Database: YourSQLDBName

Port: 1433

Path to JDBC jar file: D:\sqlserver-jdbc-driver on Alcorn, Patrick - S3078 [1142961] (t3261)\sqljdbc.jar

☐ Bypass Database Initialization

You must enter information for the following text boxes:

Database
specifies the database name.

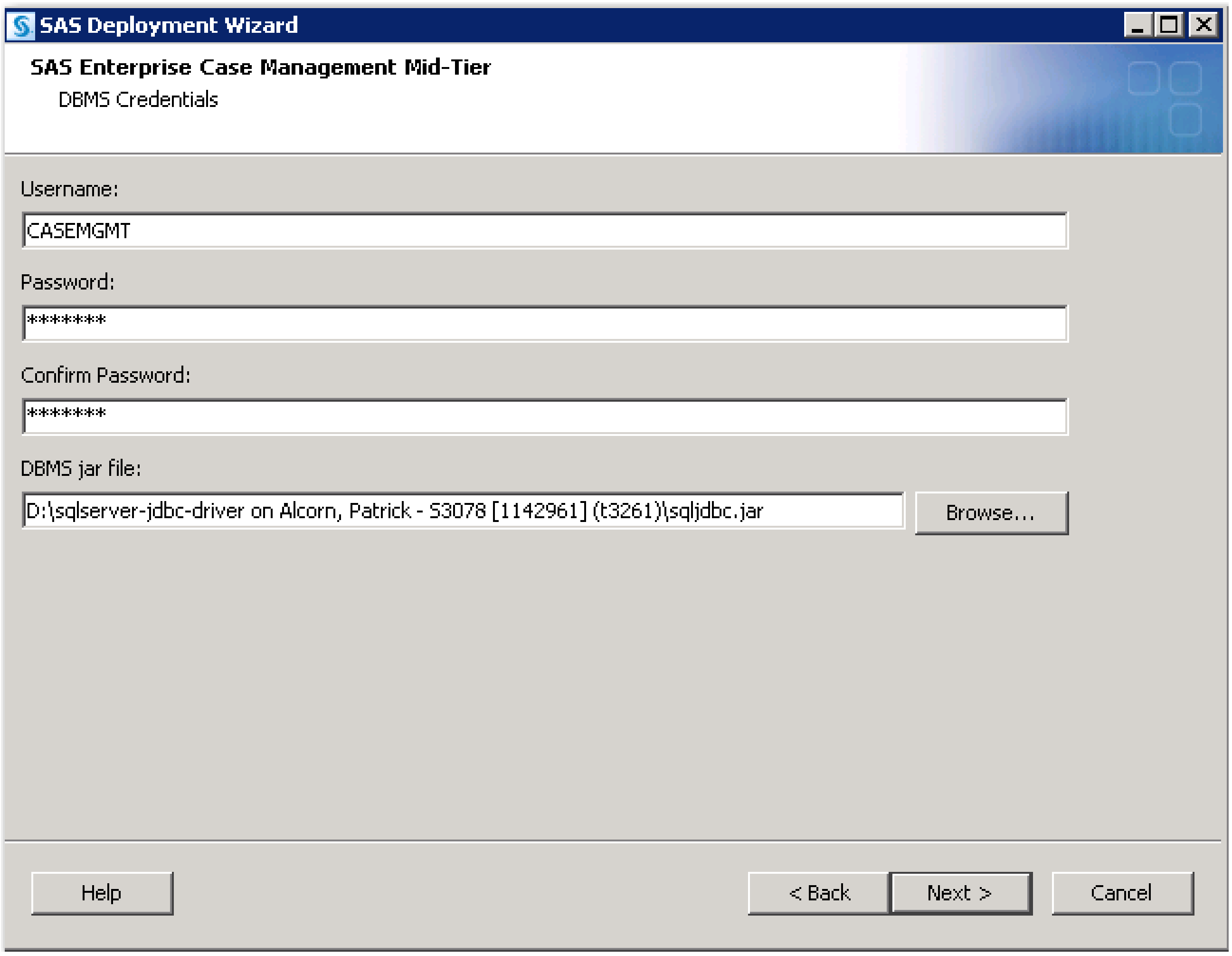
Port
specifies the port used by the database.

Path to JDBC Jar File
specifies the path to the JDBC JAR file that is provided by the database vendor. This file facilitates Java access and must be available on this host in order for configuration to occur.

Bypass Database Initialization
when selected, specifies to bypass the initialization of the database.

The following page prompts you for middle-tier information.

Display 3.9 *SAS Enterprise Case Management Mid-Tier Configuration – DBMS Credentials*



SAS Deployment Wizard

SAS Enterprise Case Management Mid-Tier

DBMS Credentials

Username: CASEMGMT

Password: *******

Confirm Password: *******

DBMS jar file: D:\sqlserver-jdbc-driver on Alcorn, Patrick - S3078 [1142961] (t3261)\sqljdbc.jar

You must enter information for the following text boxes:

Username
: specifies the username for the SQLServer database.

Password
: specifies a valid password for the username for the SQLServer database.

Confirm Password
: confirms the password for the username for the SQLServer database.

DBMS jar file
: specifies the location of the database vendor's JDBC JAR file to facilitate Java access. Use the same JAR file that you specified for the server tier. You must have this file available on the server tier for configuration to take place.

Reviewing the Instructions.html File

After you have installed and configured your SAS software, the SAS Deployment Wizard writes an instructions file called Instructions.html to the `Documents` directory in your SAS configuration directory. The Instructions.html file contains additional information and details for configuring your installation. You can review this file for any additional steps to your installation.

Chapter 4

Post-installation Requirements and Tasks

Post-installation Overview

At the end of the installation process, the SAS Deployment Wizard produces an HTML document named Instructions.html. If your server tier and middle tier are hosted on separate machines, you will have an Instructions.html file for each machine. To complete your installation, you will need the information that is provided in Instructions.html and the information specific to SAS Enterprise Case Management that is documented in this chapter.

Customizing Your SAS Enterprise Case Management Installation

Loading the SAS Enterprise Case Management Configuration Tables

After you have completed your installation, you should customize your SAS Enterprise Case Management installation. To populate the SAS Enterprise Case Management configuration tables, you should provide your own data. As an example, the following SAS files contain sample data:

- ecm_autoexec.sas
- load_post_install_data.sas
- load_fincen_sar_di_data.sas.

To execute these sample files, follow these steps:

1. From the SAS Enterprise Case Management configuration directory (**`\Lev1\Applications\SASCaseManagementServerCfg\2.2\Source\control`**), open the ecm_autoexec.sas file in SAS. Check the libref listing in the ecm_autoexec.sas file for the correct libref.
2. Select **Run** to execute this file in an interactive SAS session.
3. Check to be sure the SAS Enterprise Case Management tables are created in ecm_db.
4. From the directory **`\Program Files\SAS\SASFoundation\9.2\casemgmtmva\sasmisc\sample\config`**, open the load_post_install_data.sas file in SAS.
5. Select **Run** to execute this file in SAS.
6. From the directory **`\Program Files\SAS\SASFoundation\9.2\casemgmtmva\sasmisc\sample\config`**, open the load_fincen_sar_di_data.sas file in SAS.
7. Select **Run** to execute this file in SAS.

Note: The load_post_install_data.sas file must be executed before the load_fincen_sar_di_data.sas is executed.

Deploying SAS Enterprise Case Management using WebLogic 10.3g3

If you are deploying SAS Enterprise Case Management with the Web application server WebLogic 10.3g3, you should make additional changes after the SAS Deployment Wizard has completed. The following steps apply if you are installing WebLogic 10.3g3:

1. From the home page of the WebLogic Administrative Console, select **`JMS Modules`**.
2. Select **`sasJmsSystemResource`**.
3. Select **`SASQueueConnectionFactory`**.
4. Select the **Transactions** tab.
5. Check the **XA Connection Factory Enabled** box.

To apply the JDBC connection workaround, follow these steps:

1. Under **Domain Structure**, select **Services** ⇨ **JDBC** ⇨ **Data Sources** .
2. Select **SharedServices**.
3. Select the **Connection Pool** tab. Enter the following values:
   - **Maximum capacity**: *1*
   - **Capacity increment** *1*
   - **Statement Cache Size**: *0*
4. Save the changes to the JDBC connection. Activate the connection.
5. Restart the Web application server.

Defining Users, Groups, and Roles

Overview

You must configure users, groups, and roles to use SAS Enterprise Case Management.

Users
: Every user who needs to log on to the SAS Enterprise Case Management Web application must be defined in the SAS Metadata Repository and be associated with one or more groups and one or more roles that have one or more capabilities within SAS Enterprise Case Management. Every SAS Enterprise Case Management user should be a member of the *Ent Case Mgmt Users* group.

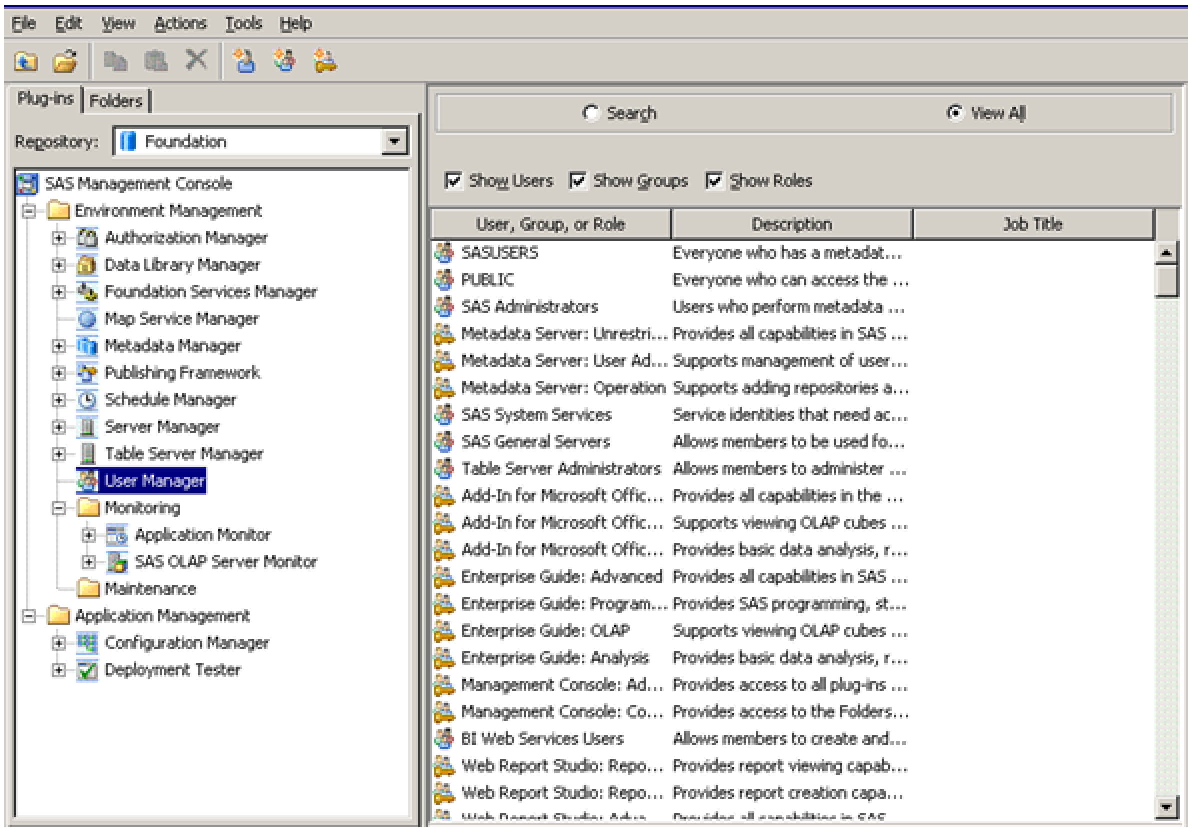
Groups
: A group is a group of users classified by common traits or common data access levels. Groups are typically used for giving users access to data. Groups can also be used within workflows to allow a restricted set of users to perform an activity. The *Ent Case Mgmt Users* group is pre-loaded during installation. It enables members to access SAS Enterprise Case Management. You must define all other groups.

Roles
: A role provides a grouping functionality. Roles determine what a user can do within the application. Roles can also be used within workflows to allow a restricted set of

users to perform an activity. The *Ent Case Mgmt* advanced role is pre-loaded during installation. It provides all capabilities in SAS Enterprise Case Management. You must define all other roles.

Groups, roles and users are defined with the User Manager function in SAS Management Console, as shown in the following display.

Display 4.1 *User Manager – SAS Management Console*



Repository: Foundation

- SAS Management Console
  - Environment Management
    - Authorization Manager
    - Data Library Manager
    - Foundation Services Manager
    - Map Service Manager
    - Metadata Manager
    - Publishing Framework
    - Schedule Manager
    - Server Manager
    - Table Server Manager
    - User Manager
    - Monitoring
      - Application Monitor
      - SAS OLAP Server Monitor
    - Maintenance
  - Application Management
    - Configuration Manager
    - Deployment Tester

Search [✓ View All]

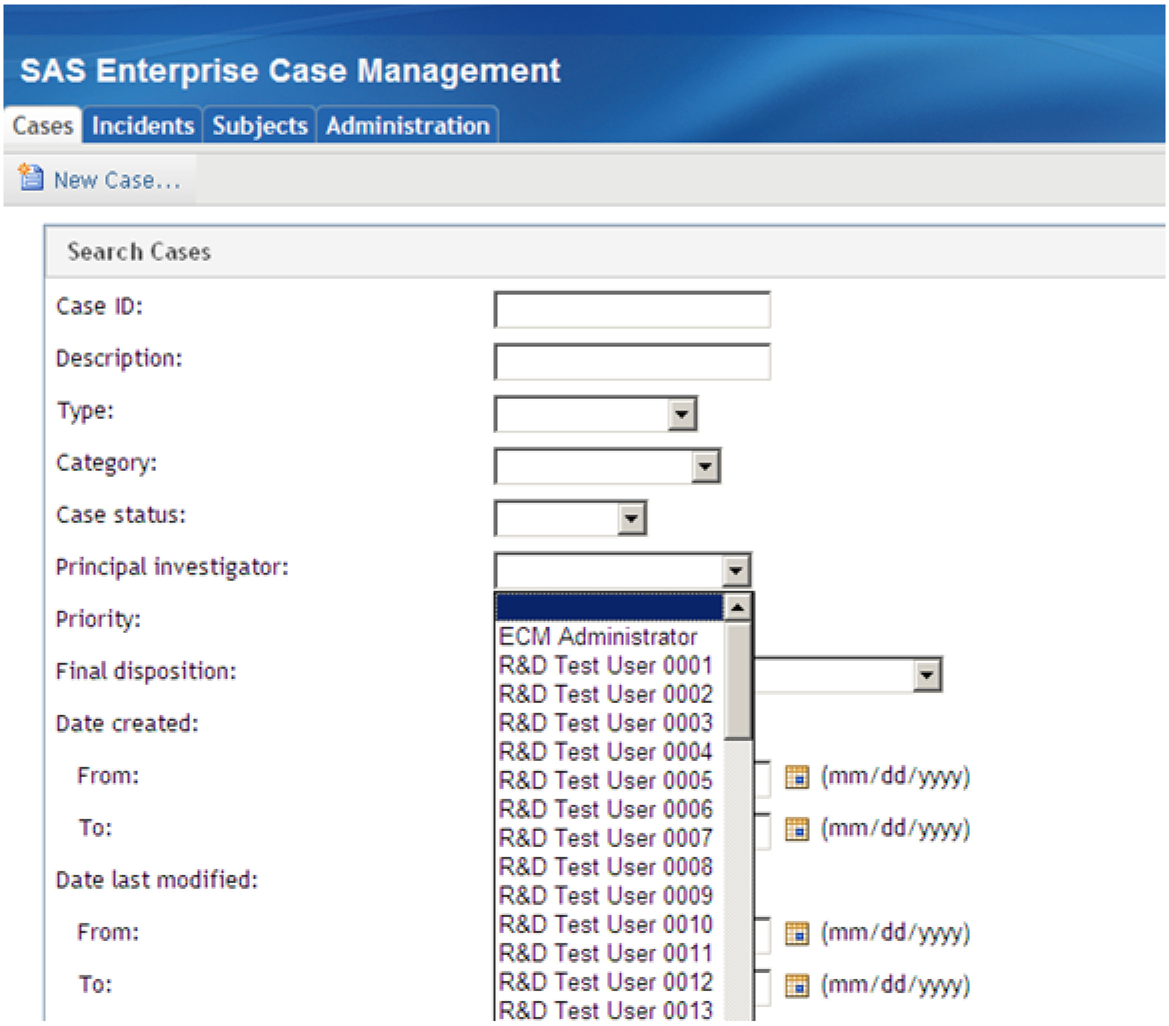
[✓] Show Users [✓] Show Groups [✓] Show Roles

User, Group, or Role	Description	Job Title
SASUSERS	Everyone who has a metadat…	
PUBLIC	Everyone who can access the …	
SAS Administrators	Users who perform metadata …	
Metadata Server: Unrestri…	Provides all capabilities in SAS …	
Metadata Server: User Ad…	Supports management of user…	
Metadata Server: Operation	Supports adding repositories a…	
SAS System Services	Service identities that need ac…	
SAS General Servers	Allows members to be used fo…	
Table Server Administrators	Allows members to administer …	
Add-In for Microsoft Offic…	Provides all capabilities in the …	
Add-In for Microsoft Offic…	Supports viewing OLAP cubes …	
Add-In for Microsoft Offic…	Provides basic data analysis, r…	
Enterprise Guide: Advanced	Provides all capabilities in SAS …	
Enterprise Guide: Program…	Provides SAS programming, st…	
Enterprise Guide: OLAP	Supports viewing OLAP cubes …	
Enterprise Guide: Analysis	Provides basic data analysis, r…	
Management Console: Ad…	Provides access to all plug-ins …	
Management Console: Co…	Provides access to the Folders…	
BI Web Services Users	Allows members to create and…	
Web Report Studio: Repo…	Provides report viewing capab…	
Web Report Studio: Repo…	Provides report creation capa…	
Web Report Studio: Adva…	Provides all capabilities in SAS	

Note: For specific information on defining users, groups, and roles, see the *SAS Management Console User's Guide*.

Groups and roles can be used as drop-down lists when configured as reference tables on the search screen, as shown in the following display.

Display 4.2 *Groups and Roles — Drop-down list*



SAS Enterprise Case Management

Cases | Incidents | Subjects | Administration

New Case…

Search Cases

Case ID:	
Description:	
Type:	
Category:	
Case status:	
Principal investigator:	
Priority:	
Final disposition:	
Date created:	
From:	(mm/dd/yyyy)
To:	(mm/dd/yyyy)
Date last modified:	
From:	(mm/dd/yyyy)
To:	(mm/dd/yyyy)

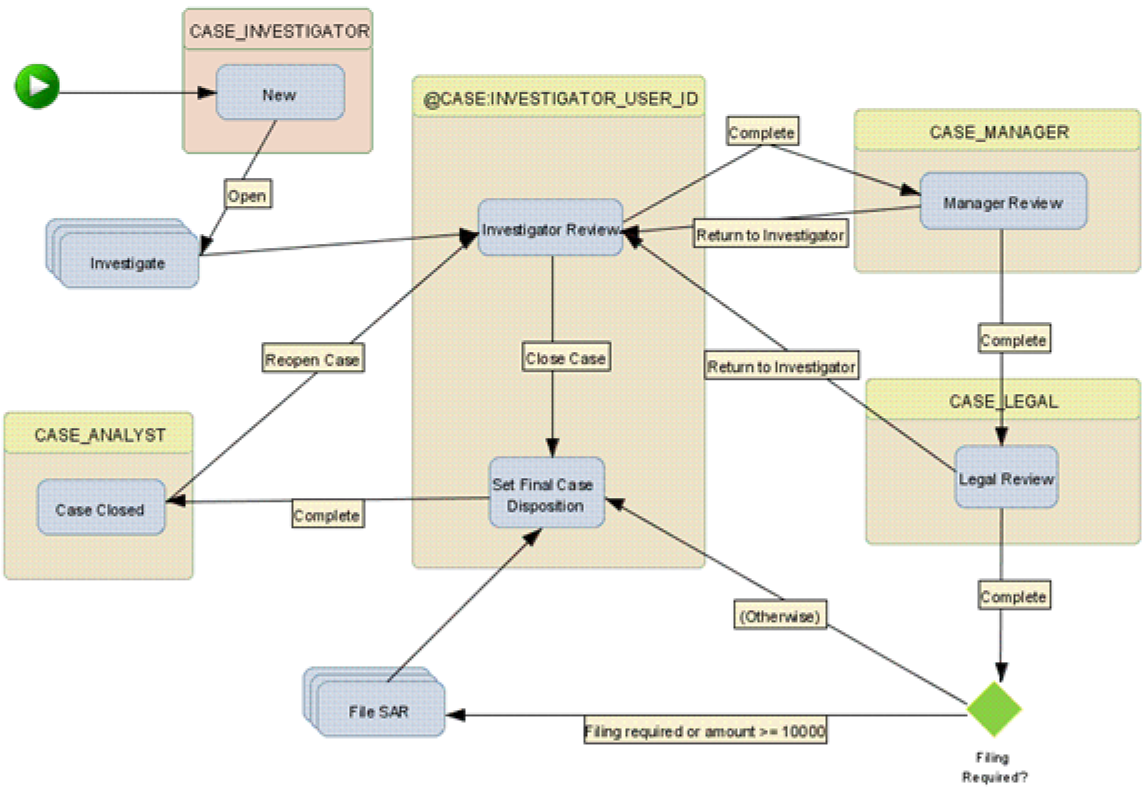
ECM Administrator
R&D Test User 0001
R&D Test User 0002
R&D Test User 0003
R&D Test User 0004
R&D Test User 0005
R&D Test User 0006
R&D Test User 0007
R&D Test User 0008
R&D Test User 0009
R&D Test User 0010
R&D Test User 0011
R&D Test User 0012
R&D Test User 0013

Groups, roles and users can be used in workflow definitions to determine who can perform activities in the investigative process. In the following display, the following roles are referenced in the workflow definition:

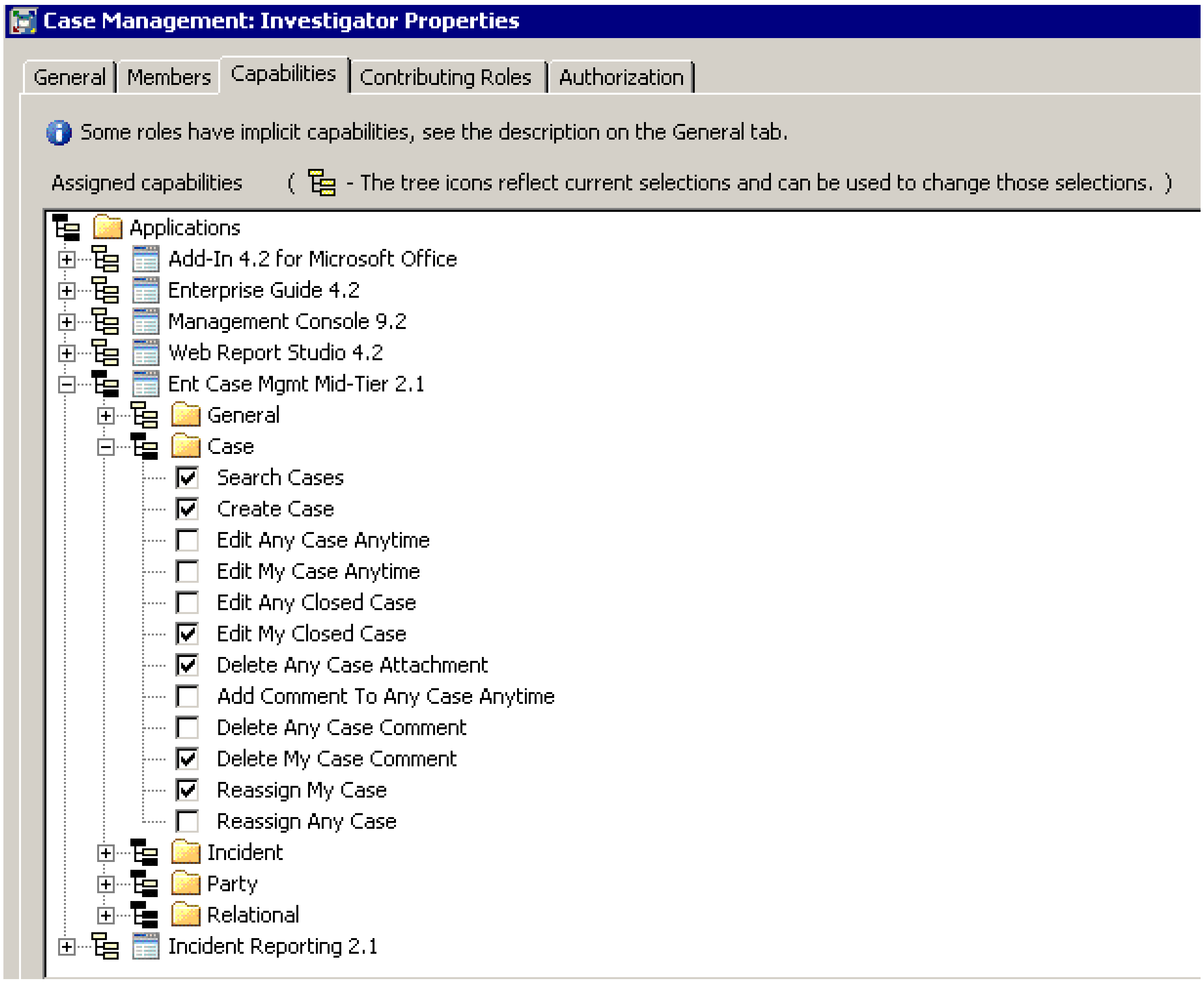
- CASE_INVESTIGATOR
- CASE_ANALYST
- CASE_MANAGER
- CASE_LEGAL

@CASE__INVESTIGATOR_USER_ID refers to the primary owner for the case.

Display 4.3 *Roles – Workflow Definition*



Capabilities can be associated with roles in the SAS Management Console as shown in the following screenshot.



Some roles have implicit capabilities, see the description on the General tab.

Assigned capabilities (- The tree icons reflect current selections and can be used to change those selections.)

- Applications
  - Add-In 4.2 for Microsoft Office
  - Enterprise Guide 4.2
  - Management Console 9.2
  - Web Report Studio 4.2
  - Ent Case Mgmt Mid-Tier 2.1
    - General
    - Case
      - ✓ Search Cases
      - ✓ Create Case
      - ☐ Edit Any Case Anytime
      - ☐ Edit My Case Anytime
      - ☐ Edit Any Closed Case
      - ✓ Edit My Closed Case
      - ✓ Delete Any Case Attachment
      - ☐ Add Comment To Any Case Anytime
      - ☐ Delete Any Case Comment
      - ✓ Delete My Case Comment
      - ✓ Reassign My Case
      - ☐ Reassign Any Case
    - Incident
    - Party
    - Relational
  - Incident Reporting 2.1

Groups, roles and users can be referenced in user interface definitions. The following user interface definition shows how to get the display name for the primary owner for a case.

```
<field name="CASE.INVESTIGATOR_USER_ID" type="string" required="false"
       values="GetUserDisplayName(CASE.INVESTIGATOR_USER_ID)">
   <label>
      <message key="field.case.investigator_user_id.label.txt" />
   </label>
</field>
```

Users and groups can be referenced in configuration tables. You can specify the primary owner for newly created cases. You can also specify the initial set of groups that have access to newly created cases, incidents, and parties.

Defining Users in SAS Management Console

To define users, select **Administration** ⇨ **Users and Group** ⇨ **Users** ⇨ **New**. For details, see the online Help for the New User page.

1. Log on to SAS Management Console as a user who has the capability to manage users, groups, and roles.
2. Click the **User Manager** plug-in.
3. Select **Actions** ⇨ **New** ⇨ **User**. The New User Properties window appears.

4. Enter valid data in the **Name** and **Display Name** text boxes.
5. Select the **Groups and Roles** tab.
6. Click the **Accounts** tab.
7. Click **New**. The New Login Properties dialog box appears.
8. Define logon information for the user.
9. Click **OK**. For more information, see the online Help in SAS Management Console or *SAS Management Console: Guide to Users and Permissions.*

Defining Groups in SAS Management Console

A SAS Enterprise Case Management group is defined by default during installation. If necessary, you can add users to this group to access SAS Enterprise Case Management. To create additional groups in SAS Management Console, complete these steps:

1. Log on to SAS Management Console as sasadm or as a user who has the capability to manage users, groups, and roles.
2. Click the **User Manager** plug-in.
3. Select **Actions** ⇨ **New** ⇨ **Group**. The New Group Properties window appears.
4. Enter valid data in the **Name** and **Display Name** text boxes.
5. Select the **Members** tab.
6. Select users from the **Available Identities** that you want to be members of the group list and move them to the **Current Members** list. Note that you can define users later if they are not yet defined.
7. Click **OK**.

   For more information, see the online Help in SAS Management Console or *SAS Management Console: Guide to Users and Permissions*.

Defining the Administrative User Account

If the account does not already exist, add the admin user ID and password. You can add this user ID in SAS Management Console. In SAS Management Console:

1. Select the **User Manager** tab.
2. Select the **New User** option.
3. Enter the required information for the admin user.

Defining Roles for SAS Enterprise Case Management Access

Roles in SAS Enterprise Case Management are activity based. Roles are granted to users and are cumulative. For example, if a user is assigned to more than one role, then the capabilities will always honor the grant. If role 1 grants a user a specific capability but role 2 does not, the user will still have the capability. The `Advanced` role is provided with your SAS Enterprise Case Management installation by default.

1. Log on to SAS Management Console as sasadm or as a user who has the capability to manage users, groups, and roles.

2. Click the **User Manager** plug-in.
3. Select **Actions** ⇨ **New** ⇨ **Role**. The New Role Properties window appears.
4. Enter valid data in the **Name** and **Display Name** text boxes.
5. Select the **Members** tab.
6. Select users from the **Available Identities** that you want assigned to the role and move them to the **Current Members** list. Note that you can define users later if they are not yet defined.
7. Select the **Capabilities** tab. All of the capabilities from all of the installed applications are displayed.
8. You can select a capability or capabilities.
9. Click **OK**. For more information, see the online Help in SAS Management Console or *SAS Management Console: Guide to Users and Permissions*.

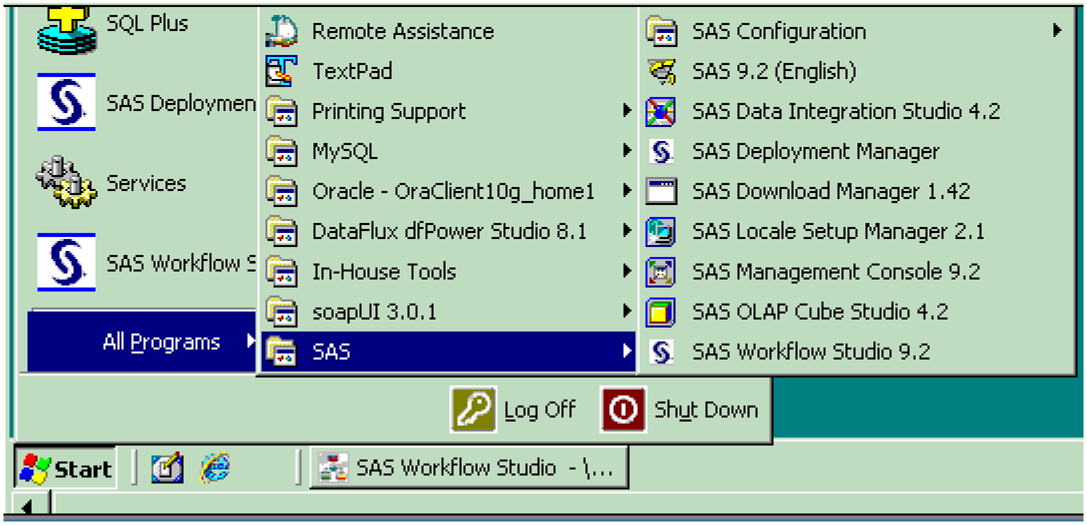
Uploading Definitions and Properties

Uploading Workflow Definitions

After you have set up and populated your Oracle database, you can upload your workflow definitions. You must provide your own workflow definitions. As an example, the following file that contains sample workflow definitions can be executed. To use this sample, follow these steps:

1. Start the Windows Workflow Studio Client by selecting **All Programs** ⇨ **SAS** ⇨ **SAS Workflow Studio 9.2** as shown in the following display.

Display 4.4 *Select SAS Workflow Studio 9.2*



2. In the **File** menu, open CaseManagementFinancialFraud.xml and CaseManagementGeneric.xml from **`<SAS_HOME>\SASFoundation\9.2\casemgmtmva\sasmisc\sample\workflow`**.
3. Select the **Upload** option for each workflow definition file.

Uploading User Interface Definitions

After you have uploaded your workflow definitions, you must provide your own user interface definitions. As an example, the following file that contains sample user interface definitions can be executed. To use this sample, follow these steps:

1. Log on to SAS Enterprise Case Management as the admin user.
2. Select **UI Definitions** on the **Administration** tab. The user definition files are located in `\Program Files\SAS\SASFoundation\9.2\casemgmtmva\sasmisc\sample\uidef`.
3. Upload the needed user interface definitions. You must upload the files individually.

Uploading Custom Properties

After you have uploaded your user interface definitions, you can upload your custom property definitions in SAS Enterprise Case Management. As an example, the following file that contains sample custom properties can be executed. To use this sample, follow these steps:

1. Log on to SAS Enterprise Case Management as the admin user.
2. Select **Custom Property Files** on the **Administration** tab. The custom property files are located in `<SAS_HOME>\SASFoundation\9.2\casemgmtmva\sasmisc\sample\properties`.
3. Upload the needed custom property definitions. You must upload the files individually.

Clearing the Cache

SAS Enterprise Case Management caches various configuration data in memory for better performance. The following configurations are cached in memory:

- all user-defined field definitions
- all static and user-defined reference table values
- all user display names defined in the SAS Metadata Repository
- all search screen configurations
- all custom resource bundle properties
- all properties defined in the SAS Metadata Repository for SAS Enterprise Case Management

If any the above configurations are changed (except the user defined field definition), then the administrator should go to the **Administration** application tab in the SAS Enterprise Case Management Web application and select the **Clear Cache** menu option to clear cached data.

Note: If the SAS Enterprise Case Management Web application is deployed on multiple servers, then the clear cache action needs to be performed on all servers in the cluster.

SAS Enterprise Case Management Capabilities

Associating Capabilities

SAS Enterprise Case Management provides various function capabilities that are applicable to cases, incidents, and parties. The following tables show the different capabilities.

Note: All the capabilites listed apply to the `Advanced` role in SAS Enterprise Case Management.

Table 4.1 *SAS Enterprise Case Management – Case Capabilities*

Case Capability	Description
Search Cases	Enables a user to search for cases.
Create Case	Enables a user to create a case.
Edit Any Case Anytime	Enables a user to edit any case anytime.
Edit My Case Anytime	Enables a user to edit their case anytime.
Edit Any Closed Case	Enables a user to edit any closed case.
Edit My Closed Case	Enables a user to edit their closed case
Delete Any Case Attachment	Enables a user to delete any case attachment.
Add Comment To Any Case Anytime	Enables a user to add a comment to any case anytime.
Delete Any Case Comment	Enables a user to delete any case comment.
Delete My Case Comment	Enables a user to delete any case comment that they created.
Reassign Any Case	Enables a user to set the primary owner for any case and unlock any case.
Reassign My Case	Enables a user to reassign any case that they own.

Table 4.2 *SAS Enterprise Case Management – Incident Capabilities*

Incident Capabilities	Description
Search Incidents	Enables a user to search for incidents.
Create Incident	Enables a user to create an incident.
Edit Incident	Enables a user to edit an incident.

Incident Capabilities	Description
Delete Any Incident Attachment	Enables a user to delete any incident attachment.
Add Comment to Any Incident	Enables a user to add a comment to any incident.
Delete Any Incident Comment	Enables a user to delete any incident comment.
Delete My Incident Comment	Enables a user to delete any incident comment that they created.

Table 4.3 *SAS Enterprise Case Management – Party Capabilities*

Party Capability	Description
Search Parties	Enables a user to search for parties.
Create Party	Enables a user to create a party.
Edit Party	Enables a user to edit a party.
Delete Any Party Attachment	Enables a user to delete any party attachment.
Add Comment To Any Party	Enables a user to add a comment to any party.
Delete Any Party Comment	Enables a user to delete any party comment.
Delete My Party Comment	Enables a user to delete any party comment that they created.

Table 4.4 *SAS Enterprise Case Management – Relational Capabilities*

Relational Capability	Description
Add Incident To Case	Enables a user to add an incident to a case.

Table 4.5 *SAS Enterprise Case Management – General Capabilities*

General Capability	Description
Administration	Enables a user to perform any administrative task within the Administration tab.

SAS Enterprise Case Management Capabilities – User Interface Impact

Case Capability	**User Interface Impact**
Search Cases	The Cases application tab is visible.
Create Case	The New Case action is visible on the cases search screen toolbar.
Edit Any Case Anytime	The Edit Case menu action is always enabled.
Edit My Case Anytime	The Edit Case menu action is always enabled for any case that the user owns.
Edit Any Closed Case	The Edit Case menu action is always enabled for any closed case.
Edit My Closed Case	The Edit Case menu action is always enabled for any closed case that the user owns.
Delete Any Case Attachment	The delete attachment action icon is visible for all attachments on any case the user can edit.
Add Comment To Any Case Anytime	The add comment input fields and button are always visible. Without this capability, the add comment input fields and button are only visible on cases the user can edit.
Delete Any Case Comment	The delete comment action icon is visible for all comments on any case the user can edit or add a comment to.
Delete My Case Comment	The delete comment action icon is visible for all comments created by the user on any case the user can edit or add a comment to.
Reassign Any Case	The Set Primary Owner and Unlock menu actions for a case are always enabled.
Reassign My Case	The Reassign Case menu action is enabled for cases that the user owns.

Incident Capability	**User Interface Impact**
Search Incidents	The Incidents application tab is visible.
Create Incident	The New Incident action is visible on the incident search screen toolbar.
Edit Incident	The Edit Incident menu action is always enabled.

Incident Capability	User Interface Impact
Delete Any Incident Attachment	The delete attachment action icon is visible for all attachments on any incident the user can edit.
Add Comment To Any Incident	The add comment input fields and button are always visible. Without this capability, the add comment input fields and button are only visible on incidents the user can edit.
Delete Any Incident Comment	The delete comment action icon is visible for all comments on any incident the user can edit or add a comment to.
Delete My Incident Comment	The delete comment action icon is visible for all comments created by the user on any incident the user can edit or add a comment to.

Party Capability	User Interface Impact
Search Parties	The Subjects application tab is visible.
Create Party	The New Subject action is visible on the party search screen toolbar.
Edit Party	The Edit Subject menu action is always enabled.
Delete Any Party Attachment	The delete attachment action icon is visible for all attachments on any party the user can edit.
Add Comment To Any Party	The add comment input fields and button are always visible. Without this capability, the add comment input fields and button are only visible on parties the user can edit.
Delete Any Party Comment	The delete comment action icon is visible for all comments on any party the user can edit or add a comment to.
Delete My Party Comment	The delete comment action icon is visible for all comments created by the user on any party the user can edit or add a comment to.

Relational Capability	User Interface Impact
Add Incident To Case	The Related Cases menu action (on incident search screen) and toolbar action (on incident detail screen) are always enabled for unassigned incidents.

General Capability	User Interface Impact
Administration	The Administration application tab is visible.

You should consider the following specific details about capabilities, workflows, and their impact on the SAS Enterprise Case Management user interface:

- If a user is able to work on a workflow activity as defined in the associated workflow for a case, then that case can be edited, regardless of the user's capabilities.
- Attachments can only be added to cases, incidents, or parties that can be edited. In addition, you can only add attachments that are 50 MB or less in size.
- Security access and restrictions within the case, incident and party detail screens are controlled from within the user interface definitions.

SAS Enterprise Case Management Web Service Authentication and Authorization

In order for a user to be authenticated, SAS Enterprise Case Management sends a request to the SAS Security Token Service. The SAS Security Token Service is a Web service that is discovered by contacting the service registry. The service registry is a web service that listens at the following URL**`http://<server>:<port>/SASWIPSoapServices/services/ServiceRegistry`**. Once the SAS Security Token Service is found, a request is sent to this service that contains the username and password for the user. The following actions then occur:

1. The security token service sends back a special token.
2. SAS Enterprise Case Management then sends this token to the SAS Enterprise Case Management Web Service.
3. The SAS Enterprise Case Management Web Service then verifies that the given token is valid and finds the user associated with that token.
4. The SAS Enterprise Case Management Web Service then checks the user's capabilities before performing each create operation in the request. For example, if a Web service client has sent a request to create an incident, SAS Enterprise Case Management then verifies that the user associated with the request has permission to create incidents.

Task List E-mail

The Task List component of SAS Enterprise Case Management application has the ability to receive alerts similar to Microsoft Outlook reminders for tasks. By default, SAS Enterprise Case Management is installed with two e-mail templates, a text template and an HTML template. The templates reside on the content server under the path**`/sasdav/Templates/notifications/en`**. A utility included with the SAS installation can be found under **`<SAS_Install_Dir>\Config\Lev1\Web\Utilities\DAVTree.bat`**.

You can browse the content server by using this utility and opening the following URL: **`http://localhost:8080/SASContentServer/repository/default`**. Use your SAS Administrator username and password to log in. If you wish to modify the templates in place or add templates for additional languages, the templates must remain named SAS_Solutions_ECM_ToDo_Reminder.html and SAS_Solutions_ECM_ToDo_Reminder.txt for HTML and text e-mails respectively.

The following template properties can be used within the e-mail to insert pertinent information.

Property	Value
%OBJ	CASE-<CASE_ID>
%TASK	Task Description
%DUE_DATE	Task Due Date
%OBJ_LINK	A link back to the Case*

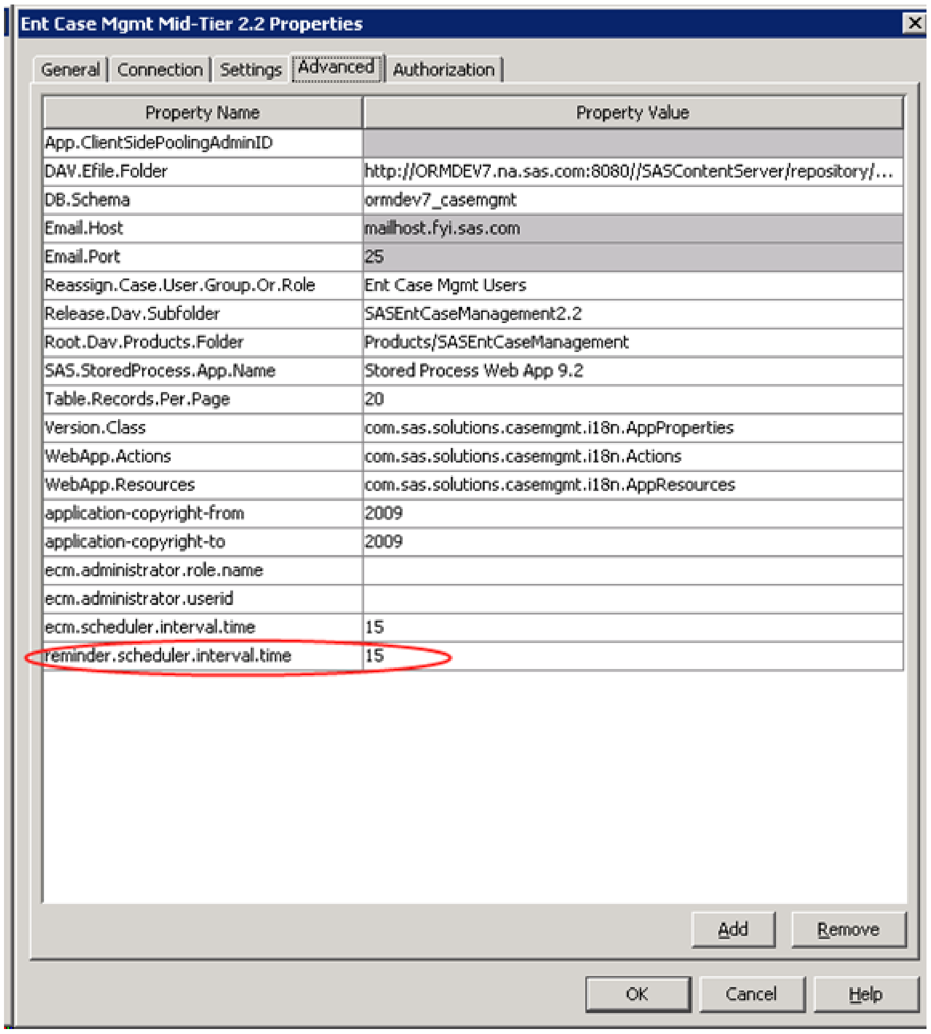
*This property is only supported in the HTML template. Additional properties might be supported in future releases.

Adjusting the Reminder Interval for the Task List

SAS Enterprise Case Management is installed with a metadata property for the reminder timer interval that is set to 15 minutes by default. This means the reminder scheduler will wake up every 15 minutes to determine whether there are any alerts or reminders that need to be sent. This property is also configurable, but it is recommended to remain at 15-minute intervals. If you decide to modify this property, it is also recommended to set this property in multiples of 15, preferably 15, 30, or 60. Keep in mind that the Task list only allows for reminder times at a minimum of 15 minutes, so setting this interval at odd numbers will cause any alerts or reminders to be sent later than expected. You can find the **reminder.scheduler.interval.time** setting in SAS Management Console under the **Advanced** tab of the SAS Enterprise Case Management Application Management section.

The following display shows the Task list reminder interval setting.

Display 4.5 *Task list reminder interval setting*



Property Name	Property Value
App.ClientSidePoolingAdminID	
DAV.Efile.Folder	http://ORMDEV7.na.sas.com:8080//SASContentServer/repository/...
DB.Schema	ormdev7_casemgmt
Email.Host	mailhost.fyi.sas.com
Email.Port	25
Reassign.Case.User.Group.Or.Role	Ent Case Mgmt Users
Release.Dav.Subfolder	SASEntCaseManagement2.2
Root.Dav.Products.Folder	Products/SASEntCaseManagement
SAS.StoredProcess.App.Name	Stored Process Web App 9.2
Table.Records.Per.Page	20
Version.Class	com.sas.solutions.casemgmt.i18n.AppProperties
WebApp.Actions	com.sas.solutions.casemgmt.i18n.Actions
WebApp.Resources	com.sas.solutions.casemgmt.i18n.AppResources
application-copyright-from	2009
application-copyright-to	2009
ecm.administrator.role.name	
ecm.administrator.userid	
ecm.scheduler.interval.time	15
reminder.scheduler.interval.time	15

Task List Alerts and the SAS Information Delivery Portal

Configuring the SAS Information Delivery Portal for SAS Enterprise Case Management

To access the portal, you can log on to the application by entering **`http://yourmachine/SASPortal`**. Use your configured username and password to log on the same way you would for SAS Enterprise Case Management. To add the Alerts portlet to your portal, complete the following steps:

1. Click **Options** on the top banner and select **Add Page** if you don't already have a page specified.
2. Fill in the required name information and any other optional information. Click **Add**, and then click **Done**. You will now be in your new Tab area with the name you selected.
3. Click **Options** and select **Edit Page Content**.
4. Click **Add Portlets**.
5. Select the **Alerts** portlet type if not already selected. Enter the required name and any other information. Click **Add**, and then click **Done**. Click **OK**. You will now see your Alerts portlet within your newly created Tab page.

What to Expect from the Portal

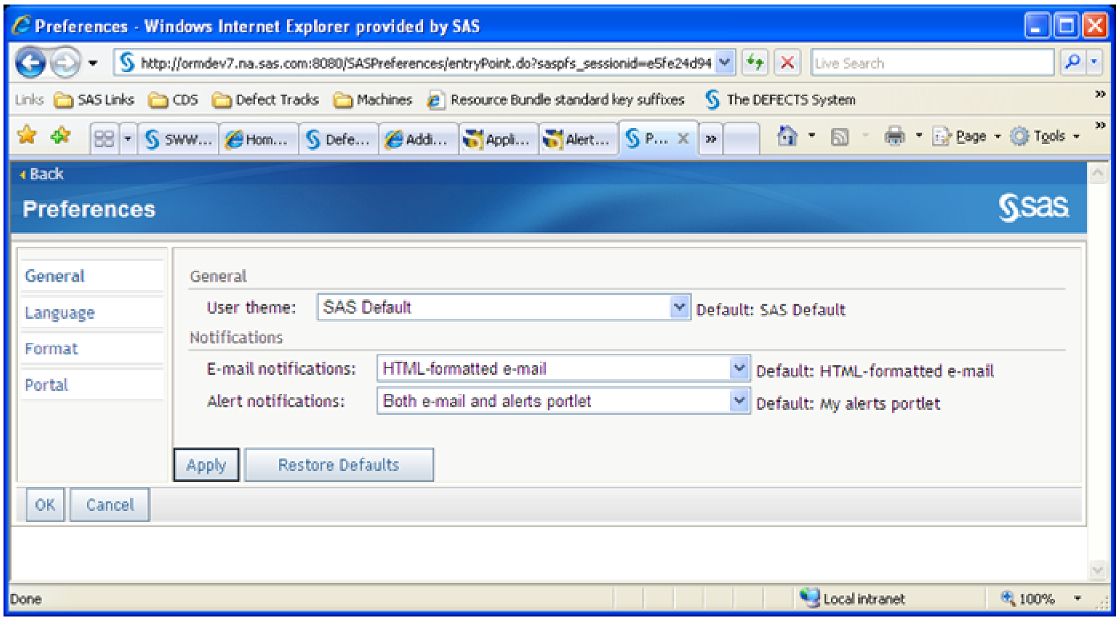
SAS Enterprise Case Management alerts are displayed in this portlet with the task name and the date that the alert was sent. You can delete any alerts you wish to remove here. Also, clicking on the task name will return you to the case that the alert was created from.

Controlling the Alert Notifications from the Preferences Manager

SAS Enterprise Case Management contains a Preferences manager link on the top banner on any page. Clicking this link takes you to the SAS Preferences manager, which controls preferences for any SAS application. The Portal section will have your configuration options for notifications of both e-mail and alerts. By default, the alerts notification will be set to Portlet only. In order to receive e-mails, you must select an option that includes e-mail alerts, and the user that you created in metadata must have a valid e-mail address.

The following display shows the Portal Preferences dialog box.

Display 4.6 *Portal Preferences*



Preferences

General

User theme: SAS Default Default: SAS Default

Notifications

E-mail notifications: HTML-formatted e-mail Default: HTML-formatted e-mail

Alert notifications: Both e-mail and alerts portlet Default: My alerts portlet

Preferences - Windows Internet Explorer provided by SAS
http://ormdev7.na.sas.com:8080/SASPreferences/entryPoint.do?saspfs_sessionid=e5fe24d94
Back
General
Language
Format
Portal
Apply
Restore Defaults
OK
Cancel
Done
Local intranet
100%

Deploy Case Network Analysis Stored Processes as a Web Service

Deploying the Web Service

After SAS Enterprise Case Management is installed and configured, the SAS stored processes getSocialNetwork, getSocialNetworkNodeDetails, and growSocialNetworkNodes are created in **`system/SAS Enterprise Case Management/Ent Case mgmt Configuration 2.2/Application SAS code`**. These stored processes need to be adjusted and deployed into a Web service before the Case Network Analysis Web component can use it. To accomplish this, follow these steps:

1. In SAS Management Console, use the **Folders** tab to navigate to the folder that was just imported to the **`system/applications/SAS Enterprise Case Management/Ent Case mgmt Configuration 2.2/Application SAS code`** folder.
2. Select the **Application SAS code** folder. The **Stored Process** icons appear in the right pane.
3. Some of the stored processes respond with XML streams to the CNA user interface. These stored processes must have the Schema URI set for the responses that use XML streams. The XML Schema (XSD) files are installed with the SAS software in the following location:

Platform	Location
UNIX	!SASROOT/misc/casemgmtmva/xml/
Microsoft Windows	!SASROOT\casemgmtmva\sasmisc\xml

For each of the stored processes identified in Table 4.6 on page 43, perform the following steps:

1. Select the **Stored Process**, right-click, and select **Properties**.
2. Select the **Data** tab.
3. For each of the targets listed in Table 4.6 on page 43, perform the following steps:
   - Select the label value and then select **Edit**. The Modify Data Target dialog box opens.
   - Edit the **Schema URI** field. Start the value with the file:// protocol. Enter the path to the XML directory containing the XSD files, followed by the name of the XSD file.

   Note: The Schema URI is the location of the XSD file on the machine where the middle tier is installed. If the middle tier is installed on a separate machine than the SAS Foundation, the XSD files need to be copied from the directory listed above to the machine where the middle tier is installed.

Table 4.6 *Case Network Analysis Stored Processes*

Stored Process Name	Target Label on the Data Tab	Schema URI
getSocialNetwork	respN	file:///.../getSNANodes.xsd
	respL	file:///.../getSNALinks.xsd
	respG	file:///.../getSNAGroups.xsd
	Cmodel	file:///.../ getScoringModel.xsd
growSocialNetworkNode	respN	file:///.../getSNANodes.xsd
	respL	file:///.../getSNALinks.xsd
	respG	file:///.../getSNAGroups.xsd

4. After each of the stored processes in Table 4.6 on page 43 has the Schema URI set, deploy the CNA-related Web service. Hold down the CTRL key and click to select the following stored process icons:
   - **getSocialNetwork**
   - **getSocialNetworkNodeDetails**
   - **growSocialNetworkNode**
5. Right-click one of the selected icons and select **Deploy As Web Service**. The Deploy As Web Service wizard starts.
6. On the Web Service Information page, confirm the following:
   - Use the default value for Web Service Maker URL.

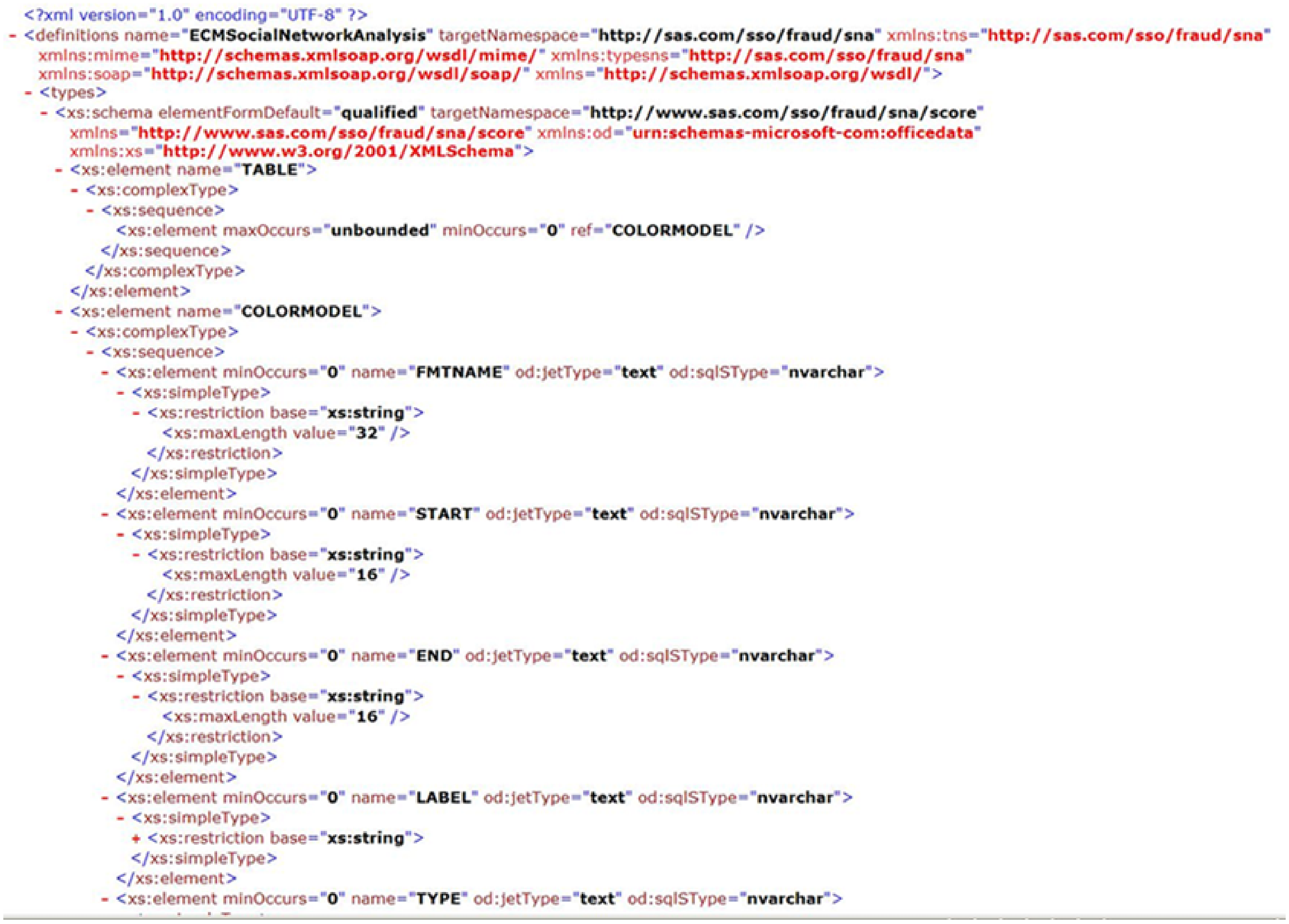
     Note: If no default is selected, choose an option from the drop-down list.
   - Use **`ECMSocialNetworkAnalysis`** for **New Web Service Name**.
   - Select **Next.**

   Note: The choice of credentials to use does not matter.
7. On the Web Service Keywords and Namespace page, provide the following value for the Namespace field: **`http://www.sas.com/sso/fraud/sna/link`**
8. Select **Next**.
9. Confirm the settings and then select **Finish**. Open the following location in a Web browser and view the available services:

   `http://WebApplicationServerHostName:WebServerPortNumber/ SASBIWS`

   The new Web service ECMSocialNetworkAnalysis is listed. If you click on it, you can see it's WSDL similar to the following.

Display 4.7 *WSDL*



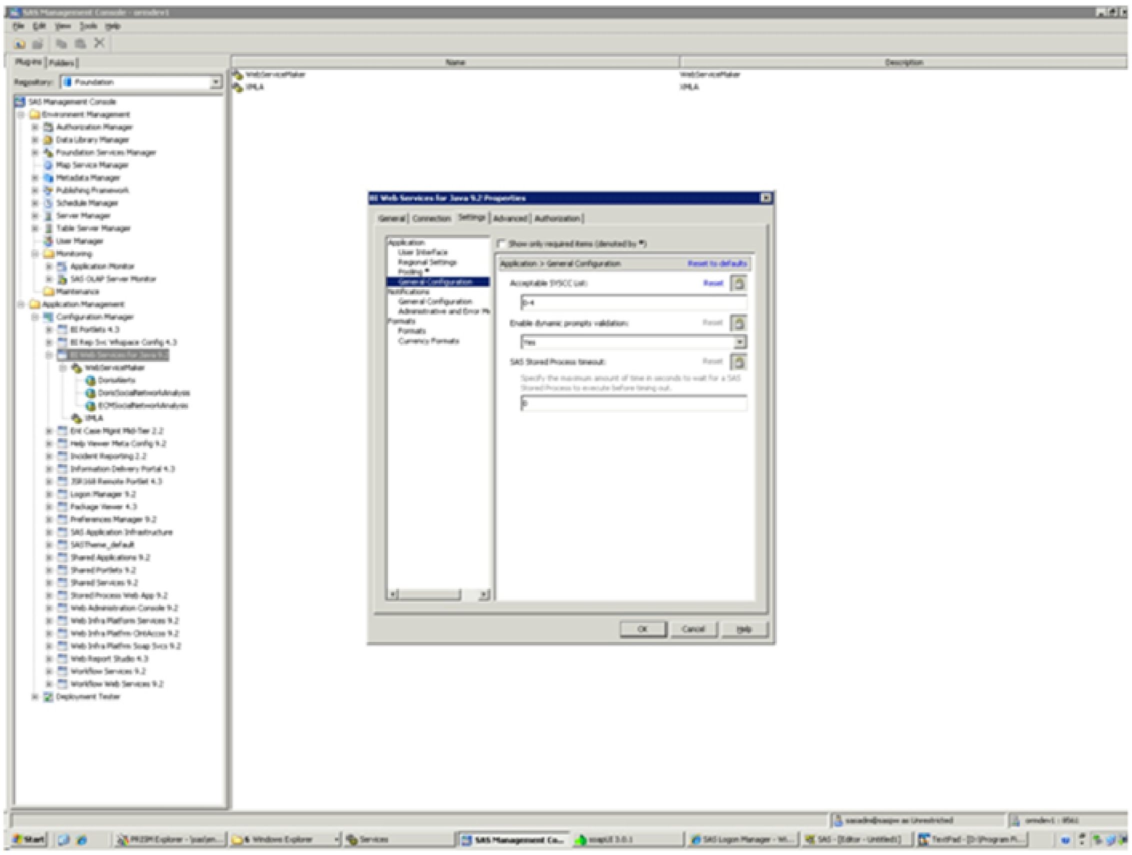
```
  <?xml version="1.0" encoding="UTF-8" ?>
- <definitions name="ECMSocialNetworkAnalysis" targetNamespace="http://sas.com/sso/fraud/sna" xmlns:tns="http://sas.com/sso/fraud/sna"
    xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/" xmlns:typesns="http://sas.com/sso/fraud/sna"
    xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns="http://schemas.xmlsoap.org/wsdl/">
  - <types>
    - <xs:schema elementFormDefault="qualified" targetNamespace="http://www.sas.com/sso/fraud/sna/score"
        xmlns="http://www.sas.com/sso/fraud/sna/score" xmlns:od="urn:schemas-microsoft-com:officedata"
        xmlns:xs="http://www.w3.org/2001/XMLSchema">
      - <xs:element name="TABLE">
        - <xs:complexType>
          - <xs:sequence>
              <xs:element maxOccurs="unbounded" minOccurs="0" ref="COLORMODEL" />
            </xs:sequence>
          </xs:complexType>
        </xs:element>
      - <xs:element name="COLORMODEL">
        - <xs:complexType>
          - <xs:sequence>
            - <xs:element minOccurs="0" name="FMTNAME" od:jetType="text" od:sqlSType="nvarchar">
              - <xs:simpleType>
                - <xs:restriction base="xs:string">
                    <xs:maxLength value="32" />
                  </xs:restriction>
                </xs:simpleType>
              </xs:element>
            - <xs:element minOccurs="0" name="START" od:jetType="text" od:sqlSType="nvarchar">
              - <xs:simpleType>
                - <xs:restriction base="xs:string">
                    <xs:maxLength value="16" />
                  </xs:restriction>
                </xs:simpleType>
              </xs:element>
            - <xs:element minOccurs="0" name="END" od:jetType="text" od:sqlSType="nvarchar">
              - <xs:simpleType>
                - <xs:restriction base="xs:string">
                    <xs:maxLength value="16" />
                  </xs:restriction>
                </xs:simpleType>
              </xs:element>
            - <xs:element minOccurs="0" name="LABEL" od:jetType="text" od:sqlSType="nvarchar">
              - <xs:simpleType>
                + <xs:restriction base="xs:string">
                </xs:simpleType>
              </xs:element>
            - <xs:element minOccurs="0" name="TYPE" od:jetType="text" od:sqlSType="nvarchar">
```

If the ECMSocialNetwork Web service does not show up in SAS Business Intelligence Web Services application, go to SAS Management Console and check whether the same service exists in the Application Management plug-in, Configuration Manager, Business Intelligence Web service for Java 9.2, Web Service Maker. If it exists in SAS Management Console but not in the SAS Business Intelligence Web Services application, the Web service is not configured properly. Delete the Web service from this location and redeploy the stored processes again.

Configuring the Web Service

As shown in the following display, configure the Web service to accept warnings:

Display 4.8 *Configuring the Web Service*



BI Web Services for Java 9.2 Properties

Application > General Configuration

Acceptable SYSCC List: 0-4

Enable dynamic prompts validation: Yes

SAS Stored Process timeout: 0

Specify the maximum amount of time in seconds to wait for a SAS Stored Process to execute before timing out.

By default, SAS Web Service is configured to accept stored process results only when the SAS stored process is completed with no errors (for example, completion code=0). To allow warnings in SAS code, the BI Web Service for Java 9.2 properties should be changed. Use the plug-in tab of SAS Management Console to navigate to **Application Management**, **Configuration Manager**. Click on **BI Web Service for Java 9.2** to bring up the properties screen. Click the **Settings** tab. On the right pane, select **Application** ⇨ **General Configuration**. On the left pane, enter *0-4* for **Acceptable SYSCC list** as shown in Display 4.8 on page 45. Then click **OK**. You can now exit SAS Management Console. Restart SAS Remote Services and the Web server on the middle-tier machine.

Chapter 5

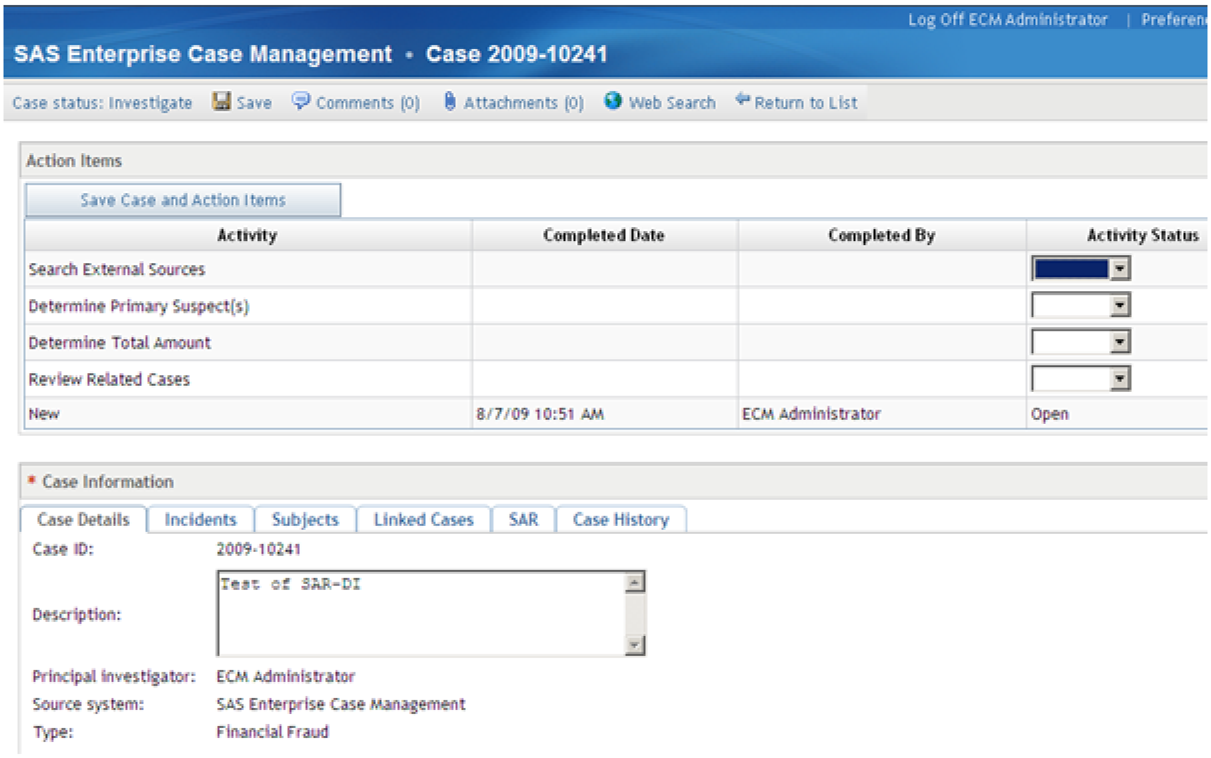
Customizing SAS Enterprise Case Management

Introduction to Customizing

User Interface Definitions

User interface definitions are used to define customizable screens within the SAS Enterprise Case Management user interface. The following display shows a customizable screen that is defined using a user interface definition.

Display 5.1 *Customized Screen*



Log Off ECM Administrator | Preferen
SAS Enterprise Case Management • Case 2009-10241
Case status: Investigate
Save
Comments (0)
Attachments (0)
Web Search
Return to List
Action Items
Save Case and Action Items

Activity	Completed Date	Completed By	Activity Status
Search External Sources			
Determine Primary Suspect(s)			
Determine Total Amount			
Review Related Cases			
New	8/7/09 10:51 AM	ECM Administrator	Open

Case ID:	2009-10241
Description:	Test of SAR-DI
Principal investigator:	ECM Administrator
Source system:	SAS Enterprise Case Management
Type:	Financial Fraud

XML is used to describe user interface definitions. The following XML code is defined in the user interface definition used to render the previous example.

```
<section id="caseInfo">
   <label><message key="section.case.information.header.txt" /></label>
   <tab-section id="viewCaseTab">
      <tab id="caseTab">
         <label><message key="tab.case.details.header.txt" /></label>
         <field name="CASE.CASE_ID" type="string" readonly="true">
            <label>
               <message key="field.case.case_id.label.txt" />
            </label>
         </field>
         <field name="CASE.CASE_ID" type="hidden"/>
         <field name="CASE.CASE_DESC" type="textarea" length="40"
          required="false">
            <label>
               <message key="field.case.case_desc.label.txt" />
            </label>
         </field>
         <field name="CASE.INVESTIGATOR_USER_ID" type="string" required="false"
               values="GetUserDisplayName(CASE.INVESTIGATOR_USER_ID)">
            <label>
               <message key="field.case.investigator_user_id.label.txt" />
            </label>
         </field>
         <field name="CASE.SOURCE_SYSTEM_CD" type="dropdown" readonly="true"
                values="GetLabelValues('RT_SOURCE_SYSTEM')">
            <label>
               <message key="field.case.source_system_cd.label.txt" />
            </label>
         </field>
         <field name="CASE.CASE_TYPE_CD" type="dropdown" required="false"
          readonly="true"
                values="GetLabelValues('RT_CASE_TYPE')">
            <label>
               <message key="field.case.case_type_cd.label.txt" />
            </label>
         </field>
```

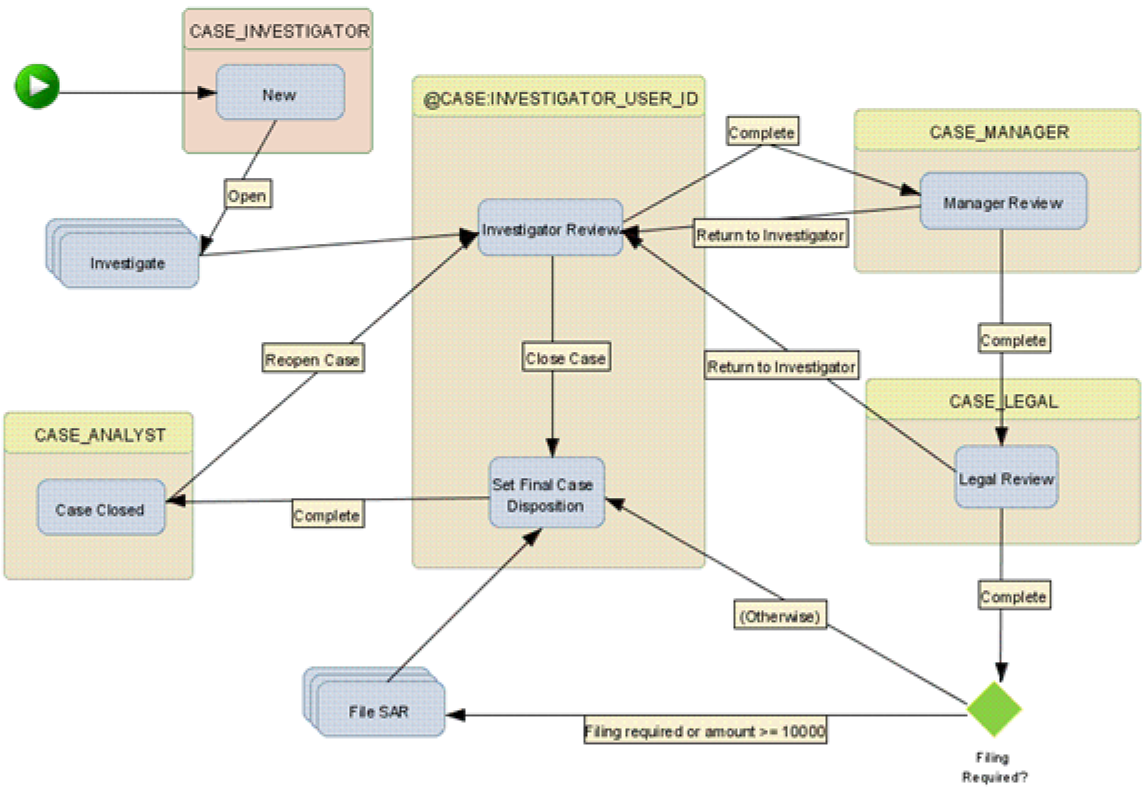
Workflows

Workflows are used to manage the investigative process. Workflow definitions define what activities are involved in the investigative process and which users can perform the activities. The workflow engine used within SAS Enterprise Case Management supports the following:

- automation of SAS processes
- route activities based upon events, data, timers, groups and/or roles
- e-mail notifications
- visual process designer
- concurrent activities
- decision nodes that allow conditional branching

The following display shows an example workflow definition.

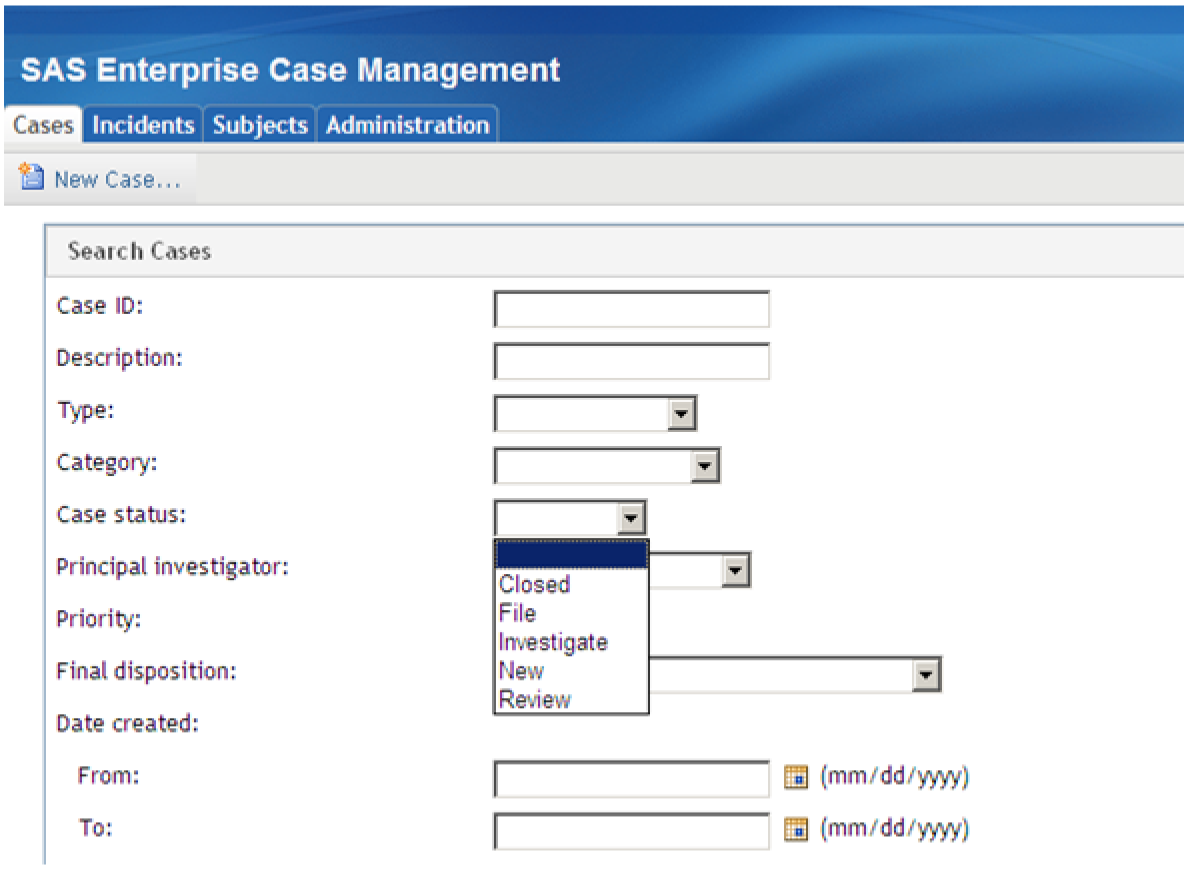
Display 5.2 *Workflow Definition*



Reference Tables

Reference tables define the list of possible values for a particular field or selection list. In the following display, the drop-down list values for case status come from a configurable reference table named RT_CASE_STATUS. The coded values and displayable values for each selectable option are specified in the RT_CASE_STATUS reference table. User-defined reference tables can also be defined.

Display 5.3 *Reference Tables*



Case ID:

Description:

Type:

Category:

Case status:

Closed
File
Investigate
New
Review

Principal investigator:

Priority:

Final disposition:

Date created:

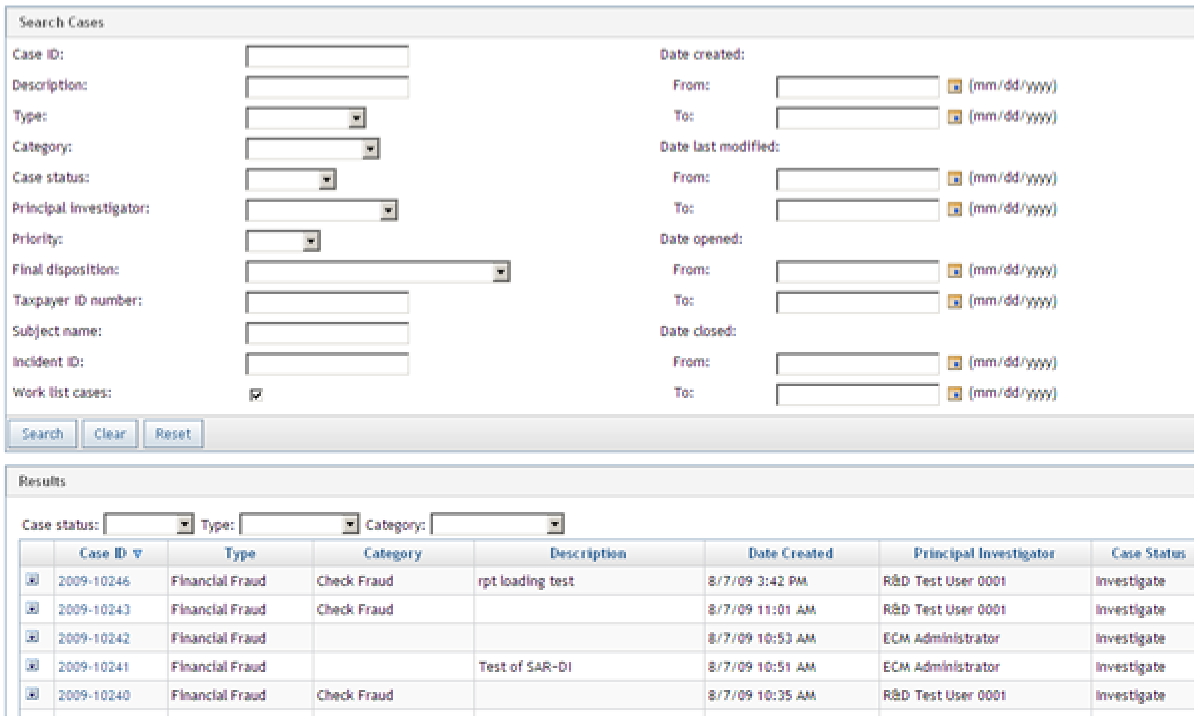
From: (mm/dd/yyyy)

To: (mm/dd/yyyy)

Customizable Search Screens

The case, incident, and party search screens are fully customizable. Any static or user-defined field can be used as search criteria. Any static or user-defined field with possible values described using a reference table can be used as search filters. Any static or user-defined field with at most one possible value can be used in the search results table. The following display shows what the case search screen might look like, depending on your configuration.

Display 5.4 *Customizable Search Screens*



Search Cases

Case ID:		Date created:		
Description:			From:	(mm/dd/yyyy)
Type:			To:	(mm/dd/yyyy)
Category:		Date last modified:		
Case status:			From:	(mm/dd/yyyy)
Principal investigator:			To:	(mm/dd/yyyy)
Priority:		Date opened:		
Final disposition:			From:	(mm/dd/yyyy)
Taxpayer ID number:			To:	(mm/dd/yyyy)
Subject name:		Date closed:		
Incident ID:			From:	(mm/dd/yyyy)
Work list cases:	✓		To:	(mm/dd/yyyy)

Search Clear Reset

Results

Case status: Type: Category:

	Case ID	Type	Category	Description	Date Created	Principal Investigator	Case Status
⊞	2009-10246	Financial Fraud	Check Fraud	rpt loading test	8/7/09 3:42 PM	R&D Test User 0001	Investigate
⊞	2009-10243	Financial Fraud	Check Fraud		8/7/09 11:01 AM	R&D Test User 0001	Investigate
⊞	2009-10242	Financial Fraud			8/7/09 10:53 AM	ECM Administrator	Investigate
⊞	2009-10241	Financial Fraud		Test of SAR-DI	8/7/09 10:51 AM	ECM Administrator	Investigate
⊞	2009-10240	Financial Fraud	Check Fraud		8/7/09 10:35 AM	R&D Test User 0001	Investigate

User-Defined Fields

User-Defined Field Tables

There are five types of data objects in Enterprise Case Management.They are case, incident, party (AKA subject), financial item, and generic data. The user-defined fields of each data object type are defined in the table with <data_object_type>_UDF_DEF. Each row in the <data_object_type>_UDF_DEF table represents a user-defined field definition for the data object. To define user-defined fields, add the appropriate data in these tables.

Configuring User-Defined Fields in the Database

The structure for all five tables (CASE_UDF_DEF, INCIDENT_UDF_DEF, PARTY_UDF_DEF, FINANCIAL_ITEM_UDF_DEF, and GENERIC_DATA_UDF_DEF) is identical and each contains the following columns:

- UDF_TABLE_NM
- UDF_NM
- UDF_TYPE_NM
- UDF_DESC
- MAX_CHAR_CNT

User-defined field names must have the following characteristics:

- The length must be 3 to 30 characters.

- The first two characters must be “X_”.
- The characters following “X_” can be any combination of uppercase letters, numbers, and underscores.

UDF_TABLE_NM
: contains the name of the user-defined field’s table. If a user-defined field contains one value, then this name will be the same as the data object name CASE, INCIDENT or PARTY. UDF_TABLE_NM and UDF_NM together make up the unique key for a user-defined field. If a user-defined field can have more than one value, then this name must have the following characteristics:

  - The length must be 3 to 30 characters.
  - The first two characters must be “X_” .
  - The characters following “X_” can be any combination of uppercase letters, numbers, and underscores.
  - The name must be unique with respect to all other static and user-defined table names.

UDF_NM
: contains the name of the user-defined field. UDF_TABLE_NM and UDF_NM together make up the unique key for a user-defined field. User-defined field names must have the following characteristics:

  - The length must be 3 to 30 characters.
  - The first two characters must be “X_”.
  - The characters following “X_” can be any combination of uppercase letters, numbers, and underscores.

UDF_TYPE_NM
: contains the data type name for the user-defined field.

Table 5.1 *User-Defined Field Data Types*

Data Type	**Description**	**Java Type**
VARCHAR	Character string	String
BIGINT	Whole number	Long
DOUBLE	Double precision number	Double
BOOLEAN	Boolean (true/false)	Boolean
DATE	Date	Date
TIMESTAMP	Date and time	Timestamp
LNGVARCHAR	Character string over 4000 characters	CLOG for Oracle; NTEXT for SQLServer; TEXT for PostgresSQL

Note: UDF fields with a type of BIGINT are stored in a double precision floating point columns in the database and will therefore only have 53 bits of precision, not the full precision of a Long.

UDF_DESC
: contains a description of the user-defined field.

MAX_CHAR_CNT
: contains the maximum number of characters for user-defined fields with a VARCHAR data type.

If an invalid value is loaded into the UDF_DEF tables, an error message is logged and that field will be ignored by the application. Common errors include:

- including invalid characters in UDF_TABLE_NM or UDF_NM
- defining a UDF_TABLE_NM or UDF_NM longer than 30 characters
- not including a MAX_CHAR_CNT for a VARCHAR column
- defining a MAX_CHAR_CNT < 0 or > 1000

User-Defined Fields: Example

In the following example configuration table, each case can have a loss amount specified. Because there is only one value for the loss amount field for each case, UDF_TABLE_NM is CASE. There can be zero or more accounts associated with a case. We also need to store whether each account is closed or not. Therefore, we created a user-defined table called X_ACCOUNT which contains two user-defined fields: X_ACCOUNT_ID and X_CLOSED_FLG. We also need to track all suspicious activities related to the case; there could be more than one of these activities. We therefore created user-defined table X_SUSPCIOUS_ACTIVITY which contains one user-defined field: X_SUSPCIOUS_ACTIVITY_CD.

UDF_TABLE_NM	UDF_NM	UDF_TYPE_NM	MAX_CHAR
CASE	X_LOSS_AMT	DOUBLE	
X_ACCOUNT	X_ACCOUNT_ID	VARCHAR	32
X_ACCOUNT	X_CLOSED_FLG	BOOLEAN	
X_SUSPICIOUS_ ACTIVITY	X_SUSPICIOUS_ ACTIVITY_CD	VARCHAR	3

User-Defined Generic Data Tables

Generic data look-up functions can be defined in a custom user interface (UI). Generic data tables are tables that are not directly linked to a particular case, incident, party, or financial item. All data fields in generic data tables are defined in the generic_data_udf_def table as user-defined fields, and they follow the same name-value pair structure as in other ECM tables.

One major difference between generic data tables and the other ECM tables is that generic data does not have a live table. That means there is not a data table for storing the most current records. To get a list of current data, records in generic_data_udf_<data type>_value should be filtered by empty VALID_TO_DTTM. To verify that the data is loaded properly in generic data tables, see the step for placing a generic data table in a rectangular structure in "Adding Custom SAS Code" on page 175 .

To facilitate FinCen SAR reporting, the sample code for defining financial institution and branch look-up tables is shipped with the solution, and it can be found in load_fincen_sar_di_data.sas in the following locations:

Platform	Path
Windows	`<sasroot>\SASFoundation/ 9.2\casemgmtmva\sasmisc \sample\config`
UNIX	`<sasroot>/SASFoundation/9.2/ misc/casemgmtmva/sample / config`

The sample UI definition case-fin-01.xml is an example of how a case form can be defined for SAR reporting. This file is located in the following locations:

Platform	Path
Windows	`<sasroot>\SASFoundation/ 9.2\casemgmtmva\sasmisc \sample\uidef`
UNIX	`<sasroot>/SASFoundation/9.2/ misc/casemgmtmva/sample / uidef`

Note: The UDF fields X_INSTITUTION_OPEN_DT and X_INSTITUTION_CLOSE_DT of X_INSTITUTION and X_BRANCH_OPEN_DT and X_BRANCH_CLOSE_DT of X_BRANCH are the open and close dates of the institution and branch. These fields are used in case-fin-01.xml to filter active institutions and branches based on the case creation date.

User Interface Definitions

User Interface Definition Files

User interface definition files specify the form and content of screens presented in SAS Enterprise Case Management, the data that is captured, and how that data is validated. The sample user interface definition files for all screens that make use of the Custom Page Builder are located in the **`SAS_HOME/SASFoundation/9.2/casemgmtmva/ sasmisc/sample/uidef directory`**.

Uploading User Interface Definitions

Over time, changes will need to be made to user interface definitions. Customers must decide whether they should update a user interface definition or create a new version of the user interface definition. For minor changes that don't cause existing cases, incidents, or parties to become invalid, it is permissible to update an existing user interface definition. For major changes that may cause existing cases, incidents, or parties to become invalid, it is recommended that customers create a new version of the user interface definition (by giving it a new unique name) which will only be used for new records. Existing records will continue to use the older version of the user interface definition. User interface definitions must be uploaded from the **Administration** application tab.

Configurations

Case Configurations

The CASE_CONFIG and CASE_CONFIG_X_USER_GROUP tables are used to store how cases are associated with the following:

- user interface definition. This is used to render the case detail screen.
- workflow definition. This is used to create a workflow instance to manage the investigative process for the case.
- case owner. If specified, the case will be initially assigned to the specified user; otherwise, the case will be initially unassigned.
- user groups. One or more user groups can be associated with a case. Any user in the associated user groups will have access to the case.

The CASE_CONFIG table contains the following columns:

CASE_CONFIG_SEQ_NO
: contains the sequence number of the case configuration. Case configurations are processed in order until a matching configuration is found.

CASE_TYPE_CD, CASE_CATEGORY_CD and CASE_SUBCATEGORY_CD
: are used to determine whether the newly created case matches this configuration. CASE_TYPE_CD is required. CASE_CATEGORY_CD and CASE_SUBCATEGORY_CD can be null. If null, these columns aren't factored in when determining whether the newly created case matches this configuration.

UI_DEF_FILE_NM
: contains the file name of the user interface definition if the newly created case matches this configuration.

INVESTIGATE_WORKFLOW_DEF_NM
: contains the name of the investigation workflow definition if the newly created case matches this configuration.

REOPEN_WORKFLOW_DEF_NM
: is not used in this release of Enterprise Case Management and should be left null.

INVESTIGATOR_USER_ID
: is the user ID of the user whom the case is initially assigned to. If null, the case will be initially unassigned.

This table must be configured to handle every possible type of case created in Enterprise Case Management at the customer site. The CASE_CONFIG_X_USER_GROUP table contains the following columns:

CASE_CONFIG_SEQ_NO
: contains the sequence number of the case configuration. This column maps to the corresponding configuration in the CASE_CONFIG table.

USER_GROUP_NM
: contains the name of a user group defined in the SAS Metadata Repository that has access to newly created cases that match this configuration.

If a new case type, category, or subcategory is added to the system, then the Reference Tables must be updated so that items are available in the drop-down lists when creating a new case. If a new case type is added, then a corresponding reference table value should be added to RT_CASE_TYPE. If a new case category is added, then a corresponding reference table value should be added to RT_CASE_CATEGORY. If a new case subcategory is added, then a corresponding reference table value should be added to RT_CASE_SUBCATEGORY.

Incident Configurations

The INCIDENT_CONFIG and INCIDENT_CONFIG_X_USER_GROUP tables are used to store how incidents are associated with the following:

User interface definition
: This is used to render the incident detail screen.

User groups
: One or more user groups can be associated with an incident. Any user in the associated user groups will have access to the incident.

The INCIDENT_CONFIG table contains the following columns:

INCIDENT_CONFIG_SEQ_NO
: contains the sequence number of the incident configuration. Incident configurations are processed in order until a matching configuration is found.

INCIDENT_TYPE_CD, INCIDENT_CATEGORY_CD and INCIDENT_SUBCATEGORY_CD
: are used to determine whether the newly created incident matches this configuration. INCIDENT_TYPE_CD is required. INCIDENT_CATEGORY_CD and INCIDENT_SUBCATEGORY_CD can be null. If null, these columns aren't factored in when determining whether the newly created incident matches this configuration.

UI_DEF_FILE_NM
: contains the file name of the user interface definition. If the newly created incident matches this configuration.

This table must be configured to handle every possible type of incident created in SAS Enterprise Case Management. The INCIDENT_CONFIG_X_USER_GROUP table contains the following columns:

INCIDENT_CONFIG_SEQ_NO
: contains the sequence number of the incident configuration. This column maps to the corresponding configuration in the INCIDENT_CONFIG table.

USER_GROUP_NM
: contains the name of a user group defined in the SAS Metadata Repository that has access to newly created incidents that match this configuration.

If a new incident type, category, or subcategory is added to the system, then the Reference Tables must be updated so that items are available in the drop-down lists when creating a new incident. If a new incident type is added, then a corresponding reference table value should be added to RT_INCIDENT_TYPE. If a new incident category is added, then a corresponding reference table value should be added to RT_INCIDENT_CATEGORY. If a new incident subcategory is added, then a corresponding reference table value should be added to RT_INCIDENT_SUBCATEGORY.

Party Configurations

The PARTY_CONFIG and PARTY_CONFIG_X_USER_GROUP tables are used to store how parties are associated with the following:

User interface definition
: This is used to render the party detail screen.

User groups
: One or more user groups can be associated with a party. Any user in the associated user groups will have access to the party.

The PARTY_CONFIG table contains the following columns:

PARTY_CONFIG_SEQ_NO
: contains the sequence number of the party configuration. Party configurations are processed in order until a matching configuration is found.

PARTY_TYPE_CD, PARTY_CATEGORY_CD and PARTY_SUBCATEGORY_CD
: are used to determine whether the newly created party matches this configuration. PARTY_TYPE_CD is required. PARTY_CATEGORY_CD and PARTY_SUBCATEGORY_CD can be null. If null, these columns aren’t factored in when determining whether the newly created party matches this configuration.

UI_DEF_FILE_NM
: contains the file name of the user interface definition if the newly created party matches this configuration.

This table must be configured to handle every possible type of party created in SAS Enterprise Case Management. The PARTY_CONFIG_X_USER_GROUP table contains the following columns:

PARTY_CONFIG_SEQ_NO
: contains the sequence number of the party configuration. This column maps to the corresponding configuration in the PARTY_CONFIG table.

USER_GROUP_NM
: contains the name of a user group defined in the SAS Metadata Repository that has access to newly created parties that match this configuration.

If a new party type, category, or subcategory is added to the system, then the Reference Tables must be updated so that items are available in the drop-down lists when creating a new party. If a new party type is added, then a corresponding reference table value should be added to RT_PARTY_TYPE. If a new party category is added, then a corresponding reference table value should be added to RT_PARTY_CATEGORY. If a new party subcategory is added, then a corresponding reference table value should be added to RT_PARTY_SUBCATEGORY.

Data Security

Data Security: Record Level

The initial user groups that have access to a case are determined and configured during case creation. The initial user groups are stored in the CASE_X_USER_GROUP table, which associates a case to one or more user groups defined in the SAS Metadata Repository. Any user in the associated groups will have access to the case. The initial user groups that have access to an incident are configured in Section 8.2 and are determined during incident creation.

Note: If a user does not have access to a case, the case will not be visible to the user in the system. Case owners (or primary investigators) automatically have access to cases they own even if they are not in the appropriate user group(s). For example, if a user is in group A and has access only to A-type cases, if there is an A-type case with a B-type incident, then they will be able to see the B-type incident if they are assigned to the incident.

The initial user groups are stored in the INCIDENT_X_USER_GROUP table, which associates an incident to one or more user groups defined in the SAS Metadata Repository. Any user in the associated groups will have access to the incident. If a user does not have access to an incident, the incident will not be visible to the user in the system unless the user is looking at the incident within the context of a case that the user has access to. If the type, category, or subcategory of an incident is changed, the permissions for the incident will be redetermined and stored in INCIDENT_X_USER_GROUP. Therefore, the permissions for an incident can change after creation.

The initial user groups that have access to a party are determined and configured during party creation. The initial user groups are stored in the PARTY_X_USER_GROUP table, which associates a party to one or more user groups defined in the SAS Metadata Repository. Any user in the associated groups will have access to the party. If a user does not have access to a party, the party will not be visible to the user in the system unless the user is looking at the party within the context of a case or incident that the user has access to. If the type, category, or subcategory of an incident is changed, the permissions for the incident will be redetermined and stored in INCIDENT_X_USER_GROUP. Therefore the permissions for an incident can change after creation.

Currently, there is not a way to modify user groups associated with a case or party within SAS Enterprise Case Management. This can be done by an administrator who can modify the appropriate database tables directly.

Data Security: Field Level

Field-level security within the case, incident, and party detail screens is controlled by the user interface definitions. Field-level security on the case, incident and party search screens is controlled by the Search Screen configurations which can be configured at a user level.

Resource Bundles

Custom Resource Bundles

Custom resource bundles are necessary for creating labels on screens for user-defined fields in the customizable data model. When a user-defined field is created, the field can be referenced in the user interface definition file. A label can also be shown for that field. The label tag in the user interface definition has a message tag with a key attribute. The key is a reference to a property in the resource bundle.

For example, X_BRANCH_ID has been defined as a user-defined field for a case. To define a label to be shown on the screen, the following entry is made in the custom resource bundle file:

```
field.case.x_branch_id.label.txt=Branch ID:
```

To reference this property, the following can be added to the user interface definition file:

```
<label><message key=" field.case.x_branch_id.label.txt " /></label>
```

Customers can also override resource bundle properties defined in SAS Enterprise Case Management using the custom resource bundle. For example, you can change the label for a party full name as follows:

- `field.party.party_full_nm.label.txt=Person/Organization name:`
- `field.party.party_full_nm.header.txt=Person/Organization Name`

Note: The property ending label.txt is used for text next to input fields. The property ending in header.txt is used as the heading of a column when fields are used in a table.

The following files contain all of the properties used in SAS Enterprise Case Management:

- com.sas.solutions.casemgmt.i18n.AppResources.properties
- com.sas.solutions.casemgmt.i18n.Actions.properties
- com.sas.solutions.casemgmt.i18n.WebServiceResources.properties
- com.sas.solutions.cpb.i18n.CPBResources.properties

The properties in all of these files can be overridden, except for the actions resource bundle (com.sas.solutions.casemgmt.i18n.Actions.properties.) If a customer wants to override a property in this file, they will have to modify the actual file in the Enterprise Case Management JAR file.

The naming convention for the custom resource bundle files is as follows:

- custom.properties
- custom _<locale>.properties

For example, if creating a file for the Canada-French locale, the file would be: custom_ca_FR.properties.

Workflows

Workflows

Each case within SAS Enterprise Case Management can be associated with a workflow instance (also known as a process instance) which is used to manage the investigative process. Workflow definitions (also known as process templates) need to be defined using SAS Workflow Studio before workflow instances can be created for a case. See the SAS Workflow Studio Help for step-by-step instructions on defining workflow definitions.

Operands

The following root process-level operand is required in all workflow definitions for use in SAS Enterprise Case Management.

CASE__CASE_RK

- Set Type = Number
- Set Value = 0
- When the workflow instance is created, the case key of the associated case is set as the value for this operand.

The following root process-level operand is optional. This operand can be used to automatically open the case when it is first edited in SAS Enterprise Case Management.

AUTO_OPEN_STATUS

- Set Type = Short Text
- Value = the name of the status to automatically apply when the case is first edited

If other static or user defined case fields are needed within the workflow definition as input to decision nodes and policies, they can be added as root process level operands using the following naming convention.

```
<TableName>:<FieldName>
```

Here are some examples:

- CASE__REGULATORY_RPT_RQD_FLG (static case field)
- CASE__X_LOSS_AMT (single valued user-defined case field)
- X_SUSPICIOUS_ACTIVITY:X_SUSPICIOUS_ACTIVITY_CD (multi-valued user-defined case field)

The following table describes how operand values are set for the different case field data types.

Table 5.2 *Operand Values*

Data Type	Operand Value Description
VARCHAR	Raw value
BIGINT	Numerical value

Data Type	Operand Value Description
DOUBLE	Numerical value
BOOLEAN	String value – “true” or “false”
DATE	Formatted string value – “yyyy.MM.dd”
TIMESTAMP	Formatted string value – “yyyy.MM.dd HH:mm:ss”
Multi-valued field	Comma delimited string of the above formatted values

All root process-level operands that map to case fields (static and user-defined) in the SAS Enterprise Case Management database will be set to the current value in the database whenever the case is saved. Incident fields and party fields cannot be used as operands even though they may be associated with a case.

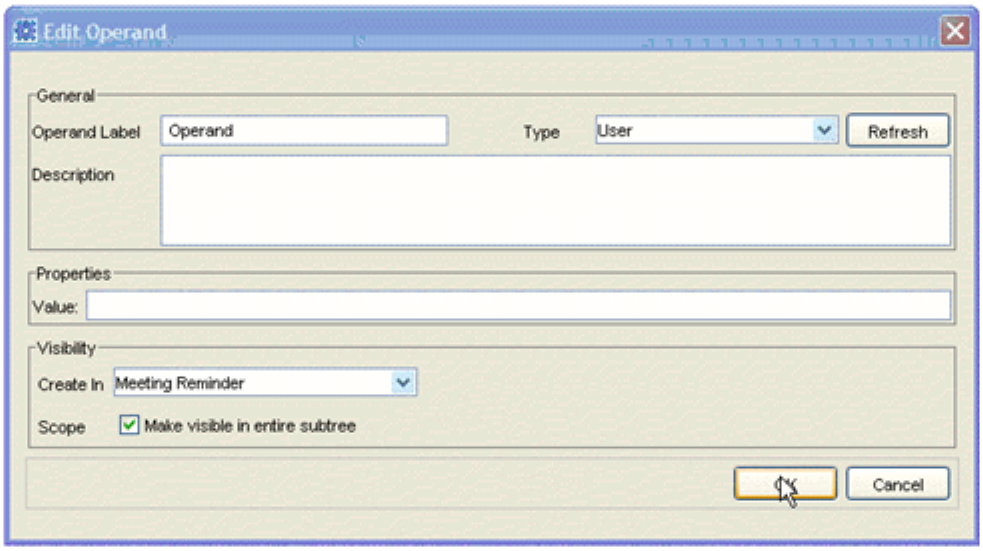
Adding Operands

Here are the steps for adding an operand in SAS Workflow Studio:

1. In the process tree, right-click **Operand**. Click **New Operand**.
2. In the **Edit Operand** dialog box, assign the following values:
   - **Operand Label** – This is the operand name.
   - **Description**.
   - **Value**.
   - **Data Type** – You can specify text, a file (such as an attachment), date and time data, or user data.
   - **Create In** – Select the name of the process.
   - **Scope** – Select **Make visible in entire subtree** if you want other activities to use this operand.

   The following display shows the **Edit Operands** dialog box in SAS Workflow Studio.

Display 5.5 *SAS Workflow Studio – Edit Operand*



Operand Label: Operand
Type: User
Description:
Value:
Create In: Meeting Reminder
Scope: [✓] Make visible in entire subtree

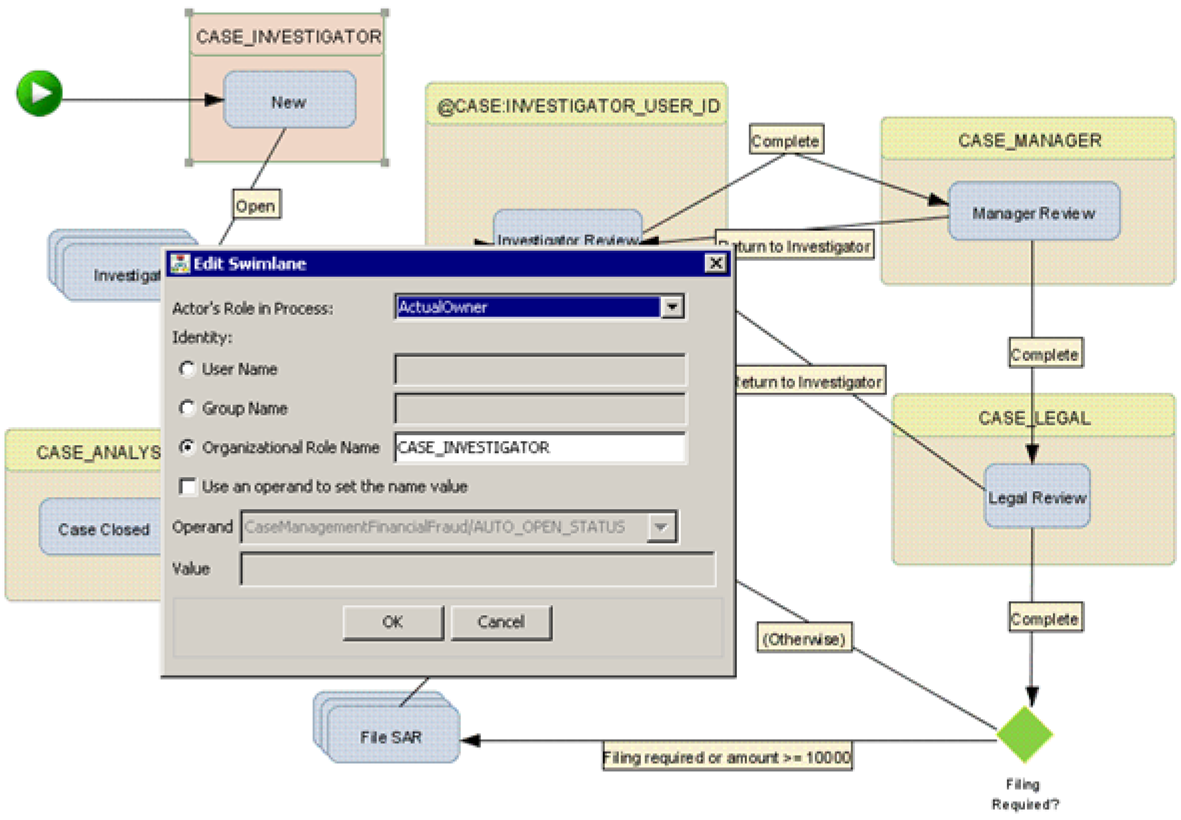
Defining Actors

Activities within a workflow can be assigned to a user, group, or role (also known as actors or swimlanes). This enables you to restrict who can perform which activities within the investigative process.

Defining Static Actors

To assign an activity to a static user, group, or role defined in the workflow, specify the actual user name (also known as user ID), group name, or role name when editing the swimlane associated with the activity. In the following display, CASE_INVESTIGATOR is an actual role name defined in the SAS Metadata Repository. Any user in this role can perform the “New” activity.

Display 5.6 *Edit Actor Name*

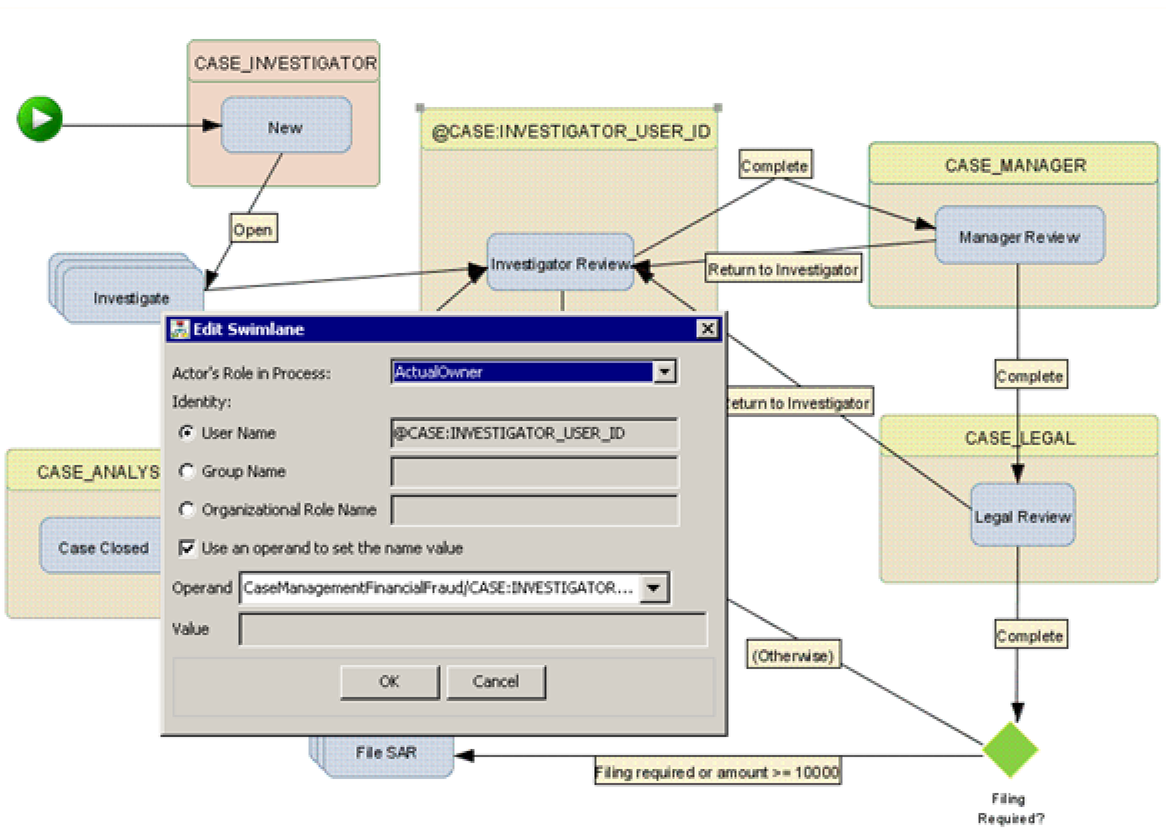


Actor's Role in Process: ActualOwner
Identity:
User Name
Group Name
Organizational Role Name: CASE_INVESTIGATOR
Use an operand to set the name value
Operand: CaseManagementFinancialFraud/AUTO_OPEN_STATUS
Value

Dynamically Determined Actors

To assign an activity to a dynamically determined user, group or role, you must define an operand that corresponds to a case static or user defined field that contains the user name, group name or role name. When editing the swimlane associated with the activity, reference the operand containing the user name, group name or role name as shown in the following display. In this example, whatever user ID is specified in the INVESTIGATOR_USER_ID case database field is the only user who can perform the “Investigator Review” activity.

Display 5.7 *Dynamic – Edit Actor Name*



Actor's Role in Process: ActualOwner

Identity:

[✓ User Name] @CASE:INVESTIGATOR_USER_ID

Group Name

Organizational Role Name

[✓ Use an operand to set the name value]

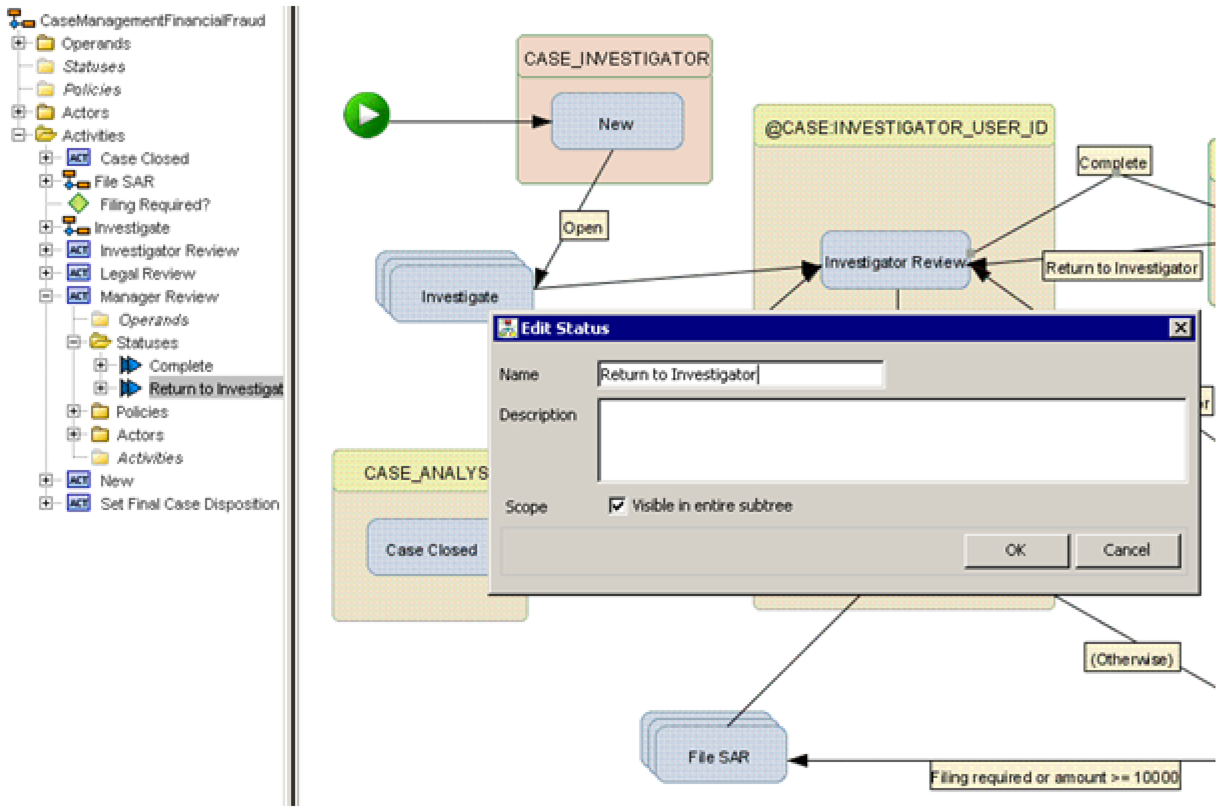
Operand CaseManagementFinancialFraud/CASE:INVESTIGATOR...

Value

Statuses

Statuses are used to transition from one activity to another within a workflow. SAS Enterprise Case Management requires that statuses be defined locally with activities and not for the whole process. To add a local status, go to the activity in the process tree that you want to transition from and right-click **Statuses** to add a new status. You can also edit existing statuses from here as well, as shown in the following display.

Display 5.8 *Edit Status*



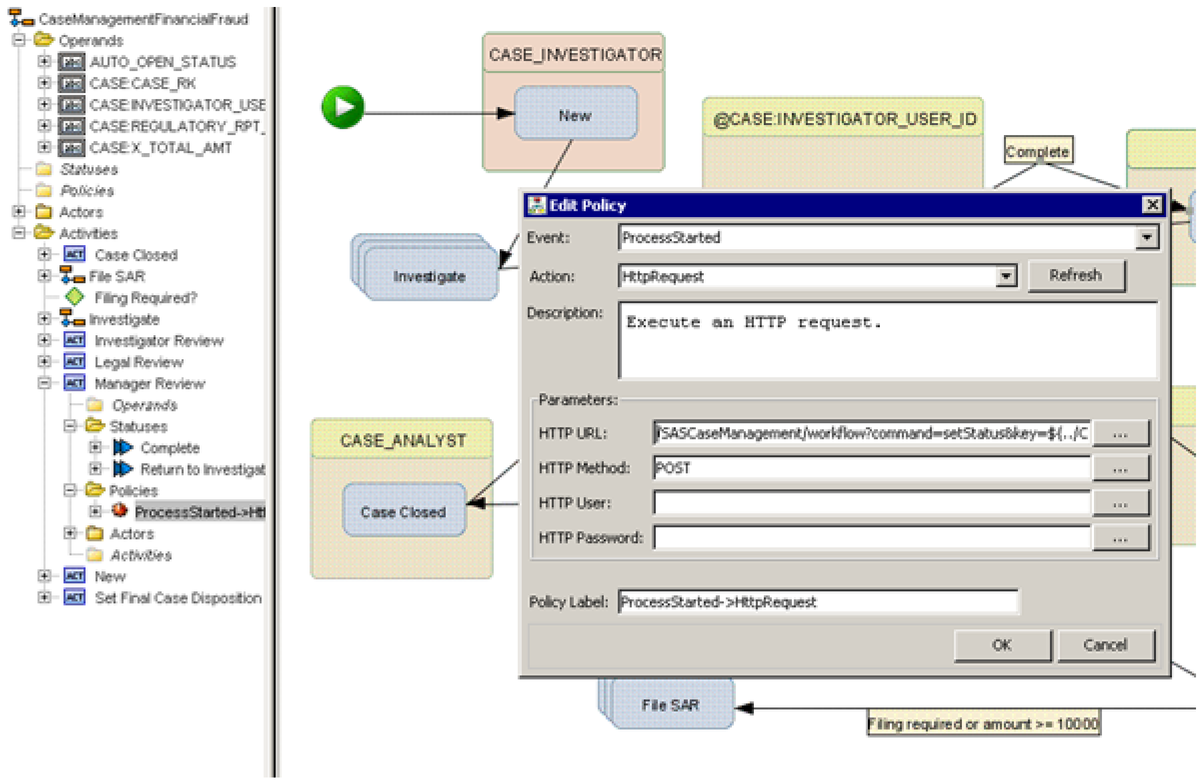
Name: Return to Investigator
Description:
Scope: ☑ Visible in entire subtree

HTTPRequest Policy

The workflow definition can be configured to notify SAS Enterprise Case Management when certain events happen within the workflow. This can be done by using the HttpRequest policy. This policy can be configured to invoke an HTTP URL in SAS Enterprise Case Management regarding notifications.

To setup a notification, go to the activity where you want the notification to happen and right-click **Policies** to add a new policy. You can also edit existing policies from here as well, as shown in the following display.

Display 5.9 *Edit Policy*



Edit Policy

Event: ProcessStarted

Action: HttpRequest

Refresh

Description: Execute an HTTP request.

Parameters:

HTTP URL: /SASCaseManagement/workflow?command=setStatus&key=${../C

HTTP Method: POST

HTTP User:

HTTP Password:

Policy Label: ProcessStarted->HttpRequest

OK Cancel

The event specifies what event causes the policy to execute (ProcessStarted, ProcessFinished, and so on). The action should be set to HttpRequest. The following notifications are supported:

Set case status

```
HTTP URL = /SASEntCaseManagement/workflow?command=setStatus&key=
${../CASE__CASE_RK}&statusCode=<caseStatusCode>
```

- The CASE_STATUS_CD database field is set to the value of the statusCode request parameter shown as <caseStatusCode> in the URL above. The status code value should be defined in the RT_CASE_STATUS static reference table.

Set case closed

```
HTTP URL =/SASEntCaseManagement/workflow?command=setStatus&key=
${../CASE__CASE_RK}&statusCode=<caseStatusCode>&caseClosed=true
```

- The CASE_STATUS_CD database field is set to the value of the statusCode request parameter shown as <caseStatusCode> in the URL above. The status code value should be defined in the RT_CASE_STATUS static reference table.
- The CLOSE_DTTM database field is set to the current date and time if the caseClosed request parameter is true; otherwise this field is set to null.

Set case opened

```
HTTP URL =/SASEntCaseManagement/workflow?command=setOpened&key=
${../CASE__CASE_RK}
```

- The OPEN_DTTM database field is set to the current date and time.

Set case reopened

```
HTTP URL = /SASEntCaseManagement/workflow?command=setReopened&key=
${../CASE__CASE_RK}
```

- The REOPEN_DTTM case database field is set to the current date and time.

HTTP Method should always equal **POST. HTTP User** and **HTTP Password** should always be left blank. If the host name and port are not included in the HTTP URL, the HTTP request is sent to the SAS Enterprise Case Management Web application running on the same server as the workflow engine.

Reference Tables

Defining Reference Tables

Reference tables define the list of possible values for a particular field or selection list. Each row in the REF_TABLE_VALUE table represents a possible value for a static or user-defined reference table. To define user-defined reference tables or add possible values for static reference tables, add the appropriate data in this table.

Configuring Reference Tables in the Database

The REF_TABLE_VALUE table contains the following columns:

REF_TABLE_NM
: contains the name of the static or user-defined reference table. Reference table names must have the following characteristics:

  - The length must be 3 to 30 characters.
  - The first three characters must be “RT_” for static reference tables.
  - The first two characters must be “X_” for user-defined reference tables.
  - The characters following the above prefix can be any combination of upper case letters, numbers, and underscores.
  - The name must be unique with respect to all other static and user-defined table names.

VALUE_CD
: contains the coded value. REF_TABLE_NM and VALUE_CD together make up the unique key for a reference table possible value.

VALUE_DESC
: contains the displayable value.

PARENT_REF_TABLE_NM
: optionally contains the name of the parent reference table used for cascading prompts.

PARENT_VALUE_CD
: optionally contains the name of the parent coded value used for cascading prompts.

DISPLAY_ORDER_NO
: contains a number that determines the display order of the reference table value in the user interface. If two or more reference table values have the same display order, then they will be ordered alphabetically by the VALUE_DESC column.

Defining Static Reference Tables

The following static reference tables must be defined in the REF_TABLE_VALUE table. These reference tables are considered static because the SAS Enterprise Case Management application has hardcoded references to these reference tables. All other reference tables are considered user-defined.

RT_EVENT_TYPE
: contains event types for audit . This reference table is preloaded during the installation. The possible values should not be modified for this reference table.

RT_CASE_STATUS
: contains case statuses. This reference table is not preloaded during the installation. Customers must add all possible case statuses.

RT_CASE_TYPE
: contains case types for case classification. This reference table is not preloaded during the installation. Customers must add all possible case types.

RT_CASE_CATEGORY
: contains case categories for case classification. This reference table is not preloaded during the installation. Customers must add all possible case categories if this reference table is needed.

RT_CASE_SUBCATEGORY
: contains case subcategories for case classification. This reference table is not preloaded during the installation. Customers must add all possible case subcategories if this reference table is needed.

RT_INCIDENT_TYPE
: contains incident types for incident classification. This reference table is not preloaded during the installation. Customers must add all possible incident types.

RT_INCIDENT_CATEGORY
: contains incident categories for incident classification. This reference table is not preloaded during the installation. Customers must add all possible incident categories if this reference table is needed.

RT_INCIDENT_SUBCATEGORY
: contains incident subcategories for incident classification. This reference table is not preloaded during the installation. Customers must add all possible incident subcategories if this reference table is needed.

RT_PARTY_TYPE
: contains party types for party classification. This reference table is not preloaded during the installation. Customers must add all possible party types.

RT_PARTY_CATEGORY
: contains party categories for party classification. This reference table is not preloaded during the installation. Customers must add all possible party categories if this reference table is needed.

RT_PARTY_SUBCATEGORY
: contains party subcategories for party classification. This reference table is not preloaded during the installation. Customers must add all possible party subcategories if this reference table is needed.

Table 5.3 *Example Static Reference Tables*

REF_TABLE_NM	VALUE_CD	VALUE_DESC	PARENT_TABLE	PARENT_VAL
RT_CASE_TYPE	ML	Money Laundering		
RT_CASE_TYPE	FF	Financial Fraud		
RT_CASE_CATEGORY	CF	Check Fraud	RT_CASE_TYPE	FF
RT_CASE_CATEGORY	CK	Check Kiting	RT_CASE_TYPE	FF
RT_CASE_CATEGORY	CCF	Credit Card Fraud	RT_CASE_TYPE	FF
RT_CASE_CATEGORY	DCF	Debit Card Fraud	RT_CASE_TYPE	FF
RT_CASE_STATUS	N	New		
RT_CASE_STATUS	I	Investigate		
RT_CASE_STATUS	R	Review		
RT_CASE_STATUS	F	File		

Adding User-Defined Reference Tables

User-defined reference tables are not preloaded during the installation. Customers must add all user-defined reference table values to REF_TABLE_VALUE.

Table 5.4 *Example User-Defined Reference Tables*

REF_TABLE_NM	VALUE_CD	VALUE_DESC	PARENT_TABLE	PARENT_VAL
X_COUNTRY	USA	United States		
X_COUNTRY	MEX	Mexico		
X_COUNTRY	CAN	Canada		
X_STATE_PROVINCE	AL	Alabama	X_COUNTRY	USA
X_STATE_PROVINCE	AK	Alaska	X_COUNTRY	USA
X_STATE_PROVINCE	AB	Alberta	X_COUNTRY	CAN
X_STATE_PROVINCE	ON	Ontario	X_COUNTRY	CAN
X_NATIONAL_ID_TYPE	SSN	Social Security Number.		
X_NATIONAL_ID_TYPE	EIN	Employer ID Number		

Search Screens

Search Criteria

Fields that appear as search criteria on the case search screen are configured in the CASE_SEARCH_CRITERIA_FIELD table. Fields that appear as search criteria on the incident search screen are configured in the INCIDENT_SEARCH_CRITERIA_FIELD table. Fields that appear as search criteria on the party search screen are configured in the PARTY_SEARCH_CRITERIA_FIELD table. The structure for all three tables is the same, and each table contains the following columns:

USER_ID
: contains the user ID of the user this configuration applies to. The value equals “*” for the default configuration for all users.

TABLE_NM
: contains the table name of the search criteria field.

FIELD_NM
: contains the name of the search criteria field.

DISPLAY_ORDER_NO
: contains the search criteria display order. If the value is greater than 100, then the search criteria appears in a second column within the search criteria section.

REF_TABLE_NM
: optionally contains the reference table name used to populate a drop-down list of possible values to search for.

User-Specified Configurations

Default configurations are installed with the product for case, incident, and party search criteria. The default configurations only reference static fields (no user-defined fields). Customers can change the default configurations by modifying the previous database tables directly. Customers can also define user-specific search criteria configurations by setting the USER_ID column value appropriately. If there is no user-specific configuration for the user, the default configuration is used.

Searchable Fields

Any static or user defined field on any business object (case, incident and party) table can be used as search criteria. Customers can reference fields in associated business object tables as search criteria. For example, the customer can specify PARTY.PARTY_FULL_NM in the CASE_SEARCH_CRITERIA_FIELD table to allow users to search for cases by party full name. The search looks for all cases that have one or more parties associated with the case with full name equal to the specified party full name. The following special field can be used as search criteria within the CASE_SEARCH_CRITERIA_FIELD table.

TEMP.WORK_LIST_CASE_FLG
: returns all cases that the currently logged-on user can work on as defined in the workflow instances associated with the cases.

The following special field can be used as search criteria within the INCIDENT_SEARCH_CRITERIA_FIELD table.

TEMP.UNASSIGNED_INCIDENT_FLG
: returns all unassigned incidents (incidents not associated with a case).

Note: It is not necessary to enter wildcards (*) when entering search criteria. The search will return results that include all instances of the search criteria. For example: Entering 2009 in the Case ID field will return all cases that contain 2009 in their Case ID. You do not have to enter a wildcard with 2009.

Field Labels

The labels for all static search criteria shipped in the default configuration are specified in the SAS Enterprise Case Management resource bundle file (com.sas.solutions.casemgmt.i18n.AppResources.properties). All other labels must be specified in the custom resource bundle file. The naming convention for search criteria field resource bundle keys is as follows:

- field.<lowerCaseTableName>.<lowerCaseFieldName>.label.txt
- Here is an example:
    - field.party.party_full_nm.label.txt=Subject name:

User Interface Controls

Field Data Type	UI Control	Description
Any	Drop-down list	If REF_TABLE_NM is specified, show a drop-down list of possible values from the reference table. The REF_TABLE_NM is also useful for Boolean fields when searching for checked or unchecked values. By creating entries in REF_TABLE_VALUE, a drop-down list can be created where REF_TABLE_NM is 'X_RT_SEARCH_FLG'. The VALUE_CD field will hold the Boolean values 0 and 1, and the VALUE_DESC field will contain whatever is needed as the label in the drop-down list, (for example, True/False or Yes/No). See "Configuring Reference Tables in the Database" on page 68 for further information.
VARCHAR	Text	Show text input field.

Field Data Type	UI Control	Description
BIGINT / DOUBLE	Number range	Show number from/to input fields.
BOOLEAN	Checkbox	Show a checkbox. This is only useful for special case search fields as defined in "Searchable Fields" on page 71. An example is TEMP.WORK_LIST_CASE_FLG.
DATE / TIMESTAMP	Date range	Show date from/to input fields. The date format is determined by the user locale.

Search Filters

Fields that appear as search filters on the case search screen are configured in the CASE_SEARCH_FILTER_FIELD table. Fields that appear as search filters on the incident search screen are configured in the INCIDENT_SEARCH_FILTER_FIELD table. Fields that appear as search filters on the party search screen are configured in the PARTY_SEARCH_FILTER_FIELD table. The structure for all three tables is the same, and each contains the following columns.

USER_ID
: contains the user ID of the user this configuration applies to. The value equals "*" for the default configuration for all users.

TABLE_NM
: contains the table name of the search filter field.

FIELD_NM
: contains the name of the search filter field.

DISPLAY_ORDER_NO
: contains the search filter display order.

REF_TABLE_NM
: optionally contains the reference table name used to populate a drop-down list of possible values to filter by.

User-Specified Configurations

Default configurations are installed with the product for case, incident, and party search filters. The default configurations only reference static fields (no user-defined fields). Customers can change the default configurations by modifying the previous database tables directly. Customers can also define user-specific search filter configurations by setting the USER_ID column value appropriately. If there is no user-specific configuration for the user, the default configuration is used.

Filterable Fields

Any static or user-defined field on any business object (case, incident, and party) table that can be used in conjunction with a reference table can be used as search filters. Customers can reference fields in associated business object tables as search filters. For example, the customer can specify PARTY.PARTY_TYPE in the CASE_SEARCH_FILTER_FIELD table to allow users to filter cases by party type. The search looks for all cases that have one or more parties associated with the case with the specified party type.

Field Labels

The labels for all static search filters shipped in the default configuration are specified in the SAS Enterprise Case Management resource bundle file (com.sas.solutions.casemgmt.i18n.AppResources.properties). All other labels must be specified in the custom resource bundle file. The naming convention for search filter field resource bundle keys is the same as specified for search criteria.

Search Results

Fields that appear as search results on the case search screen are configured in the CASE_SEARCH_RESULT_FIELD table. Fields that appear as search results on the incident search screen are configured in the INCIDENT_SEARCH_RESULT_FIELD table. Fields that appear as search results on the party search screen are configured in the PARTY_SEARCH_RESULT_FIELD table. The structure for all three tables is the same, and each contains the following columns.

USER_ID
: contains the user ID of the user this configuration applies to. The value equals “*” for the default configuration for all users.

TABLE_NM
: contains the table name of the search result field.

FIELD_NM
: contains the name of the search result field.

DISPLAY_ORDER_NO
: contains the search result column display order.

REF_TABLE_NM
: optionally contains the reference table name used to render coded values as displayable values.

User-Specified Configurations

Default configurations are installed with the product for case, incident and party search results. The default configurations only reference static fields (no user-defined fields). Customers can change the default configurations by modifying the previous database tables directly. Customers can also define user-specific search result configurations by setting the USER_ID column value appropriately. If there is no user-specific configuration for the user, the default configuration is used.

Displayable Fields

Any static or user-defined field in the business object (case, incident, or party) that contains one value can be shown in the search result table. You cannot show fields in associated business object (case, incident, or party) tables as search results. The following derived field can be shown in the incident search result table.

INCIDENT.CASE_ID
: shows the ID of the associated case or blank if the incident is unassigned.

Column Header Labels

The labels for all static search result column headers shipped in the default configuration are specified in the SAS Enterprise Case Management resource bundle file (com.sas.solutions.casemgmt.i18n.AppResources.properties). All other labels must be specified in the custom resource bundle file. The naming convention for search result field resource bundle keys is as follows:

- field.<lowerCaseTableName>.<lowerCaseFieldName>.header.txt
- Here is an example:
  - field.party.party_full_nm.header.txt=Subject Name

SAS Metadata Repository Properties

The following SAS Enterprise Case Management properties in the SAS Metadata Repository can be manually set from the SAS Management Console.

Property Name	Description
DB.Schema	The name of the database schema that contains the Enterprise Case Management tables. The initial value is prompted for during the installation.
Reassign.Case.User.Group.Or.Role	The name of the group or role defined in the SAS Metadata Repository. This name is used to populate the drop-down list of users to set as primary owner. The initial value is “Ent Case Mgmt Users”, which contains all Enterprise Case Management users.
Table.Records.Per.Page	The number of records to show per page within tables that support pagination. The initial value is 20.

Chapter 6
Using the Custom Page Builder

Overview of the Custom Page Builder

User interface (UI) definition files specify the form and content of screens presented in SAS Enterprise Case Management, the data that is captured, and how data is validated. UI definition files must be uploaded from the **Administration** tab within SAS Enterprise Case Management.

Using the Custom Page Builder, users can make fields either mandatory or optional. You can also display or hide fields depending on the entries selected for other fields. In addition, default values and validations can be freely defined.

The following screens can be customized:

- case detail screen
- incident detail screen
- party (or subject) detail screen

Additionally, the Custom Page Builder enables you to do the following:

- specify the order of fields on a screen
- group fields into sections, subsections, and tabs
- override the default labels for fields
- specify property keys to use strings from customMessages.properties (or other properties files)
- hide or show fields, sections, subsections, and tab-sections
- specify whether a field is read-only or can be edited
- configure the number of decimal digits visible for numeric fields
- specify the default value for any field
- specify custom validation expressions that must be passed before the user is able to continue through a workflow
- specify the maximum and minimum values allowed in date and number fields
- control field rendering for certain fields:
  - For single-select list fields, you can choose between a drop-down list and radio buttons.

- For string fields, you can choose between a text field and a text area, and also control the size of the text field or the text area.

Note: You can also apply the above list to auxiliary (aux) fields.

Certain fields are required by design, and you can specify optional fields as required fields. Although you cannot specify required fields as optional, you can hide these fields. For more information see “Example: Hiding a Required Field” on page 106.

Customizable User Interfaces

User interface definition files specify the form and content of user interfaces presented in SAS Enterprise Case Management, the data that is captured, and how that data is validated. User interface definition files must be uploaded within SAS Enterprise Case Management.

You can customize the following subsets of user interfaces with the Custom Page Builder for the following subject areas:

- Create/Edit Case
- Create/Edit Incident
- Create/Edit Subject
- Add/Edit Row of User-Defined Table

Assign the Custom Page Builder Permission

To load and update user interfaces using the Custom Page Builder, you must assign a global capability to an existing or new role. Then you must give the user membership in that role. Use SAS Management Console to specify the role and to assign the user to the role. See *SAS Management Console Guide to Users and Permissions* for more information.

Working with User Interface Definitions

Viewing User Interface Definitions

To view user interface definitions, select the **Administration** tab and select the user interface definition that you want to view.

Editing the User Interface Definition

To edit a user interface definition:

1. Select the **Administration** tab.
2. Click **Download User Interface Definition** from the pop-up menu.
3. Edit the file with a text editor or with your favorite XML editor.

Note: You can validate the structure of the file against the uiDefinition.dtd file. The file can be found at **`SAS_HOME/SASFoundation/9.2/casemgmtmva/sasmisc/sample/uidef/uiDefinition.dtd`**.

4. Upload the changes. For more information, see "Uploading the User Interface Definition" on page 80.

Note: You do not need to restart the server after uploading the user interface definition.

Uploading the User Interface Definition

To upload a user interface definition:

1. Select the **Administration** tab.
2. Click **Upload User Interface Definition**. The Upload User Interface Definition File window opens.
3. Type the path to the file, or click **Browse** to navigate to it.
4. Enter a description. This step is optional.
5. Click **OK**. Any warnings or errors found in the user interface definition file are displayed.
6. When you are satisfied with the results, click **Upload User Interface Definition**.

Note: You do not need to restart the server after uploading the user interface definition.

Deleting the User Interface Definition

Deleting a user interface definition removes the file from the system. This is an unrecoverable operation. To delete a user interface definition:

1. Select the **Administration** tab.
2. For the corresponding user interface definition that you want to delete, click the action menu, and then click **Delete**.

Valid XML Elements and Descriptions for User Interface Definitions

A user interface definition file is an XML document consisting of a top-level **`<ui-definition>`** element with attributes and child elements that describe the form and content of the screens, their validations, derived fields, and conditional logic. The user interface definition files must conform to the structure described in the document type definition (DTD) uiDefinition.dtd. For more information about where to locate a copy of this file, see "Editing the User Interface Definition" on page 79.

The following table describes the XML format used in the user interface definition files.

Table 6.1 *XML Format*

Element	Description
<ui-definition>	The top-level element that describes the screens in the UI definition. **Attributes:** • id - A unique identifier for this user interface definition (user-defined). This must be a valid XML name. • type - Indicates the type of object that this UI definition is used for. Valid values include Case, Incident, and Party. **Child Elements:** • A <title> element. The title appears on the administration page, but it is not visible to the end user (for example, the user who is editing an issue). • One or more <screen> elements.
<function>	Declares a custom function. **Attributes:** • name - The name that is used to reference the custom function. Custom function names must begin with “C_” (or “c_”). • qualified-class-name - The fully qualified class name. For more information about creating custom functions, see “Example: Creating a Custom Function” on page 274.
<component>	Declares a custom component. **Attributes:** • name - The name that is used to reference the custom function. Custom function names must begin with “C_” (or “c_”). • qualified-class-name - The fully qualified class name.
<screen>	Describes the appearance and behavior of a single screen. **Attributes:** • id — the screen ID. This must be a valid XML name and a valid SAS name. **Child elements:** • An optional <title> element providing the screen title. • An optional <initialize> section that describes any initialization that must be performed before the screen is rendered. • Any number of <field> elements. • An optional <finalize> section that describes any validations or computations that must be performed when the user clicks **Save**. • Zero or more <action-group> elements.

Element	Description
<initialize>	An optional section that contains code that is executed before the screen appears. **Child elements:** • Zero or more <set > elements that set variables to some computed value. • Zero or more screen-level <validation> elements that are performed before the screen is rendered.
<finalize>	An optional section that contains code that is executed when the screen is considered complete (usually when the user clicks **Save**). **Child elements:** • Zero or more <set> elements that compute derived fields. These fields are evaluated when the user clicks **Save**. • Zero or more screen-level <validation> elements that are checked when the user clicks **Save**.
<set>	Evaluates an expression and stores its value in the memory hashtable. **Attributes:** • name - The variable name that corresponds to a field. If the name is not specified, this is treated like a function call having no return value. • value - An expression that is evaluated with the resulting value stored in the named variable in the memory hashtable.

Element	Description
<field>	Describes a prompt for user input. **Attributes:** • name - The name of the field. This should be one of the names associated with the type of user interface definition that you are editing. • type - The GUI component that is used for the input control. The following are valid values: string, number, boolean, dropdown, checkbox, radio, date, textarea, hidden, readonly, component. • component-name - (optional) The name of a fixed screen component. Applicable only if type="component", ignored otherwise. • length - (optional) The width of the input control on the screen (not necessarily the field length in the database). • rows - (optional) Applies to textarea type only. Indicates the number of rows in the textarea. • max-length - (optional) The maximum length of the input content allowed in the textinput. • decimal-digits - (optional) Limits the number of digits in number format. • min - (optional) Minimum value for dates and numbers. • max - (optional) Maximum value for dates and numbers. • minSelectableDate - (optional) Minimum selectable date. This attribute affects only the date chooser and not validation. • maxSelectableDate - (optional) Maximum selectable date. This attribute affects only the date chooser and not validation. • default - (optional) An expression whose value is used as the default value for the field. This value is only used when creating a new object. • values - (optional) An expression whose value is a list of items used to populate a drop-down list, check box, or radio button group. Each item in the list is a label and value pair, where label is the displayed value, and value is the internally used value. Using the values attribute with a check box will display a group of check boxes to be multi-selected. • align - (optional) The alignment of the input field's label. Valid values are top, left, and inline. The default is left. • required - (optional) An expression that is evaluated by the expression handler to determine if the user must complete the field before saving. Default is false. • visible - (optional) An expression that is evaluated by the expression handler to determine if the field is visible. Default is true. • readonly - (optional) An expression that is evaluated by the expression handler to determine if the field is read-only. Default is false. You can also specify neverBeenSaved. • escape-xml - (optional) By default, any XML character in a readonly field is escaped. Specifying false keeps the characters from being escaped. Default is true. Only valid for read-only fields.

Element	Description
<field>	Describes a prompt for user input. **Child elements:** • A <label> element that specifies the label and prompt for this input field. • Zero or more <validation> elements, which are evaluated when the user clicks **Save**. • Zero or more <param> elements, which are applicable only if type="component". • An optional <on_change> element, which describes any dynamic actions to be executed when the field value changes. • An optional <true_label> element, which is applicable only if type="boolean". • An optional <false_label> element, which is applicable only if type="boolean".
<label>	The label or prompt displayed for a field. If styled input is required (for example, multiple lines with bullets), you can specify this element as a CDATAsection with embedded HTML. **Attributes:** • separator-visible - By default, a separator (colon) is added to the label. Specifying false suppresses the separator. **Child elements:** • Zero or more <message> elements.
<param>	A parameter passed to a fixed screen component. **Attributes:** • name - The parameter name. The name is required when the parameter is for a field, but should be empty when the parameter is for a message. • value - An expression that is evaluated, with the result used as the parameter value. If no value is specified, the content of the element is used.
<validation>	A test that is performed at the screen, section, or field level. The test is evaluated by the expression handler (usually, when the user clicks **Save**), and if it is false, the error message is displayed and the user remains on the same screen. **Attributes:** • test - An expression that is evaluated by the expression handler using the current contents of the memory hashtable (which will include the values from the database and everything the user has entered up to this point). For example, if the input field was a month number in a field named MONTH, the expression might be test="month ge 1and month le 12". **Child elements:** • An <errmsg> element that describes the message to display if the test fails.

Element	Description
<errmsg>	An error message that displays if a validation fails. **Child elements:** • Zero or more <message> elements.
<section>	Describes the appearance and behavior of a section of other elements. **Attributes** • id - The section ID. This must be a valid XML name (also a valid SAS name). • required - (optional) An expression that is evaluated by the expression handler to determine if the section should display the required indicator. Default is false. • visible - (optional) An expression that is evaluated by the expression handler to determine if the section is visible. Default is true. • expanded - (optional) An expression that is evaluated by the expression handler to determine if the section is expanded by default. Default is true. **Child elements:** • An optional <label> element providing the screen label and title. • Zero or more <field> elements. • Zero or more <section> elements. • Zero or more <if> elements. • Zero or more <validation> elements, which are evaluated when the user clicks **Save**. • Zero or more <action-group> elements.
<tab-section>	A tab-section can be nested under a <section>, <tab>, or <screen> element to define a set of tab pages. **Attributes:** • id - The section ID. This must be a valid XML name (also a valid SAS name). **Child elements:** • One or more <tab> elements.

Element	Description
<tab>	A tab is nested under a <tab-section> and defines a tab page. **Attributes:** • id - The section ID. This must be a valid XML name (also a valid SAS name). • required - (optional) An expression that is evaluated by the expression handler to determine if the tab should display the required indicator. Default is false. **Child elements:** • An optional <label> element providing the tab label and title. • Zero or more <field> elements. • Zero or more <section> elements. • Zero or more <if> elements. • Zero or more <validation> elements, which are evaluated when the user clicks **Save**. • Zero or more <action-group> elements.
<if>	A group of other elements that is conditionally included on the screen. **Attributes:** • test - An expression that is evaluated by the expression handler to determine if the contents of the <if> should be active or not. **Child elements:** • Any number of <field> elements. • Any number of <section> elements. • Any number of <if> elements. • Zero or more <action-group> elements.
<message>	A localized message. **Attributes**: • key - The key of the string in the resource bundle. **Child elements:** • Zero or more <param> elements.
<true-label>	True label for fields of type “boolean.” **Child elements:** • Zero or one <message> elements.
<false-label>	False label for fields of type “boolean.” **Child elements:** • Zero or one <message> elements.

Element	Description
<on-change>	A group of dynamic actions to be executed when the value of the field changes. **Child elements:** • Zero or more <set_visible> elements. • Zero or more <set_required> elements. • Zero or more <set_value> elements.
<set-visible>	A dynamic action that sets the visibility of a field. **Attributes:** • name - The name of a field on the current screen. • test - An expression that is evaluated by the expression handler to determine if the field will be shown or hidden.
<set-required>	A dynamic action that sets the required state of a field. **Attributes**: • name - The name of a field on the current screen. • test - An expression that is evaluated by the expression handler to determine if the field will be required or optional.
<set-values>	A dynamic action that sets the selectable values of a drop-down list. **Attributes:** • name - The name of a field on the current screen. • values - An expression that is evaluated by the expression handler to determine the selectable values that are allowed.
<set-value>	A dynamic action that sets the value of the field **Attributes:** • name - The name of a field on the current screen. • value - An expression that is evaluated by the expression handler to determine the value.

Custom Page Builder: Creating Custom Help

You can customize the help tags for SAS Enterprise Case Management. by adding context sensitive help tags on the <screen> and <help-text> elements. However, using both the help attribute for the <screen> element (external help) and the <help-text> element (inline help) on the same page is not supported. If you configure external help, and inline help on the same screen, then a warning displays when you upload the screen definition file. Additionally, only the external help is available for the screen.

The following example demonstrates how to link to a Web page using the help attribute for the <screen> element.

Example Code 6.1 *Linking to an External Help Page*

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE ui-definition SYSTEM "uiDefinition.dtd">
<ui-definition id="actionplan-ui-def" type="ActionPlan">
  <title>ActionPlan UI Definition</title>
  <screen id="actionPlan" help="http://www.sas.com">
   ...
  </screen>
</ui-definition>
```

You can add context sensitive help tags on the <screen> and <help-text> elements. This example demonstrates how to add inline help text using the <help-text> element.

Example Code 6.2 *Inline Help Text*

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE ui-definition SYSTEM "uiDefinition.dtd">
<ui-definition id="issue-ui-def" type="Issue">
  <title>Issue UI Definition</title>
  <screen id="issue">
   <help-text>
    <![CDATA[
      <h1>Sample Custom Help</H1
        <ul>
         <li><b>Field #1:</b>Please help me with this field...</li>
         <li><b>Field #2:</b>Please help me with this field...</li>
         <li><b>Field #3:</b>Please help me with this field...</li>
       </ul>
       <p>This is example help text.</p>
    ]]>
  </help-text>
    ...
  </screen>
</ui-definition>
```

Expressions and Functions

About Expressions and Functions

An expression is any valid set of literals, variables, operators, and functions that evaluates to a single value. Quite a few element attributes support expressions, including the following examples:

- the “test” attribute of validations and ifs
- the “value” attribute of sets and dynamic actions
- the “visible” and "required" attributes of fields and sections

Expressions can reference any valid field defined in the specific UI definition type. These fields include the fields of the primary object (for example, the Action Plan that is being edited) in addition to fields for any useful secondary objects (for example, the parent Issue of the Action Plan that is being edited). Temporary and derived fields are also supported. Expressions can use these fields in combination with the usual arithmetic operators (add, subtract, multiply, divide), relational operators (for example, a > b, c = 10, d <= 20), and logical operators (for example, a and b or c and d and not e) The use of expressions and operators enables you to express business rules directly in the user interface definition files.

In addition to arithmetic, relational, and logical operators, there is a set of functions that you can use in the expressions. Some of these functions could be used for field validation (for example, empty(), validNumber(), validDate()). Also, you might use functions to construct derived fields (for example, concat(), length(), if()). Finally, you might use functions to access data sources (for example, getCodeTableLabelValues(), getCodeEnumerationLabelValues(), or getAuxOptionLabelValues()).

Functions Supported in the User Interface Definition Files

Function	**Description**
concat()	Concatenates two strings and returns the result.
contains()	Determines whether a list or an array contains a specified value.
empty()	Determines whether an object is missing, empty, or blank.
filterLabelValues()	Filters a list of label value objects based on a specified expression.
if()	Returns one value if a condition is true and another if it is false.
length()	Determines the length of a string.
left()	Left-aligns a character string.
now()	Returns a timestamp that represents the current date and time.
size()	Determines the number of items in an array or a list.
today()	Returns the current date.
toString()	Converts an object to a string.
trim()	Removes leading and trailing whitespace from a character string.
validDate()	Tests whether a date is valid.
validDateTime()	Tests whether a date and time are valid.
validNumber()	Determines whether a string contains a valid decimal number.
validWholeNumber()	Determines whether a string contains a valid integer.

Function Reference

concat()

The concat() function concatenates two strings and returns the result.

Syntax:
concat (String1, String2)

Arguments:

String1
: specifies a variable name or character string literal.

String2
: specifies a variable name or character string literal.

Details: The concat() function creates a new string by appending the value of a second string to the value of the first without trimming leading or trailing spaces. The original strings are not modified.

Examples:

```
<set name="TEMP.FIRST_WORD" value="'Instant'"/>
<set name="TEMP.SECOND_WORD" value="' Coffee'"/>
<set name="TEMP.RESULT" value="concat(TEMP.FIRST_WORD, TEMP_SECOND_WORD)"/>
```

After these statements are evaluated, the value of TEMP.RESULT becomes “Instant Coffee”.

```
<set name="TEMP.RESULT" value="concat('Instant', ' Coffee')"/>
```

After this statement is evaluated, the value of TEMP.RESULT becomes “Instant Coffee”. Using either variables or string literals or any combination of the two is valid.

```
<set name="TEMP.RESULT" value="concat(concat('ABC', 'DEF'), 'GHI')"/>
```

Because the concat() function returns a string variable, you can use it as an argument to any other function that operates on strings, including itself. In the preceding example, the nested **`concat('ABC', 'DEF')`** is evaluated first, yielding the value ABCDEF. Then the outer concat() is evaluated, giving the final result ABCDEFGHI.

See also:

- “trim()” on page 94
- “left()” on page 93

contains()

The contains() function is used to determine whether a list or an array contains a specified value.

Syntax:
contains(collection, value)

Arguments:

collection
: specifies a variable containing an array or list of values.

value
: specifies a variable name or a string literal to search for.

Example:

```
<set name="TEMP.myList" value="getAuxOptionLabelValues('issue', 'auxOptionCd1')"/>
<set value="TEMP.containsRed" value="contains(TEMP.myList, 'Red')"/>
```

empty()

The empty() function determines whether an object is missing, empty, or blank.

Syntax:
empty(value)

Arguments:

value
: specifies a variable name or a literal. You can specify a single object, an array, or a list.

Details:

The empty function returns true if the value specified in the argument is:

- null or blank
- an empty list or array
- a list or array containing only empty values

Example:

```
<field name="TEMP.favoriteColor" type="string">
    <label>Favorite Color:</label>
        <validation test="not empty(TEMP.favoriteColor)">
        <errmsg>You must tell us your favorite color!</errmsg>
    </validation>
</question>
```

The preceding field prompts the user to enter a favorite color. The expression in the validation test uses the empty function to determine whether the user entered anything in the TEMP.favoriteColor variable. If nothing is entered, then the validation fails and an error message appears.

Alternatively, you could add the required="true" attribute to the field element to make an input field mandatory. This example demonstrates how you might use the empty function for more complicated validations.

filterLabelValues()

The filterLabelValues() function filters a list of label value objects based on a specified expression.

Syntax:
filterLabelValues(labelValues, filterExpression)

Arguments:

labelValues
: specifies a list of label value objects.

filterExpression
: is a string representing the expression that is executed against each item in the list of label values. If the expression returns true for the item, then that item is included in the resulting list.

if()

The if() function returns one value if a condition is true and another if the condition is false.

Syntax:
if(condition, trueValue, falseValue)

Arguments:

condition
: specifies a expression that is either true or false.

trueValue
: specifies the value to be returned if the condition is true.

falseValue
: specifies the value to be returned if the condition is false.

Details:

The if() function takes three parameters: an expression and two possible return values. The system evaluates the expression. If the expression is true, then the trueValue is returned. Otherwise, the falseValue is returned.

Example:

```
<set name="SOURCE_DESC"
  value="if(not empty(SOURCE_SYSTEM_CODE),
         SOURCE_SYSTEM_CODE,
   'Record added manually')"/>
```

The set statement above uses the if() function to create a line of text that contains the source of a record. The three arguments to the if() function are as follows:

- the expression **`not empty(SOURCE_SYSTEM_CODE)`**
- the value of the source system code
- the text “Record added manually”

If the SOURCE_SYSTEM_CODE variable is not blank (empty), then the condition is true, and the value of the SOURCE_SYSTEM_CODE is returned. Otherwise, the string “Record added manually” is returned.

length()

The length() function determines the length of a string.

Syntax:
length(string)

Arguments:

string
: specifies a variable or string literal.

Details:

The length() function accepts a variable or a quoted character string and returns a numeric value for the length. Leading or trailing spaces are not included in the length value.

Example:

```
validation test="length(STATE_CODE) = 2">
      <errmsg>The state code must be exactly two characters in length</errmsg>
</validation>
```

The validation shown in the preceding example tests whether the value that a user enters in the STATE_CODE field is exactly two characters long. If it is not, then the validation fails and the error message appears.

left()

The left() function left-aligns a character string.

Syntax:
left(string)

Arguments:
  string
    specifies a character constant, variable, or expression.

Details:
  For non-blank values, the left() function returns the value with all leading white space (spaces, tabs, carriage returns, or line feeds) moved from the beginning of the string to the end. The resulting string has the same length as the original. For values consisting of all spaces, or values that have no leading white space, this function returns the argument value unchanged. The original string is not modified.

Example:
```
<set name="VARNAME" value="left(' Hello')"/>
```

The set statement in this example assigns the value 'Hello' to the variable VARNAME.

now()

The now() function returns a timestamp that represents the current date and time.

Syntax:
now()

Arguments:
  This function does not take any arguments.

size()

The size() function determines the number of items in an array or a list.

Syntax:
size(value)

Arguments:
  value
    specifies a variable name that represents an array or a list.

Details:
  The size() function accepts a variable and returns a numeric value for the size of the array or list.

today()

The today() function returns the current date.

Syntax:
```
today()
```

Arguments:
  This function does not take any arguments.

Example:
```
field name="targetDt" type="date" required="true"
  <minSelectableDate="today()" maxSelectableDate="issue.targetDt">
  <label>
  <message key="actionPlanEx.field.targetDt.displayName.txt" />
  </label>
</field>
```

toString()

The toString() function converts an object to a string.

Syntax:
toString(value)

Arguments:
  value
    specifies the object to convert.

Example:

```
<field name="controlCertificationId" type="string" visible="false"
   default="toString(controlCertificationRk)">
   <label>
   <message key="controlCertification.field.
controlCertificationId.displayName.txt" />
   </label>
</field>
```

trim()

The trim() function removes leading and trailing white space from a character string.

Syntax:
trim(string)

Arguments:
  string
    specifies a character constant, variable, or expression.

Details:

The trim() function returns a string with all white space (spaces, tabs, carriage returns, or line feeds) at either the beginning or ending of the string removed. The trim() function ignores any white space between the first and last non-blank characters of the string. This makes the string that is returned by trim() shorter than the original string if any white space is removed. The original string is not modified.

Examples:

```
<set name="VARNAME" value="trim(' The Bank ')"/>
```

In this example, the trim() function converts ' The Bank ' in the value attribute to 'The Bank' and assigns this value to VARNAME. Note that the multiple spaces in the middle of the string are not modified.

```
field name="COUNTRY" type="text" length="20">
...
</field>
<set name="MESSAGE" value="'The rain in '"/>
<set name="MESSAGE" value="concat(MESSAGE, trim(COUNTRY))"/>
<set name="MESSAGE" value="concat(MESSAGE, ' stays mainly on the plain')"/>
```

In this example, the value of COUNTRY is extracted from what the user enters in an input text box of length 20. If the user enters Spain (with leading and trailing spaces), the text contained in MESSAGE is built in the following steps:

- The first set statement assigns the value **`The rain in`** to MESSAGE.
- The second set statement uses the concat() function to remove leading and trailing spaces from the COUNTRY value and then appends it to the current value of MESSAGE. The resulting string assigned to MESSAGE becomes **`The rain in Spain`**.

- The last set statement uses the concat() function to append **`stays mainly on the plain`** (with its one leading blank) to the current value of MESSAGE. The resulting string **`The rain in Spain stays mainly on the plain`** is assigned to MESSAGE.

See also:

- "concat()" on page 90
- "left()" on page 93

validDate()

The validDate() function tests whether a date is valid.

Syntax:
validDate(date)

Arguments:
date
specifies a variable or character string literal containing a date.

Details:
The validDate() function tests whether the specified string is in MM/DD/YYYY format and whether the date is a valid day, month, and year.

Example

```
field name="ACTIVITY_DATE" type="text">
    <label>Enter activity date:label>Enter activity date:</label>
    <validation test="not empty(ACTIVITY_DATE) and validDate(ACTIVITY_DATE)">
      <errmsg>Activity date must be in the format MM/DD/YYYY</errmsg>
    </validation>
</field>
```

This example demonstrates an input field where the user enters an activity date. If the date is not blank and has the format MM/DD/YYYY, then the validation passes. Otherwise the error message appears and the user must correct the input.

See also "validDateTime()" on page 95.

validDateTime()

The validDateTime() function tests whether a date and time are valid.

Syntax:
validDateTime(date)

Arguments:
date
specifies a variable or character string literal containing a date and time.

Details:
The validDateTime() function tests whether the specified string is in MM/DD/YYYY HH:MM:SS format and whether it represents a valid day, month, year, hour, minute, and second. The time is in 24-hour format.

Example:

```
field name="EXPIRATION_DATE_TIME" type="text">
    <label>Enter expiration date and time:</label>
    <validation test="not empty(EXPIRATION_DATE_TIME) and
         validDate(EXPIRATION_DATE_TIME)">
        <errmsg>Expiration date/time must be in the
           format MM/DD/YYYY HH:MM:SS</errmsg>
```

```
</validation>
</field>
```

This example demonstrates an input field where the user enters an expiration date and time. If the field is not blank, has the format MM/DD/YYYY HH:MM:SS, and represents a valid date and time, the validation passes. Otherwise the error message appears and the user must correct the input.

See also "validDate()" on page 95.

validNumber()

The validNumber() function tests whether a string contains a valid decimal number.

Syntax:
validNumber(string)

Arguments:
string
specifies a variable or string literal to test for valid numeric format.

Details:
The validNumber() function tests its input argument to determine if it represents a valid decimal number (positive, negative, or zero). The function removes dollar signs and commas from the input argument, and then the argument is examined to determine whether it consists only of the following:

- an optional leading plus or minus sign
- any number of decimal digits
- an optional decimal point
- any number of digits following the decimal point

The function returns true if the argument contains a valid number. Otherwise, it returns false.

Example:

```
<field name="LOAN_AMOUNT" type="text">
    <label>Enter loan amount:</label>
    <validation test="validNumber(LOAN_AMOUNT) and LOAN_AMOUNT gt 0">
       <errmsg>Loan amount must be numeric and greater than zero</errmsg>
    </validation>
</field>
```

This example demonstrates how to validate the value of a loan amount entered by the user. If the amount is not in valid numeric format, or if it is less than or equal to zero, the validation fails and the error message appears.

See also "validWholeNumber()" on page 96.

validWholeNumber()

The validWholeNumber() function determines whether a string contains a valid integer.

Syntax:
validWholeNumber(string)

Arguments:
string
specifies a variable or string literal to test for valid integer format.

Details:

The validWholeNumber() function tests an input argument to determine whether it represents a valid integer value (positive, negative, or zero). The function removes dollar signs and commas from the input argument, and then examines the argument to determine whether it consists of only the following:

- an optional leading plus or minus sign
- any number of decimal digits

The function returns true if the argument contains a valid integer value. Otherwise, it returns false.

Example:

```
<field name="TEMP.numberOfApples" type="text">
    <label>Enter the number of apples:</label>
    <validation test="validWholeNumber(TEMP.numberOfApples)
and TEMP.numberOfApples gt 0">
       <errmsg>The number of apples must be a positive integer</errmsg>
    </validation>
</field>
```

In this example, the user is prompted for a number of apples. If the amount entered by the user is not a valid integer, or if it is less than or equal to zero, the validation fails and the error message appears.

See also "validNumber()" on page 96.

Functions for Securing Fields and Components

Security access and restrictions within the case, incident, and party detail screens are controlled from within the user interface definitions. To help customers secure (make read-only or not visible) fields and components within user interface definitions, the following static functions have been added.

Function	**Description**
GetUserId()	Returns the currently logged-on user ID.
GetUserDisplayName()	Returns the display name for the specified user ID.
IsUserInGroup()	Returns true if the currently logged-on user is in the specified group; otherwise false is returned.
IsUserInRole()	Returns true if the currently logged-on user is in the specified role; otherwise false is returned.
IsCapable()	Returns true if the currently logged-on user has the specified capability; otherwise false is returned.
IsWorkableActivity()	Returns true if the specified workflow activity is an activity that the currently logged-on user can work on at this point in the investigative process; otherwise false is returned.

Function	Description
IsWorkflowActivityStarted()	Returns true if the specified workflow activity is started; otherwise false is returned.

Function Reference

GetUserId()

Returns the currently logged-on user ID.

Syntax:
GetUserId()

Arguments:
There are no arguments for this function.

GetUserDisplayName()

Returns the display name for the specified user ID.

Syntax:
GetUserDisplayName(userId)

Arguments:
userId
specifies the user ID.

IsUserInGroup()

Returns true if the currently logged-on user is in the specified group; otherwise false is returned.

Syntax:
IsUserInGroup(groupName)

Arguments:
groupName
specifies the name of the group defined in the SAS Metadata Repository.

IsUserInRole()

Returns true if the currently logged-on user is in the specified role; otherwise false is returned.

Syntax:
IsUserInRole(roleName)

Arguments:
roleName
specifies the name of the role defined in the SAS Metadata Repository.

IsCapable()

Returns true if the currently logged-on user has the specified capability; otherwise false is returned.

Syntax:
IsCapable(capabilityName)

Arguments:

capabilityName

specifies the name of the capability defined in the SAS Metadata Repository.

IsWorkableActivity()

Returns true if the specified workflow activity is an activity that the currently logged-on user can work on at this point in the investigative process; otherwise false is returned.

Syntax:
IsWorkableActivity(workflowActivityName)

Arguments:

workflowActivityName

specifies the name of the workflow activity defined in the workflow associated with the case.

IsWorkflowActivityStarted()

Returns true if the specified workflow activity is started; otherwise false is returned.

Syntax:
IsWorkflowActivityStarted(workflowActivityName)

Arguments:

workflowActivityName

specifies the name of the workflow activity defined in the workflow associated with the case.

Other SAS Enterprise Case Management Functions

Function	**Description**
CreateQueryFilter():	Returns an instance of com.sas.solutions.casemgmt.cpb.function.AppQueryFilter, which can be used in other functions to define search type parameters. It is used in the following functions: GetFilteredGenericDataLabelValues, GetFilteredGenericDataTypeAheadItems, and GetFilteredGenericDataEntryValue.
GetCaseParties()	Returns the list <LabelValueBean> of all parties associated with the case for use as drop-down list options. The LabelValueBean label is the party label (full name if set, if not national ID if set, if not party ID) and the value is the party key returned as a string.
GetFilteredGenericDataLabelValues():	Returns an ordered java.util.Collection of org.apache.struts.util.LabelValueBean containing all possible values for the reference table and field as found in "User-Defined Generic Data Tables " on page 54.

Function	Description
GetFilteredGenericDataTypeAheadItems():	Returns a JSON string representing a com.sas.servlet.tbeans.menus.popupmenu.html.PopupMenu object, which is needed by the TypeAhead component. It can be used to render a list of entries that are retrieved from the Generic Data tables, (for example, Branch data stored in X_BRANCH fields).
GetFilteredLabelValues()	Returns an ordered java.util.Collection of org.apache.struts.util.LabelValueBean containing all filtered possible values for the reference table.
GetGenericDataEntryValue():	Returns the value of the specified field from the Generic Data table.
GetLabelValues()	Returns an ordered java.util.Collection of org.apache.struts.util.LabelValueBean containing all possible values for the reference table.
GetNextCaseKey()	Returns the system-generated surrogate key for the next case.
GetNextIncidentKey()	Returns the system-generated surrogate key for the next incident.
GetNextPartyKey()	Returns the system-generated surrogate key for the next party.
GetProperty()	Returns the formatted property value using the locale for the logged-on user.
IsIDSourceSystemUnique()	Returns true if the ID and source system code are unique. Returns false if another case, incident, or party exists with the same ID and source system code.
Matches()	Tells whether or not a string or collection of strings matches the given regular expression.
StringToSubstrings()	Breaks up a string into a list of substrings.
SubstringsToString()	Concatenates a list of substrings into a string.

Function Reference

CreateQueryFilter():

Returns an instance of com.sas.solutions.casemgmt.cpb.function.AppQueryFilter, which can be used in other functions to define search type parameters. It is used in the following functions: GetFilteredGenericDataLabelValues, GetFilteredGenericDataTypeAheadItems, and GetFilteredGenericDataEntryValue.

Syntax:
CreateQueryFilter(referenceTableName, referenceFieldName, operator, value)

Arguments:

referenceTableName
: specifies the name of the reference table.

referenceFieldName
: specifies the name of the field in the reference table.

operator
: specifies the operator to be used in the filter. allowable values are: =, <=, <, >=, and >.

value
: specifies the value to be used in the comparison.

GetCaseParties()

Returns list <LabelValueBean> of all parties associated with the case for use as drop-down list options. The LabelValueBean label is the party label (full name if set, if not national ID if set, if not party ID) and the value is the party key returned as a string.

Syntax:
GetCaseParties(casePartiesFieldName)

Arguments:

casePartiesFieldName
: specifies the name of the case parties field that is used with the CasePartyTable component.

GetFilteredGenericDataLabelValues():

Returns an ordered java.util.Collection of org.apache.struts.util.LabelValueBean containing all possible values for the reference table and field as found in "User-Defined Generic Data Tables " on page 54.

Syntax:
GetFilteredGenericDataLabelValues(referenceTableName, referenceFieldName, [CreateQueryFilter()])

Arguments:

referenceTableName
: specifies the name of the reference table.

referenceFieldName
: specifies the name of the field in the reference table.

Zero or more CreateQueryFilter function calls
: specifies search filters to be used to limit the Collection.

GetFilteredGenericDataTypeAheadItems():

Returns a JSON string representing a com.sas.servlet.tbeans.menus.popupmenu.html.PopupMenu object, which is needed by the TypeAhead component. It can be used to render a list of entries that are retrieved from the Generic Data tables (for example, Branch data stored in X_BRANCH fields).

Syntax:
GetFilteredGenericDataTypeAheadItems(referenceTableName, referenceFieldName, valueFieldName, [CreateQueryFilter()])

Arguments:

referenceTableName
: specifies the name of the reference table.

referenceFieldName
: specifies the name of the field in the reference table.

valueFieldName
: specifies the field on the screen into which to place the final value.

keyFieldName
: specifies the field on the screen into which to place the database key of the final value.

Zero or more CreateQueryFilter function calls
: specifies search filters to be used to limit the Collection.

GetFilteredLabelValues()

Returns an ordered java.util.Collection of org.apache.struts.util.LabelValueBean containing all filtered possible values for the reference table.

Syntax:
GetFilteredLabelValues(referenceTableName, parentRefTableName, parentCodedValue)

Arguments:

referenceTableName
: specifies the name of the reference table.

parentRefTableName
: specifies the name of the parent reference table.

parentCodedValue
: specifies the coded value from the parent reference table used to filter the returned possible values for cascading prompts.

GetGenericDataEntryValue():

Returns the value of the specified field from the Generic Data table.

Syntax:
GetGenericDataEntryValue(referenceTableName, referenceFieldName, entryKey)

Arguments:

referenceTableName
: specifies the name of the reference table.

referenceFieldName
: specifies the name of the field in the reference table.

entryKey
: specifies the database key that maps to the entry.

GetLabelValues()

Returns an ordered java.util.Collection of org.apache.struts.util.LabelValueBean containing all possible values for the reference table.

Syntax:
GetLabelValues(referenceTableName)

Arguments:
    referenceTableName
        specifies the name of the reference table.

GetNextCaseKey()

Returns the system-generated surrogate key for the next case.

Syntax:
GetNextCaseKey()

Arguments:
    There are no arguments for this function.

GetNextIncidentKey()

Returns the system-generated surrogate key for the next incident.

Syntax:
GetNextIncidentKey()

Arguments:
    There are no arguments for this function.

GetNextPartyKey()

Returns the system-generated surrogate key for the next party.

Syntax:
GetNextPartyKey()

Arguments:
    There are no arguments for this function.

GetProperty()

Returns the formatted property value using the locale for the logged-on user.

Syntax:
GetProperty(propertyKey, propertyFormatArguments…)

Arguments:
    propertyKey
        specifies the name of the resource bundle property key.

    property format arguments (2–n)
        specifies the message format arguments for the resource bundle property (optional).

IsIDSourceSystemUnique()

Returns true if the ID and source system code are unique. Returns false if another case, incident, or party exists with the same ID and source system code.

Syntax:
IsIDSourceSystemUnique(id, sourceSystemCode)

Arguments:
    id
        specifies the case, incident, or party ID.

    sourceSystemCode
        specifies the case, incident, or party source system code.

Matches()

Tells whether or not a string or collection of strings matches the given regular expression. Returns true if the string or strings matches the regular expression; otherwise false is returned.

Syntax:
Matches(string, regex)

Arguments:
string
specifies the string or collection of strings or array of strings.

regex
specifies the regular expression to which the string or strings are to be matched.

StringToSubstrings()

Breaks up a string into a list of substrings. Returns list <string> list of substrings.

Syntax:
StringToSubstrings(string, maxSubstringLen)

Arguments:
string
specifies the string.

maxSubstringLen
specifies the maximum length of each substring.

SubstringsToString()

Concatenates a list of substrings into a string. Returns the concatenated list of substrings as a string.

Syntax:
SubstringsToString(substrings)

Arguments:
string
specifies the string.

substrings
List <String> list of substrings

Customization Examples

How to Customize the User Interface Definition Files

The following steps provide a high level overview about how to make customizations to the user interface definition files:

1. Log on to SAS Enterprise Case Management and download the user interface definition that you want to edit. For more information, see “Working with User Interface Definitions” on page 79.
2. Edit the user interface definition file by adding allowable XML elements to the file. For example, to add a new field to a screen, you add the <field> element. There are several customization examples provided in this chapter. For more information about

supported XML elements, see "Valid XML Elements and Descriptions for User Interface Definitions" on page 80.

Note: You do not need to change the application source code or the database. By default, almost every screen provides six numeric, alphanumeric, Boolean, currency, date, and drop-down fields. You can enable and label those fields as required. For more information about required fields, see "About Required and Non-Required Fields" on page 105.

3. Enter validation code to validate user entries in the user interface definition files.
4. Upload any values that you added to the user interface definition files (for example, an additional value in a drop-down list).
5. To use the new field or structure in the user interface definition files, upload the changed version of the user interface definition file. For more information, see "Uploading the User Interface Definition" on page 80.
6. To make the new field available to users of the SAS reporting tools, you must give it a meaningful name that you can use within the target reports and the list of fields available to be included in reports. You can do this using SAS Information Map Studio. In SAS Information Map Studio, you must select the referring field from the list of available fields in the database and give it a name. For more information, see the Help for SAS Information Map Studio, accessible within the product.

About Required and Non-Required Fields

Certain fields are required by design, and you can specify optional fields as required fields. Although you cannot specify required fields as optional, you can hide these fields. For more information, see "Example: Hiding a Required Field" on page 106. When you set a field as required, the system automatically checks whether the user has provided data. If a drop-down list is used, then the system checks whether the user made a selection. If the user does not provide the data, or if the user does not select a value from the drop-down list, then the system automatically displays an error message when trying to save the information. You can customize the text for error messages. For more information, see "Customize Error Messages" on page 106. If any fields within a section are required, then the section heading is marked as required. For example:

```
<section id="details">
     <label><message key="application.details.txt"/></label>
       <field name="issueShortDesc" type="string" required="true">
     <label><message key="issue.field.issueShortDesc
      .displayName.txt"/></label>
       </field>

     <field name="issueId" type="string" required="true">
       <label><message key="issue.field.issueId.displayName.txt"/>
       </label>
     </field>
</section>
```

Note: If you specify that a non-required field is required in a user interface definition file, the existing data loaders do not check the newly required field to ensure that there is information entered for it. For example, if you use the Issues data loader and you specify that a field on an issue is now required, then the data loader will load that field without any values because it does not know that you changed a non-required field to be required.

Customize Error Messages

SAS Enterprise Case Management provides you with customMessages.properties files for each supported language. You can customize error messages by adding the error messages from the server.properties file to the customMessages.properties file. For example:

```
errors.required.fmt.txt="{0}" is required.
```

Example: Hiding a Required Field

You can hide fields that are required by the database design using the visible and default attributes on the **`<field>`** element. For example, to hide the Issue ID field:

```
<field name="issueId" type="string" required="true"
    default="toString(issueRk)" visible="false">
  <label><message key="issue.field.issueId.displayName.txt"/>
  </label>
</field>
```

In this example, the ID field requires a unique value for each object. Note that you can also use functions on the default attribute. For example:

```
default="concat('ABC-', issueRk)"
```

Example: Specifying a Read-Only Field

Use the **`readonly="true"`** attribute to specify that a field is read-only. The default value of the **`readonly`** attribute is false. The following example demonstrates how to specify a read-only field:

```
<field name="sourceSystemCd" type="dropdown" required="true"
    default="'MON'" readonly="true">
  <label><message key="issue.field.sourceSystemCd
    .displayName.txt"/></label>
</field>
```

Example: Specifying the Number of Decimal Digits

To specify the number of decimal digits that should be used when formatting a number, use the decimal-digits attribute on the **`<field>`** element. The following example demonstrates how to specify 2 decimal digits on Loss Amount field:

```
<field name="auxNum1" type="number" decimal-digits="2" required="true">
   <label>Loss Amount</label>
</field>
```

Example: Validating Dates

To validate date entries, use the type attribute specifying that the input control is a date and the min and/or max attributes with a function on the **`<field>`** element for determining the date. The following example demonstrates how to specify that the minimum value entered for a date must be today's date:

```
<field name="targetDt" type="date" min="today()">
        <label><message key="issueEx.field.targetDt.displayName.txt"/>
        </label>
</field>
```

Example: Specifying Drop-Down Lists and Radio Buttons

To specify whether a drop-down list or radio buttons are used for single-select fields, use the type attribute on the **`<field>`** element. The following example demonstrates how to specify a drop-down list:

```
<field name="issuePriorityTypeCd" type="dropdown" required="true">
    <label><message key="issue.field.issuePriorityTypeCd.displayName.txt"/>
    </label>
</field>
```

The following example demonstrates how to specify radio buttons:

```
<field name="issuePriorityTypeCd" type="radio" required="true">
    <label><message key="issue.field.issuePriorityTypeCd.displayName.txt"/>
    </label>
</field>
```

Example: Specifying a Text Area and a Text field

To specify whether a string field displays as a text area, use the type attribute on the **`<field>`** element. Using **`type="textarea"`** creates a text area on your form. Additionally, you can specify the number of rows contained in a text area by using the rows attribute. The following example demonstrates how to specify a text area with 6 rows:

```
<field name="issueDesc" type="textarea" rows="6" required="true">
   <label><message key="issue.field.issueDesc.displayName.txt"/></label>
</field>
```

You can also use the type attribute to specify that a string field displays as a text field with a specified length for the field. Using the **`type="string"`** attribute creates a text field on your form. Using the length attribute specifies the length of the text field. The following example demonstrates how to specify a text field that is 32 characters long:

```
<field name="referenceNo" type="string" length="32" required="true">
    <label><message key="issue.field.referenceNo.displayName.txt"/></label>
</field>
```

Dynamic Conditional Logic in User Interface Definition Files

You can perform the following types of dynamic actions when a field value changes:

- **`set-visible`** - shows or hides another field or section.

  This example demonstrates how to define conditional logic within a page. In this example, the Name of Spouse text field appears only if Y is selected in the Married drop-down list.

  Example: Using the **`set-visible`** Action

```
<field name="auxOptionCd1" type="dropdown"
   values="getAuxOptionLabelValues('issue', 'auxOptionCd1')">
   <label>Married</label>
   <on-change>
      <set-visible name="auxStr1" test="auxOptionCd1 = 'Y'"/>
   </on-change>
```

```
</field>

<field name="auxStr1" type="string" visible="auxOptionCd1 = 'Y'">
   <label>Name of Spouse</label>
</field>
```

Note: The value that is specified for the **test** attribute of the **<set-visible>** element will most likely be the same as the value that is specified for the **visible** attribute of the target **<field>** element.

- **set-required** - makes another field required or optional.

  This example demonstrates how to define conditional logic within a page. It specifies that the Justification field is required if the value entered for the Loss Amount is greater than 1 million.

  Example: Using the **set-required** Action

```
<field name="auxNum1" type="number" decimal-digits="2" required="true">
   <label>Loss Amount</label>
   <on-change>
      <set-required name="auxStr2" test="auxNum1 > 1000000"/>
   </on-change>
</field>

<field name="auxStr2" type="textarea" required="auxNum1 > 1000000">
    <label>Justification</label>
</field>
```

  Note: The value that is specified for the **test** attribute of the **<set-required>** element will most likely be the same as the value that is specified for the **required** attribute of the target **<field>** element.

- **set-values** - updates the selectable values of a drop-down list. Although radio-buttons currently allow <set-values> in the DTD, this feature is not currently implemented. It is planned for a future release.

  Example: Using the **set-values** Action

```
<initialize>
  <!-- create a filter expression to be used in the filterLabelValue
   ()function -->
  <set name="TEMP.myFilterExpr" value="'if(auxNum2 > 1000000,
    value = &quot;high&quot;, true)'"/>
</initialize>
:
<field name="auxNum2" type="number" decimal-digits="2" required="true">
   <label>Loss Amount</label>
   <on-change>
      <set-values name="auxOptionCd2"
        values="filterLabelValues(getAuxOptionLabelValues
          ('risk', 'auxOptionCd2'), TEMP.myFilterExpr)"/>
   </on-change>
</field>

<field name="auxOptionCd2" type="dropdown" required="true"
    values="filterLabelValues(getAuxOptionLabelValues
    ('risk', 'auxOptionCd2'),TEMP.myFilterExpr)">
  <label>Risk</label>
</field>
```

Note: The value that is specified for the **values** attribute of the **<set-values>** element will most likely be the same as the value that is specified for the **values** attribute of the target **<field>** element.

Example: Creating a Custom Function

You can write your own custom functions and reference them in the user interface definition expressions. To create a custom function for use in the user interface definition files:

1. Write the Java code that represents the custom function (and compile it into a class). For example:

```
package com.sas.cpb.customFunctions;

import com.sas.cui.expr.function.Function;
import com.sas.cui.runtime.EvaluationException;

/**
 * A custom function to uppercase a String.
 */
public class UpperFunction extends Function {

    /**
     * Returns the number of arguments required by the function.
     * This function expects one argument.
     */
    @Override
    public int getArgumentCount() {
      return 1;
    }

    /**
     * Evaluates the function using arguments specified
     * in the XML file.
     *
     * @param args the arguments passed to the
     * function (specified in the XML)
     * @throws EvaluationException
     */
    @Override
    public Object evaluate(Object[] args) throws
   EvaluationException {
        if (args[0] != null) {
            return args[0].toString().toUpperCase();
        }
        return null;
    }
}
```

2. Register the custom function in the user interface definition file. Before the **<screen>** element, insert the **<function>** tag in the user interface definition file. For example:

```
<function name="C_upper" qualified-class-name="com.sas.cpb.customFunctions
  .UpperFunction"/>
```

Note: You must prefix the custom function names with “C_” to prevent naming conflicts with the Custom Page Builder standard components.

Creating a Custom Component

You can create your own custom components for use in the screen definition. Components are graphical widgets that appear on the screen (for example, the color chooser). A custom component is one that you can write to supplement the components that are provided in SAS Enterprise Case Management.

Follow these steps to create a custom component:

1. Write the Java code that represents the custom component. For example:

```
package com.sas.cpb.customComponents;

import java.io.IOException;
import java.util.Locale;
import java.util.Map;
import java.util.ResourceBundle;

import javax.servlet.ServletException;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.jsp.JspException;
import javax.servlet.jsp.JspWriter;
import javax.servlet.jsp.PageContext;

import org.apache.commons.logging.Log;
import org.apache.commons.logging.LogFactory;

import com.sas.solutions.cpb.runtime.EvaluationException;
import com.sas.solutions.cpb.runtime.UIContext;
import com.sas.solutions.cpb.runtime.component.CustomComponent;
import com.sas.solutions.cpb.screendefs.Field;
import com.sas.solutions.cpb.server.ApplicationProperties;
import com.sas.solutions.cpb.util.FieldUtil;
import com.sas.solutions.cpb.web.runtime.FieldRenderContext;
import com.sas.solutions.cpb.web.util.HTMLUtil;
import com.sas.solutions.cpb.web.util.RequestUtil;

/**
* An example custom component to allow the user
* to choose a color (and store it
* in the UI context as a String in the form "#RRGGBB").
*/
public class ColorChooserComponent extends com.sas.solutions.cpb.runtime.component.
   CustomComponent {

private static final Log log = LogFactory.getFactory().getInstance
   (ColorChooserComponent.class);

   /**
   * Renders the HTML for this component.
   *
   * @param value the current value of the field being rendered by the component
   * @param field the field being rendered by the component
   * @param readOnly if the field should be rendered as read-only
   * @param formName the name of the HTML form that will contain the field
   * @param uiContext the current UIContext
   * @param pageContext the current PageContext
   * @param out the output stream to use for writing HTML
   * @param locale the clients locale
   */

   /**
   * Update the UI context with the field value.
   *
   * @param field the field being rendered by the component
   * @param uiContext the current UIContext
   * @param parameters a map of parameters specified for the field (if any)
   * @param request the HttpServletRequest
   */
   @Override
   public boolean updateContext(Field field, UIContext uiContext, Map<String, Object>
         parameters, HttpServletRequest request) {
      // this should match the name of the HTML input we rendered above
      String fieldName = FieldUtil.formatFieldName(field.getName());
      // retrieve the new value from the request
      String value = request.getParameter(fieldName);
      // If the value is null, then it wasnt submitted, so dont clear the
      // value in the UI context.
      if (value != null) {
         uiContext.setValue(fieldName, value);
         return true;
      }
      return false;
   }

   @Override
   public void render(FieldRenderContext renderContext) throws IOException,
         ServletException, EvaluationException {
      try {
         Field field = renderContext.getField();
         UIContext uiContext = renderContext.getUIContext();
         Object value = renderContext.getFieldValue();
         JspWriter out = renderContext.getOut();
         String fieldName = field.getUnqualifiedFieldName();
         PageContext pageContext = renderContext.getPageContext();
         Locale locale = renderContext.getRequest().getLocale();

         // retrieve the application resource bundle
         final ResourceBundle bundle = ApplicationProperties.getBundle();
         // the name of the field, properly formatted for use as the name of an
            HTML String fieldName = FieldUtil.formatFieldName(field.getName());
         // get the localized label for the field (from one of the properties files)
         String label = FieldUtil.getLabel(field, uiContext, true);
         // if the current value isnt a String, dont use it
         String color = value instanceof String ? (String) value : "";
         // output the HTML for this component
         out.println("<div class=\"section\" style=\"padding:5px\">");
         out.println("<div id=\"colorPicker" + fieldName + "\" ></div>");
         out.println("<script type=\"text/javascript\">");
```

```
            out.println("function colorClicked(td) {");
            out.println(" var color = td.getAttribute(clr);");
            out.println(" elementById(\"" + fieldName + "\").value = color;");
            out.println(" elementById(\"colorBox" + fieldName + "\").style.background =
                color;");
            out.println("}");
            out.println("var colorCodes = [FF, CC, 99, 66, 33, 00]; ");
            out.println("var codeCount = colorCodes.length;");
            out.println("var html = \"<table>\";");
            out.println("for (var i = 0; i < codeCount; i++) {");
            out.println(" html += \"<tr>\";");
            out.println(" for (var j = 0; j < codeCount; j++) {");
            out.println(" for (var k = 0; k < codeCount; k++) {");
            out.println(" var color = \"#\" + colorCodes[i] + colorCodes[j] +
                colorCodes[k];");
            out.println(" html += \"<td style=cursor:default; background: "
                  + "\" + color + \" onclick=colorClicked(this)"
                  + " clr=\" + color + \">&nbsp;&nbsp;&nbsp;</td>\";");
            out.println(" }");
            out.println(" } ");
            out.println(" html += \"</tr>\";");
            out.println("}");
            out.println("html += \"</table>\";");
            out.println("elementById(\"colorPicker" + fieldName + "\").innerHTML = html;");
            out.println("</script>");
            out.println("<br/>");
            // output the required and error indicators
            HTMLUtil.writeFieldIndicators(fieldName, FieldUtil.isRequired(field, uiContext),
            false, // this field will never be confidential
                  RequestUtil.isFieldValueInvalid(fieldName, pageContext), locale, out);
            // output the label
            out.println("<span class=\"fieldlabel\">" + label + "</span>");
            // display the previously selected color
            String boxImgUrl = bundle.getString("application.colorbox.image");
            out.print("<img align=\"absmiddle\" src=\"" + boxImgUrl + "\" id=\"colorBox" +
                 fieldName + "\" style=\"background:" + color
                  + "; vertical-align: top;border: 0px solid black\" />" + "&nbsp;");
            // output an HTML input so that it will be submitted with the form
            out.println("<input id=\"" + fieldName + "\" type=\"text\" name=\"" + fieldName
                  + "\" value=\"" + color + "\" />");
            out.println("</div>");
         } catch (EvaluationException e) {
            log.error("Error rendering component.", e);
         } catch (JspException e) {
            // TODO Add your JSP catch errors here
            e.printStackTrace();
         }

      }
   }
```

2. Compile the Java file and place the resulting class somewhere in the application server's classpath.

3. Register the custom component in the screen definition file. Before the **`<screen>`** element, insert the **`<component>`** tag in the screen definition file. For example:

```
<component name="c_colorPicker"
qualified-class-name="com.sas.cpb.customComponents.ColorChooserComponent" />
```

Note: You must prefix the custom component names with “c_” to prevent naming conflicts with the Custom Page Builder standard components.

4. Reference the custom component in a **`<field>`** element. For example:

```
<field name="auxStr3" type="component" component-name="c_colorPicker">
<label>Choose a color</label>
</field>
```

Custom Page Builder Components

A collection of built-in components is provided for SAS Enterprise Case Management. These components can be added to User Interface (UI) Definition XML files. UI Definition XML files are used to define the layout of fields for viewing or editing cases, incidents, and parties.

EFilingHistory Component

The EFilingHistory component is applicable to cases and is used to show a history of E-File reports that are associated with a case.

Table 6.2 *EFilingHistory Parameters*

Parameter Name	Description	Required/ Optional	Default	Value Type	Multiplicity
refTableName	The refTableName parameter is used to specify the name of the reference table that will be used to look up labels for report-type codes.	Optional	If this parameter is not set, then report-type codes will be shown instead of user-friendly labels.	String	1

The following example shows historical E-Filing reports created for a case:

Example Code 6.3 *Historical E-Filing Reports*

```
<field type="component" required="false"
    component-name="EFilingHistory">
    <param name="refTableName" value="'X_RT_SAR_FORM'" />
</field>
```

EFiling Component

The EFiling component is applicable to cases and is used to provide buttons for previewing and submitting an E-File report.

Table 6.3 *EFiling Parameters*

Parameter Name	Description	Required/ Optional	Default	Value Type	Multiplicity
submitEnabled	If the value of this parameter evaluates to true, then the submit button will be enabled. Otherwise, the submit button will be disabled.	Optional	If this parameter is not set, then the submit button will not be enabled.	Boolean	1
param	Multiple parameters with this name can be provided to allow parameters to be passed to the stored process that handles the E-Filing request. Each parameter value is a string in the following format: <FIELD_NAME> => <STORED_PROCESS_ PARAM_NAME> The FIELD_NAME part should be replaced with the name of some field on the form whose value will be sent to the stored process as the parameter with the name STORED_PROCESS_ PARAM_NAME. The format of this value can be roughly interpreted as follows: FIELD_NAME maps to STORED_PROCESS_ PARAM_NAME.	Optional	None	String	Unbounded

The following example shows Report and Submit Report buttons:

Example Code 6.4 *Report and Submit Report buttons*

```
<field type="component" required="false"
    component-name="EFiling">
   <!-- Pass the CASE.CASE_KEY to the stored process as "case_rk"
    parameter -->
   <param name="param" value="'CASE.CASE_RK => case_rk'" />

   <!-- Pass the CASE.X_SAR_FORM_CD to the stored process as "report_type"
    parameter -->
   <param name="param" value="'CASE.X_SAR_FORM_CD => report_type'" />

   <param name="submitEnabled" value="IsWorkableActivity('Submit SAR')" />
</field>
```

GenericEntityTable Component

The GenericEntityTable component is applicable to cases, incidents, and parties. It is used to show a user-defined table. If the field is not read-only, the user-defined table can be edited.

Table 6.4 *GenericEntityTable Parameters*

Parameter Name	**Description**	**Required/ Optional**	**Default**	**Value Type**	**Multiplicity**
objectName	The value of this parameter should be an expression that evaluates to CASE, INCIDENT, or PARTY. If the user-defined table is being used for a case screen, then CASE should be used. If the user-defined table is being used for an incident screen, then INCIDENT should be used. If the user-defined table is being used for a party screen, then PARTY should be used.	Required	If this parameter is not set, then the submit button will not be enabled.	Boolean	1
tableName	The name of the user-defined table (for example, X_ACCOUNT).	Required	None	String	1
dialogScreenId	The unique identifier of the screen element within the user interface definition that will be used to edit rows of this table.	Optional (required if table is editable)		String	1
dialogWidth	The width of the dialog box that will be shown when the user is editing or adding a row.	Optional		Integer	1
dialogHeight	The height of the dialog box that will be shown when the user is editing or adding a row.	Optional		Integer	1

Parameter Name	Description	Required/ Optional	Default	Value Type	Multiplicity
rowTypeDescription	The value of this parameter is used to provide labels for various user interface elements related to the table. For example, if the row type description is **Account**, then the user is presented with a button labeled **Add Account**. Similarly, the menu item for removing a row has the label **Remove Account**.	Optional	"Row"	String	1
headerTitlePrefix	If a header title prefix is provided, then header label properties will be retrieved using the following key: <headerTitlePrefix>field .<TABLE_NAME>. <FIELD_NAME>. header.txt.	Optional	If no header title prefix is provided, then header label properties will be retrieved using the following key: field.<TABLE _NAME>. <FIELD_ NAME>. header.txt The property key is always lower case.	String	1

Parameter Name	Description	Required/ Optional	Default	Value Type	Multiplicity
filter	This parameter is used to define a filter that will cause only a subset of the user-defined table rows to be shown. The value of the filter parameter should be an expression that evaluates to a string in the following format: <FIELD_NAME>= <VALUE> The FIELD_NAME must match a column in the user-defined table. If the field that corresponds to the given field name is a string, then filter should be similar to the following: SOME_FIELD = Some string. If the field that corresponds to the given field name is numeric, then filter should be similar to the following: SOME_FIELD = 1000. If the field that corresponds to the given field name is Boolean, then filter should be similar to the following: SOME_FIELD = true or SOME_FIELD = false.	Optional	If no filters are provided, then all rows of the user-defined table will be shown.	String	Unbounded
field	This parameter is used to define a column that will be shown in the user interface. The value of the field parameter should be an expression that evaluates to a string in the following format: <FIELD_NAME> [:FORMAT]. The FIELD_NAME must correspond to a field of the user-defined table. If a FORMAT is not provided, then the format will be inferred from the data type of the column.	Required	At least one field should be defined.	String	Unbounded

Parameter Name	Description	Required/ Optional	Default	Value Type	Multiplicity
maxRows	Number of rows allowed to be added to the table.	Optional	None	Integer	1

The following example shows a basic table of accounts:

Example Code 6.5 *Basic Table of Accounts*

```
<field type="component" required="false"
    component-name="GenericEntityTable">
    <param name="objectName" value="'CASE'" />
    <param name="tableName" value="'X_ACCOUNT'"/>
    <param name="dialogScreenId" value="'account'"/>
    <param name="rowTypeDescription" value="GetProperty
     ('rowTypeDescription.account.txt')" />
    <param name="field" value="'X_ACCOUNT_ID'"/>
    <param name="field" value="'X_CLOSED_FLG:boolean'"/>
</field>
```

The following example shows a filtered table that contains relationships for a suspect:

Example Code 6.6 *Filtered table — Suspect Relationships*

```
<field type="component" component-name="GenericEntityTable">

   <param name="objectName" value="'CASE'" />
   <param name="tableName" value="'X_SUSPECT_RELATION'" />
   <param name="dialogScreenId" value="'suspectRelationship'" />
   <param name="filter" value="'X_SUSPECT_RK=' + X_SUSPECT.X_SUSPECT_RK" />

   <!-- The description of the entity that a row represents (e.g. "Suspect")
   (optional) -->
   <param name="rowTypeDescription" value="'Relationship to Financial
    Institution'" />

   <!-- The dimensions of the popup dialog used to edit/view row (optional) -->
   <param name="dialogWidth" value="450" />
   <param name="dialogHeight" value="300" />

   <!-- fields/columns that will be shown in table -->
   <param name="field" value="'X_SUSPECT_RELATION_CD:X_RT_SUSPECT_RELATION'" />
   <param name="field" value="'X_SUSPECT_RELATION_OTHER_TXT'" />

</field>
```

CaseEventTable Component

The CaseEventTable component applies to cases and is used to show a table that contains all of the audit/historical events related to a case. There are no parameters for this component.

The following example shows a table that has historical events related to a case:

Example Code 6.7 *Historical Events Related to a Case*

```
<field type="component" component-name= "CaseEventTable" />
```

IncidentEventTable Component

The IncidentEventTable component applies to incidents and is used to show a table that contains all of the audit/historical events related to an incident. There are no parameters for this component.

The following example shows a table that has historical events related to an incident:

Example Code 6.8 *Historical Events Related to an Incident*

```
<field type="component" component-name= "IncidentEventTable" />
```

PartyEventTable Component

The PartyEventTable component applies to parties and is used to show a table that contains all of the audit/historical events related to a party. There are no parameters for this component.

The following example shows a table that has historical events related to party:

Example Code 6.9 *Historical Events Related to a Party.*

```
<field type="component" component-name= "PartyEventTable" />
```

IncidentCaseLink Component

The IncidentCaseLink component applies to incidents and is used to show the case ID of the case that is associated with an incident that is linked to the **View Case** dialog box. If an incident is not associated with a case, then the case ID field value is left blank. There are no parameters for this component.

The following example shows a link to a case from a dialog box that is displaying an incident:

Example Code 6.10 *Link To a Case*

```
<field type="component" component-name="IncidentCaseLink">
<label>
<message key="field.incident.case_id.label.txt" />
</label>
</field>
```

WorkflowActivities Component

The WorkflowActivities component applies to cases and is used to show a table of all workflow activities for a case. It enables you to change the status of a workflow activity.

Table 6.5 *WorkflowActivities Parameters*

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
recordsPerPage	This parameter is used to specify the number of records shown per table page	Optional	If this parameter is not set, then the default from the metadata server installation will be used.	An integer value that specifies the number of records per page.	Integer	1

The following example shows a table that displays workflow activities:

Example Code 6.11 *Workflow Activities Table*

```
<field type="component" component-name="WorkflowActivities"
 name="WorkflowActivities">
<param name="recordsPerPage" value="10"/>
</field>
```

CaseIncidentsTable Component

The CaseIncidentsTable component applies to cases and is used to show a table of all incidents associated with a case. It enables you to add or remove incidents to or from a case.

Table 6.6 *CaseIncidentsTable Parameters*

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
incident_type_table	This parameter is used to specify the name of your Incident Type reference table.	Required	If this parameter is not set, then incident type codes will be shown instead of user-friendly labels.	The name of your incident type table should be here in single quotes.	String	1

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
source_system_cd_ table	This parameter is used to specify the name of the Source System Code reference table.	Required	If this parameter is not set, then source system codes will be shown instead of user-friendly labels.	The name of your source system code table should be here in single quotes.	String	1
field	This parameter is recommended to display at least the Incident ID that you've associated with this case. It also will have a clickable link to allow for displaying associated incident details.	Optional (but recommended)	None	'INCIDENT _ID'	String	1
field	This parameter is used to define a column that will be shown in the user interface. The value of the field parameter should be an expression that evaluates to a string in the following format: <FIELD_NAME> [:FORMAT] The FIELD_NAME must correspond to a field of an incident. For a list of valid values for the FORMAT placeholder, see "Static Component Field Formatters" on page 140. If no FORMAT is provided, then the format will be inferred from the data type of the column.	Optional	None	The name of your field should be here in single quotes.	String	Unbounded

Note: Labels for the column headers will be retrieved using the following key: **`field.incident.<field>.header.txt`**. The property key is always all lower case.

The following example shows a table that displays incidents related to a case.

Example Code 6.12 *Incidents Related To A Case*

```
<field type="component" required="false"
component-name="CaseIncidentsTable"
name="CaseIncidentsTable">

<param name="incident_type_table" value="'RT_INCIDENT_TYPE'"/>
<param name="source_system_cd_table" value="'RT_SOURCE_SYSTEM'"/>
<param name="field" value="'INCIDENT_ID'"/>
<param name="field" value="'SOURCE_SYSTEM_CD:RT_SOURCE_SYSTEM'"/>
<param name="field" value="'INCIDENT_TYPE_CD:RT_INCIDENT_TYPE'"/>
<param name="field" value="'CREATE_DTTM:datetime'"/>
</field>
```

CasePartyTable Component

The CasePartyTable component applies to cases and is used to create, remove, and display all the relationships between parties and the current case. When you specify the database fields you'd like to see as parameters to the component, a table will be rendered when the page is displayed.

There are two steps when adding a party to a case:

1. Search and select the party you wish to associate with the case.
2. Select the relationship of the party to the case and enter a description.

Table 6.7 *CasePartyTable Parameters*

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
relationship_type _ table	This parameter is used to specify the name of the name of your Relationship Type reference table.	Required		The name of your Relation-ship Type table should be here in single quotes.	String	1
party_type_table	This parameter is used to specify the name of the name of your Party Type reference table.	Required		The name of your Party Type table should be here in single quotes. See example.	String	1
party_category_ table	This parameter is used to specify the name of your Party Category reference table.	Required		The name of your Party Category table should be here in single quotes.	String	1

Parameter Name	**Description**	**Required/ Optional**	**Default**	**Value**	**Value Type**	**Multiplicity**
field	This parameter is recommended to display at least the Party ID that you've associated with this case. It also will have a clickable link to allow for displaying associated party details.	Optional (but recommended)	None	'PARTY_ID'	String	1
field	This parameter is used to define a column that will be shown in the user interface. The value of the field parameter should be an expression that evaluates to a string in the following format: <FIELD_NAME> [:FORMAT] The FIELD_NAME must correspond to a field of a party. For a list of valid values for the FORMAT placeholder, see "Static Component Field Formatters" on page 140. If no FORMAT is provided, then the format will be inferred from the data type of the column.	Optional	None	The name of your field should be here in single quotes.	String	Unbounded
field	This parameter can be used to display the relationship to the case as selected previously. *Note:* The value is specific to this field.	Optional	None	TEMP. PARTY. RELATION-SHIP	String	1

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
field	This parameter can be used to display the relationship description to the case as selected previously. *Note:* The value is specific to this field.	Optional	None	TEMP. PARTY. RELATION-SHIP. DESCRIPTION	String	1

Note: Labels for the column headers will be retrieved using the following key: **`field.party.<field>.header.txt`**.

Note: The property key is always all lowercase.

The following example shows a table that displays parties related to a case

Example Code 6.13 *Parties Related To A Case*

```
<field type="component" required="false"
component-name="CasePartyTable"
          name="CasePartyTable">
<param name="relationship_type_table" value="'X_RT_RELATION_TYPE'"/>
      <param name="party_type_table" value="'RT_PARTY_TYPE'"/>
      <param name="party_category_table" value="'RT_PARTY_CATEGORY'"/>
      <param name="field" value="'PARTY_ID'" />
      <param name="field" value="'PARTY_FULL_NM'" />
      <param name="field" value="'SOURCE_SYSTEM_CD:RT_SOURCE_SYSTEM'"/>
      <param name="field" value="'PARTY_TYPE_CD:RT_PARTY_TYPE'"/>
      <param name="field" value="'INDIVIDUAL_FLG:X_RT_INDIVIDUAL_FLG'"/>
      <param name="field" value="'TEMP.PARTY.RELATIONSHIP'"/>
      <param name="field" value="'TEMP.PARTY.RELATIONSHIP.DESCRIPTION'"/>
      <param name="field" value="'CREATE_DTTM:datetime'"/>
</field>
```

IncidentPartyTable Component

The IncidentPartyTable component applies to incidents and is used to create, remove, and display all the relationships between parties and the current case. When you specify the database fields that you want to see as parameters to the component, a table is rendered when the page is displayed. There are two steps when adding a party to an incident:

1. Search and select the party you wish to associate with the incident.
2. Select the relationship of the party to the incident and enter a description.

Table 6.8 *IncidentPartyTable Parameters*

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
relationship_type _table	This parameter is used to specify the name of your Relationship Type reference table.	Required		The name of your Relationship Type table should be here in single quotes.	String	1
party_type_table	This parameter is used to specify the name of your Party Type reference table.	Required		The name of your Party Type table should be here in single quotes.	String	1
party_category_ table	This parameter is used to specify the name of your Party Category reference table.	Required		The name of your Party Category table should be here in single quotes.	String	1
field	This parameter is recommended to display at least the Party ID that you've associated with this case. It also will have a clickable link to allow for displaying associated party details.	Optional (but recommended)	None	PARTY_ID	String	1

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
field	This parameter is used to define a column that will be shown in the user interface. The value of the field parameter should be an expression that evaluates to a string in the following format: <FIELD_NAME> [:FORMAT] The FIELD_NAME must correspond to a field of a party. For a list of valid values for FORMAT placeholder, see "Static Component Field Formatters" on page 140. If a FORMAT is not provided, then the format will be inferred from the data type of the column.	Optional	None	The name of your field should be here in single quotes.	String	Unbounded
field	This parameter is used to display the relationship to the case as previously selected. *Note:* The value is specific to this field.	Optional	None	TEMP.PARTY. RELATION-SHIP	String	1
field	This parameter is also a field parameter but can be used to display the relationship description to the case as previously selected . *Note:* The value is specific to this field.	Optional	None	TEMP.PARTY. RELATION-SHIP. DESCRIPTION	String	1

Note: Labels for the column headers will be retrieved using the following key:
`field.party.<field>header.txt`

Note: The property key is always all lowercase.

The following example shows a table that displays parties related to incident:

Example Code 6.14 *Parties Related To Incident*

```
<field type="component" required="false"
component-name="IncidentPartyTable"
          name="IncidentPartyTable">
<param name="relationship_type_table" value="'X_RT_RELATION_TYPE'"/>
      <param name="party_type_table" value="'RT_PARTY_TYPE'"/>
      <param name="party_category_table" value="'RT_PARTY_CATEGORY'"/>
      <param name="field" value="'PARTY_ID'" />
      <param name="field" value="'PARTY_FULL_NM'" />
      <param name="field" value="'SOURCE_SYSTEM_CD:RT_SOURCE_SYSTEM'"/>
      <param name="field" value="'PARTY_TYPE_CD:RT_PARTY_TYPE'"/>
      <param name="field" value="'INDIVIDUAL_FLG:X_RT_INDIVIDUAL_FLG'"/>
      <param name="field" value="'TEMP.PARTY.RELATIONSHIP'"/>
      <param name="field" value="'TEMP.PARTY.RELATIONSHIP.DESCRIPTION'"/>
      <param name="field" value="'CREATE_DTTM:datetime'"/>
</field>
```

PartyEntitiesTable Component

The PartyEntitiesTable component applies to parties. It shows a table of all cases or incidents associated with a party.

Table 6.9 *PartyEntitiesTable Parameters*

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
tableName	This parameter is used to specify the type of your entity associated with this party you'd like to view.	Required	None	The name of your entity type should be here in single quotes.	String	1
field	This parameter is recommended to display at least the Case ID or Incident ID that you've associated with this party. Use the one that matches the entity type you're associating with.	Optional (but recommended)	None	'INCIDENT_ID' or 'CASE_ID'	String	1

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
field	This parameter is used to define a column that will be shown in the user interface. The value of the field parameter should be an expression that evaluates to a string in the following format: <FIELD_NAME> [FORMAT] The FIELD_NAME must correspond to a field of a case or incident (depending on the types of relationships being shown). For a list of valid values for the FORMAT placeholder, see "Static Component Field Formatters" on page 140. If no FORMAT is provided, then the format will be inferred from the data type of the column.	Optional	None	The name of your field should be here in single quotes.	String	Unbounded

Note: Labels for the column headers will be retrieved using the following key:
`field.case.<field>.header.txt or`
`field.incident.<field>.header.txt`

Note: The property key is always all lowercase.

The following example shows a table that displays incidents related to party:

Example Code 6.15 *Incidents Related To Party*

```
<field type="component" required="false"
component-name="PartyEntitiesTable">
<param name="tableName" value="'INCIDENT'" />
<param name="field" value="'INCIDENT_ID'" />
<param name="field" value="'SOURCE_SYSTEM_CD:RT_SOURCE_SYSTEM'"/>
<param name="field" value="'INCIDENT_TYPE_CD:RT_INCIDENT_TYPE'"/>
<param name="field" value="'INCIDENT_DESC'"/>
<param name="field" value="'INCIDENT_FROM_DT:date'"/>
```

```
<param name="field" value="'CREATE_DTTM:datetime'"/>
</field>
```

The following example shows a table that displays cases related to party:

Example Code 6.16 *Cases Related To Party*

```
<field type="component" required="false"
component-name="PartyEntitiesTable">
<param name="tableName" value="'CASE'" />
<param name="field" value="'CASE_ID'" />
<param name="field" value="'CASE_TYPE_CD:RT_CASE_TYPE'"/>
<param name="field" value="'CASE_CATEGORY_CD:RT_CASE_CATEGORY'"/>
<param name="field" value="'CASE_DESC'"/>
<param name="field" value="'CREATE_DTTM:datetime'"/>
<param name="field" value="'INVESTIGATOR_USER_ID:user_name'"/>
<param name="field" value="'CASE_STATUS_CD:RT_CASE_STATUS'"/>
<param name="field" value="'PRIORITY_CD:X_RT_PRIORITY'"/>
</field>
```

LinkedCases Component

The LinkedCases component applies to cases and shows a table of all cases linked to a case. It enables you to either add or remove case links to a case.

Table 6.10 *LinkedCases Parameters*

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
case_status_table	This parameter is used to specify the name of your Case Status reference table	Required	If this parameter is not set then case status codes will be shown instead of user-friendly labels.	The name of your case status table should be here in single quotes.	String	1
case_type_table	This parameter is used to specify the name of the Case Type Code reference table.	Required	If this parameter is not set, then case type codes will be shown instead of user-friendly labels.	The name of your Case Type Code table should be here in single quotes.	String	1

Parameter Name	Description	Required/ Optional	Default	Value	Value Type	Multiplicity
field	This parameter is recommended to display at least the Case ID that you've associated with this case. It also will have a clickable link to allow for displaying associated case details.	Optional (but recommended)	None	CASE_I D	String	1
field	This parameter is used to define a column that will be shown in the user interface. The value of the field parameter should be an expression that evaluates to a string in the following format: <FIELD_NAME> [:FORMAT]. The FIELD_NAME must correspond to a field of a case. For a list of valid values for FORMAT placeholder, see "Static Component Field Formatters" on page 140. If a FORMAT is not provided, then the format will be inferred from the data type of the column.	Optional	None	The name of your field should be here in single quotes.	String	Unbounded

Note: Labels for the column headers will be retrieved using the following key: **`field.case.<field>.header.txt.`**

Note: The property key is always all lowercase.

The following example shows a table that displays cases related to another case:

Example Code 6.17 *Cases Related To Another Case*

```
<field type="component" required="false"
      component-name="LinkedCases"
name="LinkedCases">
<param name="case_status_table" value="'RT_CASE_STATUS'"/>
<param name="case_type_table" value="'RT_CASE_TYPE'"/>
<param name="case_category_table" value="'RT_CASE_CATEGORY'"/>
<param name="field" value="'CASE_ID'" />
```

```
<param name="field" value="'CASE_TYPE_CD:RT_CASE_TYPE'"/>
<param name="field" value="'CASE_CATEGORY_CD:RT_CASE_CATEGORY'"/>
<param name="field" value="'CASE_DESC'"/>
<param name="field" value="'CREATE_DTTM:datetime'"/>
<param name="field" value="'INVESTIGATOR_USER_ID:user_name'"/>
<param name="field" value="'CASE_STATUS_CD:RT_CASE_STATUS'"/>
<param name="field" value="'PRIORITY_CD:X_RT_PRIORITY'"/>
</field>
```

Task List (ToDoListTable) Component

This component is available in the Case portion of SAS Enterprise Case Management. It allows users to keep track of task list items for investigating the case.

Component Name:
ToDoListTable

Applicable for:
Cases

Parameters:
None

Notes:
None

Example:
Table showing task listen items related to case.

```
<field type="component" required="false" component-name="ToDoListTable"
name="ToDoListTable">
</field>
```

FinancialItemsTable Component

This component applies to cases and incidents. It shows a table of financial items associated with a case and/or incident. It allows the user to add/remove financial items to/from a case and/or incident.

Table 6.11 *FinancialItemsTable Parameters*

Parameter Name	Description	Required/ Optional	Default	Value	Value Type
objectName	This parameter is used to determine which object the table will be referring to.	Required	If this parameter is not set then the component will not function propertly.	The value should always remain **`FINANCIAL_ITEM`**. It may not be used in future releases. See Example Code 6.18 on page 132.	String

Parameter Name	Description	Required/ Optional	Default	Value	Value Type
field	This parameter is recommended to display at least the Financial Item ID that you've associated with this item. It also will have a clickable link to allow for displaying associated financial item details.	Recommended	None	FINANCIAL_ITEM_ID	String
field	Additional field parameters are optional but are recommended to display the information you wish to view. *Note:* If a field you wish to view has a reference table associated with it or requires a formatter, you need to use the ":" notation to specify which reference table or formatter is desired.	Optional	None	The name of your field should be here in single quotes.	String

The following example shows the FinancialItemsTable component:

Example Code 6.18 *FinancialItemsTable*

```
<field type="component" component-name="FinancialItemsTable"
name="FinancialItemsTable">
<param name="objectName" value="'FINANCIAL_ITEM'" />
      <param name="field" value="'financial_item_id'" />
      <param name="field" value="'source_system_cd:RT_SOURCE_SYSTEM'" />
      <param name="field" value="'financial_item_type_cd:RT_FINANCIAL_ITEM_TYPE'" />
      <param name="field" value="'origin:message_key'" />
      <param name="field" value="'original_incident_id'" />
      <param name="field" value="'base_amt:currency'" />
      <param name="field" value="'include_in_summary_flg:checkbox'" />

      <on-change>
       <set-value name="CASE.X_SUMMARY_SA_AMT"
value="CASE.X_SUMMARY_SA_AMT" /> *
       <set-value name="CASE.X_SUMMARY_EXP_AMT"
value="CASE.X_SUMMARY_EXP_AMT" />
```

```
       <set-value name="CASE.X_SUMMARY_PPREV_AMT"
value="CASE.X_SUMMARY_PPREV_AMT" />
       <set-value name="CASE.X_SUMMARY_PRCVRY_AMT"
value="CASE.X_SUMMARY_PRCVRY_AMT" />
       <set-value name="CASE.X_SUMMARY_INVEST_EXP_AMT"
value="CASE.X_SUMMARY_INVEST_EXP_AMT" />
       <set-value name="CASE.X_SUMMARY_IRCVRY_AMT"
value="CASE.X_SUMMARY_IRCVRY_AMT" />
       <set-value name="CASE.X_SUMMARY_LOSS_AMT"
value="CASE.X_SUMMARY_LOSS_AMT" />
       <set-value name="CASE.X_SUMMARY_STLMNT_AMT"
value="CASE.X_SUMMARY_STLMNT_AMT" />
       <set-value name="CASE.X_SUMMARY_RESTTN_AMT"
value="CASE.X_SUMMARY_RESTTN_AMT" />
       <set-value name="CASE.X_SUMMARY_NET_LOSS_AMT"
value="CASE.X_SUMMARY_NET_LOSS_AMT" />
       <set-value name="CASE.X_SUMMARY_TOTAL_RECOVERED_AMT"
value="CASE.X_SUMMARY_TOTAL_RECOVERED_AMT" />
      </on-change>
</field>
```

The previous **`<on-change>`** events should have corresponding fields associated with the calculated values you wish to display on the screen. These fields are recommended to be read-only unless you wish to override the calculated values retrieved from the stored process.

Example Code 6.19 *ReadOnly*

```
    <field name="CASE.X_SUMMARY_SA_AMT" type="readonly" required="true">
    <label>
       <message key="field.case.x_summary_sa_amt.label.txt" />
   <!-- This is the message label key here -->
   </label>
     </field>
```

These components and fields can be displayed within a tab, section, or by themselves in the UI-definition.

Note: If you are creating a case from an incident which doesn't have financial items displayed in the UI-definition (which does have financial items) and you check the **Auto Copy Financial Items** checkbox, the items will be copied to the case. However, your UI-definition will not display the items. This is because the items are not configured to display.

Note: See the Custom Page Builder uidefinition.dtd for more information.

Custom Action Component

The **`<action-group>`** element is rendered as a tool bar. It contains **`<action>`** elements. The **`<action>`** element allows you to provide links and buttons on a screen. For a list of the attributes that you can use with the **`<action>`** element, see “Valid XML Elements and Descriptions for User Interface Definitions” on page 80. The **`<action-group>`** element does not support attributes. You can nest **`<action>`** elements and conditional logic within **`<action-group>`** elements. You can nest the **`<action-group>`** element under **`<screen>`**, **`<section>`**, and **`<tab>`** elements.

Element	Description
<action-group>	A group of actions Attributes: None Child elements: Zero or more action elements

Element	**Description**
<action>	Attributes: URL specifies the landing URL after a submit. id (optional) specifies the ID field. sas-sso (optional) specifies a Boolean field that indicates whether to do SAS single sign-on automatically. output-destination (optional) specifies the output format, either "window" or "inline". The default is "window". A value of "window" specifies showing the result page in a pop-up window; A value of "inline" specifies no change in the structure of the current page, and no pop-up window. The output-destination could be a field replacement, javascript call. The value "ignore" specifies a server side trigger, with no UI change. trigger (optional) specifies the trigger action, The trigger action is currently labled as “support save”. fail-on-error failed (optional) specifies the Boolean field that enables you to decide whether to continue running other trigger actions if there is an error in the action execution. visible (optional) specifies whether the action is visible. enabled (optional) specifies whether the action is enabled. content-type (optional) specifies the response content type for a backend action. This attribute currently supports text and HTML.
	Child elements: • An optional **`<label>`** element. This element provides the screen label/title. • An optional **`<param>`** This element provides parameters for the URL. • An optional **`<url>`** element. This element is used if an attribute URL is not specified. It provides a more convenient way to specify a URL.

The following example demonstrates how to trigger the Save action on a screen.

Example Code 6.20 *Save Trigger*

```
<action-group>
  <action url="'http://yourserver.com:8080/SASStoredProcess/do'" sas-sso="true">

    <!-- Configure the behavior of the execution -->
    <param name="_action" value="'form,properties,execute,nobanner,newwindow'"/>

    <!-- Path to the stored process to execute -->
    <param name="_program" value="'/Samples/SAS Enterprise Case Management/
Stored Process/stored_process_name"/>

    <!-- All other parameters are used to initialize the prompts -->
    <param name="favoriteColor" value=""/>
  </action>

<!-- The Save action -->
  <action url="'http://www.google.com/search'" output-destination="inline"
trigger="save">
  <param name="q" value="'flower'"/>
  </action>
</action-group>
```

The following example demonstrates how to use a value from a drop-down list with a custom action.

Example Code 6.21 *Using a Value from a Drop-Down List with a Custom Action*

```
<field name="sourceSystemCd" type="dropdown" default="ECM"
visible="false"/>
  <action-group>
   <action url="'http://www.google.com/search'"enabled="true">
     <label>google search source system code</label>
     <param name="q"><eval>sourceSystemCd</eval></param>
  </action>
</action-group>
```

Identical Parties Component

The IdenticalPartiesTable component applies to parties. It shows a table of manually associated parties in the system. It is used to link parties that the user might come across, that might be referring to each other.

Parameter Name	Description	Required/ Optional	Default	Value	Value Type
party_type_table	This parameter is used to determine the reference table that the component should use to get the Party Type.	Required	None	This should be the value of your Party Type reference table.	String

Parameter Name	Description	Required/ Optional	Default	Value	Value Type
field	This parameter is recommended to display at least the Party ID that you've associated with this item. It also will have a clickable link to allow for displaying associated party details.	Recommended	None	'PARTY_ID'	String
field	Additional field parameters are optional but are recommended to display the information you wish to view. NOTE: If a field you wish to view has a reference table associated with it or requires a formatter, you need to use the ":" notation to specify which reference table or formatter is desired.	Optional	None	The name of your field should be here in single quotes.	String

whether to continue running other trigger actions if there is error in the action execution

The following code example contains the IdenticalPartiesTable component:

Example Code 6.22 *IdenticalPartiesTable component example*

```
<field type="component" required="false"
component-name="IdenticalPartiesTable" name="IdenticalParties">
<param name="party_type_table" value="'RT_PARTY_TYPE'"/>
<param name="field" value="'PARTY_ID'" />
<param name="field" value="'PARTY_FULL_NM'" />
<param name="field" value="'PARTY_TYPE_CD:RT_PARTY_TYPE'"/>
<param name="field" value="'SOURCE_SYSTEM_CD:RT_SOURCE_SYSTEM'"/>
<param name="field" value="'CREATE_DTTM:datetime'"/>
<param name="field" value="'NATIONAL_ID'"/>
</field>
```

Type-Ahead Component

The TypeAhead component applies to cases and incidents and shows a drop-down menu that shows data returned by a function based on what the user types in the field. There are static functions that can be used with this component that will provide a lookup into the Generic Data tables. See "User-Defined Generic Data Tables " on page 54 for more details.

Parameter Name	Description	Required/ Optional	Default	Value Type	Multiplicity
items	Function call that will return a json string that represents a com.sas.servlet.tbeans.menus.PopupMenu object	Required	None	Function	1
start-index	Defines the number of characters that trigger the start of the drop down menu.	Optional	3	Integer	1
field-type	Tells the field rendered by the TypeAhead component to act as a 'string' or a 'number'.	Optional	String	String	1

The following code example contains the TypeAhead component. The example shows branch data defined in the Generic Data tables.

Example Code 6.23 *TypeAhead component example*

```
<initialize>
   <set name="TEMP.DEFAULT_SAR_FORM_CD" value="'SARDI'" />

   <!-- Initialize CASE.X_SAR_FORM_CD to 'SARDI' if not set already  -->
   <set name="CASE.X_SAR_FORM_CD"
        value="If(Empty(CASE.X_SAR_FORM_CD), TEMP.DEFAULT_SAR_FORM_CD,
        CASE.X_SAR_FORM_CD)" />
   <set name="TEMP.IGNORE_OVERRIDE_ONCHANGE" value="true" />
</initialize>


…


<field name="CASE.X_BRANCH_ID" type="component" required="false"
  component-name="TypeAhead">
   <label>
      <message key="field.case.x.branch.id.label.txt" />
   </label>
   <param name="items">GetFilteredGenericDataTypeAheadItems('X_BRANCH',
    'X_BRANCH_ID', 'CASE.X_BRANCH_ID',
'CASE.X_BRANCH_RK', CreateQueryFilter('X_BRANCH', 'X_BRANCH_OPEN_DT',
 '&lt;=', CASE.CREATE_DTTM),
   CreateQueryFilter('X_BRANCH', 'X_BRANCH_CLOSE_DT', '&gt;=',
   CASE.CREATE_DTTM))</param>
   <param name="start-index" value="3" />
   <param name="field-type" value="'number'"/>
   <on-change>
      <!--
```

```
         ENTRY_KEY is a constant that indicates to use the RK field,
         which is part of the core data model and not a custom field.
      -->
      <set-value name="CASE.X_BRANCH_RK"
         value="GetFilteredGenericDataEntryValue('X_BRANCH', 'ENTRY_KEY',
                  CreateQueryFilter('X_BRANCH', 'X_BRANCH_ID', '=',
                  CASE.X_BRANCH_ID),
                  CreateQueryFilter('X_BRANCH', 'X_BRANCH_OPEN_DT',
                  '&lt;=', CASE.CREATE_DTTM),
                  CreateQueryFilter('X_BRANCH', 'X_BRANCH_CLOSE_DT',
                  '&gt;=', CASE.CREATE_DTTM)
               )" />
      <set-value name="CASE.X_BRANCH_ADDRESS_TXT"
         value="If(TEMP.IGNORE_OVERRIDE_ONCHANGE,
                  CASE.X_BRANCH_ADDRESS_TXT,
                  GetGenericDataEntryValue('X_BRANCH', 'X_BRANCH_ADDRESS_TXT',
                  CASE.X_BRANCH_RK)
               )" />
      <set-value name="CASE.X_BRANCH_CITY_NM"
         value="If(TEMP.IGNORE_OVERRIDE_ONCHANGE,
                  CASE.X_BRANCH_CITY_NM,
                  GetGenericDataEntryValue('X_BRANCH', 'X_BRANCH_CITY_NM',
                  CASE.X_BRANCH_RK)
               )" />
      <set-value name="CASE.X_BRANCH_STATE_CD"
         value="If(TEMP.IGNORE_OVERRIDE_ONCHANGE,
                  CASE.X_BRANCH_STATE_CD,
                  GetGenericDataEntryValue('X_BRANCH', 'X_BRANCH_STATE_CD',
                  CASE.X_BRANCH_RK)
               )" />
      <set-value name="CASE.X_BRANCH_ZIP_CD"
         value="If(TEMP.IGNORE_OVERRIDE_ONCHANGE,
                  CASE.X_BRANCH_ZIP_CD,
                  GetGenericDataEntryValue('X_BRANCH', 'X_BRANCH_ZIP_CD',
                  CASE.X_BRANCH_RK)
               )" />
      <set-value name="CASE.X_BRANCH_ZIP4_CD"
         value="If(TEMP.IGNORE_OVERRIDE_ONCHANGE,
                  CASE.X_BRANCH_ZIP4_CD,
                  GetGenericDataEntryValue('X_BRANCH', 'X_BRANCH_ZIP4_CD',
                  CASE.X_BRANCH_RK)
               )" />
      <set-value name="CASE.X_BRANCH_COUNTRY_CD"
         value="If(TEMP.IGNORE_OVERRIDE_ONCHANGE,
                  CASE.X_BRANCH_COUNTRY_CD,
                  GetGenericDataEntryValue('X_BRANCH', 'X_BRANCH_COUNTRY_CD',
                  CASE.X_BRANCH_RK)
               )" />
      <set-value name="TEMP.IGNORE_OVERRIDE_ONCHANGE" value="false" />
   </on-change>
</field>

…

<finalize>
```

```
    <set name="TEMP.IGNORE_OVERRIDE_ONCHANGE" value="true" />
</finalize>
```

Note: The TypeAhead component can be configured to change associated fields based on what is selected. If for any reason you wish for a certain field's value not to be overwritten, you can use the TEMP.IGNORE_OVERRIDE_ONCHANGE variable. This can be initialized and used to in conjunction with the If function to ignore overrides on an on-change event. Review the preceeding sample for usage.

Static Component Field Formatters

The term "field" within the context of a Custom Page Builder component is different from a stand-alone field. Only a field within a static component can currently use formatters. Stand-alone "field" types cannot use formatters as defined in this section. This will be supported in a future release. See "Custom Page Builder Components" on page 113 for information on static components.

In cases where you can specify a formatter, the following names can be used:

- boolean
- checkbox (read only view)
- currency
- date
- datetime
- decimal
- generic
- hyperlink
- integer
- party
- user_name
- any valid reference table name (for example: X_RT_PRIORITY)

Chapter 7
SAR Reports and E-filing

SAR Reports

The U.S. Department of the Treasury and specifically the Financial Crimes Enforcement Network require financial institutions to report suspicious activity with a Suspicious Activity Report (SAR). To create a SAR and have the ability to submit it for e-filing, the user interface definition must have the e-filing component defined. This component renders a preview button that can be used to preview the regulatory report and a submit button that can be used to submit the regulatory report. SAS Enterprise Case Management is delivered with the capability to produce the Suspicious Activity Report by Depository Institutions (SAR-DI). The SAR-DI is a variation of the SAR. Other variations of the SAR exist for other types of financial entities such as Money Service Businesses (SAR-MSB) and Securities and Futures Industry (SAR-SF). The SAR-DI is configurable to allow for the addition of other regulatory reports. This section describes the steps that a user must follow in order to produce a complete SAR-DI and e-file that report.

E-filing Process

The following sequence describes the typical e-filing process.

1. Create a case. The e-filing process begins with creating a case. The case to be e-filed must be configured to use a user interface definition that contains the e-filing

component and, optionally, the EFilingHistory component. Furthermore, the case should be configured to collect data that will eventually be transferred to the e-file. This is accomplished by defining any necessary user-defined fields and adding the necessary field elements to the case UI definition file.

Note: See "Configuring the Case UI Definition " on page 144 for more information.

2. Collect data for the case. During the case workflow, one or more individuals has the opportunity to add data to the case. Based on how the e-filing process is configured, a subset of the fields related to a case is transferred to the eventual e-file. The fields for collecting e-file data might be grouped together (such as in a tab or section) or they might be spread throughout the page. Placement on the page is determined by the designer of the UI definition. For example, in the case of collecting a data for a Suspicious Activity Report (SAR), all of the fields needed for the SAR might be placed in a tab labeled **SAR**.

3. Preview the report. At any point during the collection of data for a case, you can preview the e-file report by clicking **Preview Report**. This capability is provided by the e-filing component. When **Preview Report** is clicked, a window appears that contains the preview. You can then close the preview window.

4. Submit the report. Depending on how the case UI definition is configured, the **Submit Report** button might be available. This button is conditionally enabled and disabled. A typical configuration enables this button only when the case is in a workflow activity designated for submitting the e-file report. When **Submit Report** is clicked, a window appears that contains the preview. You should then review the content. If the content is acceptable, select **OK**. This will submit the report. If there are errors in the generated preview, then select **Cancel**. The built-in support for e-filing provided by SAS Enterprise Case Management places the submitted report in a queue. This queue contains all submitted reports that need to be batch processed into a single e-file. A scheduled job then reads all submitted reports in this queue and batch processes them into e-files based on each report type.

5. Generate a batch e-file. The process of creating batch e-files is done via another SAS program that should be configured to run as a scheduled job. For example, this SAS program should run daily and create batch e-files for all reports submitted that day. For SAR-DI, only the first four accounts are shown on the SAR.

6. View a historical report. After a report has been submitted for e-filing, it might be necessary to view the report or check the status. For this purpose, SAS Enterprise Case Management provides a component named EFilingHistory that should be added to a case UI definition file. The EFilingHistory component has a table with the following columns:

Column	Description
View	This function serves as a link to view the previously submitted report.
Date Report Submitted	This column is used to display the date and time when the report was submitted to be e-filed. Values in this column also serve as a link to view the previously submitted report.
Report Type	This column shows the type of report. For example, this type might be the name of the form as used by the regulatory or government agency that collects the e-file.

Column	Description
E-filing Status	This column used to display the e-filing status. Possible values include *pending* and *submitted*. The *pending* status indicates that the report has been requested for e-filing but has not been placed in a batch e-file. The *submitted* status indicates that the report has been placed in a batch e-file.
Report File Name	If the status of the report is *submitted*, then this column will contain the name of the batch e-file that contains the report

Configuring E-filing

Configuring e-filing involves the following steps:

1. Configure user-defined fields. Define any custom fields for cases, incidents, and subjects that will be necessary to collect data for e-filing
2. Configure the case UI definition. Add the required e-filing component and any custom and static fields to the applicable user interface definition files so that data for these fields will be collected by the user. Optionally, add the EFilingHistory component if the user should be able to view historical reports.
3. Configure the e-filing workflow. If e-filing will be bound to the case workflow, then it will be necessary to configure the e-filing component to be aware of the current workflow activity.
4. Configure the e-filing field mappings. The SAS program responsible for initializing the variables that map fields in SAS Enterprise Case Management to e-file report fields can be modified to meet the requirements of the report.
5. Configure static e-filing field values. The SAS program responsible for initializing static variables for a report type can be modified to meet the requirements of the report.
6. Configure the report preview. The SAS macro responsible for generating the HTML can be modified to meet the requirements of the report.
7. Configure the report submission. The SAS macro responsible for submitting the report to be e-filed can be modified to meet the requirements of the report.
8. Configure the viewing of historical reports. The SAS macro responsible for generating the HTML to view the historical report can be modified to meet the requirements of the report.

Configuring User-Defined Fields

To collect data for the eventual e-file, fields must be defined that will capture this data. For example, if "total amount" is a field that will be needed for the e-file, then it might be necessary to define a custom field named X_TOTAL_AMT that is applicable to cases. This custom field should then be added to the UI definition. See "Configuring the Case UI Definition " on page 144.

After the custom field is defined and added to the UI definition, values collected for this field will be stored with the case. Any static or custom field value that is persisted to the database will be available to the SAS program that handles generating the report preview and the SAS program that handles submitting the report. Refer to **`<SASROOT>\casemgmtva\sasmisc\sample\config\load_fincen_sar_di_data.sas`** for sample SAR-DI custom fields and the lookup tables that are useful for the SAR-DI Case UI definition.

Configuring the Case UI Definition

Cases that can be e-filed must be configured to use a UI definition that contains an e-filing component. This e-filing component is used to display a **Preview Report** button and **Submit Report** button. The button for submitting a report can be conditionally enabled or disabled based on the evaluation of an expression. This is accomplished by adding a submitEnabled parameter to the e-filing field.

The following are examples of how to set the submitEnabled parameter:

Enabled or disabled based on workflow activity

```
<param name="submitEnabled" value="IsWorkableActivity('Submit SAR')" />
```

Always enabled

```
<param name="submitEnabled" value="true" />
```

Always disabled

```
<param name="submitEnabled" value="false" />
```

If the process of submitting a report is bound to a workflow, then this expression will typically contain a function call that checks to see if the case is at the correct point in the workflow. When the user clicks the **Preview Report** button, the stored process ecm_generate_sar_report is invoked. When the user clicks the **Submit Report** button, the stored process ecm_load_efile_data is invoked. These stored processes expect the following parameters:

case_rk
: contains the unique key of the case that is being previewed or submitted.

report_type
: contains the unique code that identifies the type of report being previewed or submitted.

The value of this parameter should only contain letters and numbers (no spaces or special characters). Any field on the form can be passed as a parameter to the ecm_generate_sar_report and ecm_load_efile_data stored process by adding **`<param>`** elements whose values are in the following format:

```
<param name="param" value="'FIELD_NAME => STORED_PROCESS_PARAM_NAME'" />
```

The FIELD_NAME placeholder should be substituted with the fully qualified name of a form field (e.g. CASE.CASE_KEY).The STORED_PROCESS_PARAM_NAME placeholder should be substituted with the name of the parameter as it will referenced in the SAS program that handles the request. These **`<param>`** elements basically map values associated with the case to SAS macro variables.

The following is an example of the e-filing component configuration:

```
<field type="component" required="false" component-name="e-filing">
<!-- Pass the CASE.CASE_KEY to the stored process as "case_rk" parameter -->
<param name="param" value="'CASE.CASE_RK => case_rk'" />
<!-- Pass the CASE.X_SAR_FORM_CD to the stored process as "report_type"
parameter -->
```

```
<param name="param" value="'CASE.X_SAR_FORM_CD => report_type'" />
<param name="submitEnabled" value="IsWorkableActivity('Submit SAR')" />
</field>
```

It is also recommended that the EFilingHistory component be added to the case UI definition as shown in the following example. This component is used to show the list of reports that have been submitted previously. Each value in the Report Type column is expected to be a code that corresponds to an entry in a reference table. The name of the reference table is identified by the value of the refTableName parameter.

The following is an example of the EFilingHistory component configuration:

```
<field type="component" required="false"
component-name="EFilingHistory">
<param name="refTableName" value="'X_RT_SAR_FORM'" />
</field>
```

Configuring the E-filing Workflow

If the ability to submit a case to be e-filed is bound to the case workflow, then the e-filing component's submitEnabled parameter should be an expression that contains a call to the IsWorkableActivity function. For example, the following expression can be used if the **Submit Report** button is only to be enabled if the case is in the "Submit SAR" workflow activity:

```
IsWorkableActivity('Submit SAR')
```

.

Configuring E-filing Field Mappings

Static and custom fields in SAS Enterprise Case Management must be mapped to fields of the e-file report. For this purpose a SAS program should be created to define these mappings. This program is responsible for initializing macro variables whose value is the name of a case field in SAS Enterprise Case Management. See the following mapping example:

```
/* Branch Code */
%let branch_cd=X_BRANCH_ID;
```

Upon making this mapping, the SAS programs that generate previews or load e-file data should refer to these macro variables when identifying fields related to the SAS Enterprise Case Management data model. These mappings should be defined in a file that corresponds to the report type. The name of the SAS program file should follow this convention:

```
ecm_udf_sar__<report_type>_vars.sas
```

This macro for SAR-DI is installed in the following locations:

Table 7.1 *SAR-DI Macro Location*

Platform	Location
Windows	**`<SASROOT>\casemgmtmva \ucmacros>`**
UNIX	**`<sasroot>/ucmacros/ casemgmtmva`**

If it is customized, it should be placed in the following directory:

`<SASCONFIGDIR>\config\Lev1\Applications \SASCaseManagementServerCfg\2.1\Source\ucmacros`

For example, if you are creating a new report of type *TEST*, then create a SAS program whose file name is ecm_udf_sar_test_vars.sas. This new SAS program will be responsible for initializing field mappings for reports of type *TEST*.

Configuring Static E-filing Field Values

There are certain fields (such as transmitter name) of the e-file report for which there is no corresponding field in the SAS Enterprise Case Management data model. These fields instead obtain their value from globally defined macro variables that are initialized prior to generating the report preview or submitting the report. These variables should be initialized in a SAS program whose file name follows this convention:

`ecm_static_institution__<report_type>_var.sas`

This file should be placed in the following directory:

`<SASCONFIGDIR>\config\Lev1\Applications \SASCaseManagementServerCfg\2.1\Source\ucmacros`

For example, if you are creating new report of type *TEST*, then create a SAS program whose file name is ecm_static_institution_test_vars.sas. This new SAS program will be responsible for initializing global macro variables for reports of type *TEST*.

Configuring the Report Preview

The following process is used to generate a report preview:

1. The user clicks the **Preview Report** button (provided by the e-filing component).
2. The SAS stored process ecm_generate_sar_report is invoked.
3. The SAS program ecm_generate_sar_report.sas is invoked with the following parameters:
   - case_rk: the unique key of the case
   - report_type: the report type
   - any additional parameters configured for the component

   This program is in the following directory:

   `{SASCONFIG}\config \Lev1\Applications \SASCaseManagementServerCfg\2.1\Source \sasstp`
4. The SAS macro ecm__<report_type>_generate_rpt is invoked, where <report_type> is replaced with the value of the report_type stored process parameter. This macro should be defined in a SAS program file by the same name in the following directory:

   `{SASCONFIGDIR}\config\Lev1\Applications \SASCaseManagementServerCfg\2.1\Source\ucmacros`

   SAS Enterprise Case Management ships with a sample implementation of the report that corresponds to the SARDI report type. The file ecm_sardi_generate_preview_rpt.sas in **`<SASROOT>\casemgmtmva\ucmacros`** is an example SAS macro that shows how to handle a new report type. For example, if you are creating new report of type *TEST*, then create a SAS program whose file name is ecm_test_generate_rpt.sas. This new SAS program will be responsible for generating previews for reports of type *TEST*.

Configuring Report Submission

The following process is used to submit a report:

1. The user clicks the **Submit Report** button (provided by the e-filing component).
2. The SAS stored process ecm_load_efile_data is invoked with the following parameters:
   - case_rk: the unique key of the case
   - report_type: the report type
   - any additional parameters configured for the component
3. The SAS program ecm_load_efile_data.sas is invoked. This program is in the following directory:

   ```
   {SASCONFIG}\config\Lev1\Applications
   \SASCaseManagementServerCfg\2.1\Source\sasstp
   ```
4. The SAS macro ecm_load_efile__<report_type>data is invoked, where <report_type> is replaced with the value of the report_type stored process parameter. This macro should be defined in a SAS program file by the same name in the following directory:

   ```
   {SASCONFIGDIR}\config\Lev1\Applications
   \SASCaseManagementServerCfg\2.1\Source\ucmacros
   ```

SAS Enterprise Case Management ships with a sample implementation of the report that corresponds to the SARDI report type. The file ecm_load_efile_sardi_data.sas should serve as an example in writing your own SAS macro to handle a new report type. For example, if you are creating new report of type *TEST*, then create a SAS program whose file name is ecm_load_efile_test_data.sas. This new SAS program will be responsible for submitting reports of type *TEST*.

Configuring Viewing of Historical Reports

The following process is used to view a historical report:

1. The EFilingHistory component is executed. The following steps describes what happens when the EFilingHistory component is executed:
   - The stored process ecm_efile_report_history is invoked with the case_rk parameter. This is the unique key of the case for which the report history is being shown.
   - The SAS program ecm_efile_report_history.sas is invoked. This program is in the following directory:

     ```
     <SASCONFIG>\config\Lev1\Applications
     \SASCaseManagementServerCfg\2.1\Source\sasstp .
     ```
   - The ecm_file_report_history stored process will return a response containing comma-separated values. Each line should have values for the following fields:
     - record_key: the unique record key
     - creation_dttm: the date/time when report was submitted

    - report_type: the report type code status: ('S' for submitted or 'P' for pending)
    - efile_name: the name of the batch e-file that contains the report
  - Each line containing the comma-separated values is shown as a row in a table in the user interface.

2. The user clicks a link to view the historical report. This historical report is associated with a report key and report type.
3. The SAS stored process ecm_generate_sar_report is invoked with the following parameters:

   report_key
   the unique key that identifies the historical report

   report_type
   the type of the historical report

4. The SAS program ecm_generate_sar_report.sas is invoked. This program is in the following directory:

   `<SASCONFIG>\config\Lev1\Applications \SASCaseManagementServerCfg\2.1\Source\sasstp`.

5. The SAS macro ecm__<report_type>_generate_rpt.sas is invoked, where <report_type> is replaced with the value of the report_type stored process parameter. This macro should be defined in a SAS program file by the same name in the following directory:

   `<SASCONFIGDIR>\config\Lev1\Applications \SASCaseManagementServerCfg\2.1\Source\ucmacros`.

   SAS Enterprise Case Management ships with a sample implementation of the report that corresponds to the SARDI report type. The file ecm_sardiSARDI_generate_rpt.sas, which is installed in **`<SASROOT> \casemgmtmva\ucmacros`**, should serve as an example in writing your own SAS macro to handle new report type. For example, if you are creating a new report of type *TEST*, then create a SAS program whose file name is ecm_test_historical_rpt.sas. This new SAS program will be responsible for generating views for historical reports of type *TEST*.

SAR-DI Report

As described in the previous sections, SAS Enterprise Case Management is highly configurable to support different SAR reports. Sample user-defined fields, case UI forms. SAR report macros, and SAR e-file macros are shipped in the solution. The following is the summary of the sample files for SAR-DI and how to use the UI interface.

SAR-DI Files

The following files are needed to process the SAR-DI:

File	Location
ecm_static_sardi_vars.sas	**`<sasconfg>\Lev1\Applications \SASCaseManagementServerCfg\2.2\Source\ucmacros\`**

File	Location
ecm_generate_batch_sardi_efile.sas	On Windows: **`<sasroot>\SASFoundation\9.2\casemgmtmva\ucmacros`** On UNIX: **`<sasroot>/SASFoundation/9.2/ucmacros/casemgmtmva`**
ecm_udf_sar_sardi_vars.sas	On Windows: **`<sasroot>\SASFoundation\9.2\casemgmtmva\ucmacros`** On UNIX: **`<sasroot>/SASFoundation/9.2/ucmacros/casemgmtmva`**
ecm_load_efile_sardi_data.sas	On Windows: **`<sasroot>\SASFoundation\9.2\casemgmtmva\ucmacros`** On UNIX: **`<sasroot>/SASFoundation/9.2/ucmacros/casemgmtmva`**
ecm_sardi_generate_rpt.sas	On Windows: **`<sasroot>\SASFoundation\9.2\casemgmtmva\ucmacros`** On UNIX: **`<sasroot>/SASFoundation/9.2/ucmacros/casemgmtmva`**
create_sar_di_report_mart_tables.sas	On Windows:**`<sasroot>\SASFoundation\9.2\casemgmtmva\sasmisc\sample\config`** On UNIX: **`<sasroot>/SASFoundation/9.2/misc/casemgmtmva/sample/config`**
load_fincen_sar_di_data.sas	**`<sasroot>\SASFoundation\9.2\casemgmtmva\sasmisc\sample\config`** On UNIX: **`<sasroot>/SASFoundation/9.2/misc/casemgmtmva/sample/config`**
case-fin-01.xml	**`<sasroot>\SASFoundation\9.2\casemgmtmva\sasmisc\sample\uidef`** On UNIX: **`<sasroot>/SASFoundation/9.2/misc/casemgmtmva/sample/uidef`**
CaseManagementFinancialFraud.xml	**`<sasroot>\SASFoundation\9.2\casemgmtmva\sasmisc\sample\workflow`** On UNIX: **`<sasroot>/SASFoundation/9.2/misc/casemgmtmva/sample/workflow`**

SAR-DI Case UI

SAS Enterprise Case Management is used to enter data into several objects required by the SAR-DI form. You should enter data for the following areas:

1. Use the **Case** tab to create a case. Link subjects to the case.
2. Use the **Subject** tab to add data about people or organizations who can become suspects for a case. When a subject becomes a suspect on a case, data from the subject object is

used to set Part II boxes on the SAR-DI form. When multiple suspects are linked to a case, the Part II section of the SAR-DI form is repeated multiple times.

3. In order for the SAR e-file to generate correctly, you must enter the correct naming information for a subject when adding or editing the subject information. When you are adding or editing a subject, you can enter the naming information on the **Subject Details** tab.
4. Depending on your subject, select either the **Person** or **Organization** button.
5. If a subject is a person, you must enter the first, middle, and last name for that person in the **First name**, **Middle name**, and **Last name** fields. You must complete all fields.
6. If a subject is an organization, you must enter the full organization name in the **Subject name** field.
7. Within the new case, use the **SAR** tab to enter all the non-static data for the SAR-DI form. On the **SAR** tab, financial institution, branch, and account data are used to set the values for boxes contained in Part I of the SAR-DI form. Also, the **SAR** tab is the screen where subjects are added as suspects. Data from the Add Suspects function is used to set the values for boxes contained in Part II of the SAR-DI form that were not populated from the subject object. Finally, on the **SAR** tab, data from the Suspicious Activity Information section is used to set the values for Part III of the SAR-DI form.

Defined in the sample case-fin-01.xml, institution and branch data is available in look-up tables. The topic "User-Defined Generic Data Tables " on page 54 in this document describes the definition of these tables. Only the financial institutions that were opened after the case creation date are available for selection. To see the list of institutions, always save the new case at least once. After an institution is selected, the branches of the selected institution will be available for selection. Due to the potential length of the branch list, case-fin-01.xml uses the type-ahead feature for branch selection. That means you can type the first few digits of the branch code to shorten the list of available branches.

Note: Only the first four accounts entered are used in the SAR report. Any additional accounts that may be entered are not included in the SAR report.

After entering data in all of the sections, follow these steps to see the online SAR-DI report:

1. Click **Save** on any screen in the **Case** tab
2. Click **Preview Report** on any screen in the **Case** tab.

Note: Only the first four accounts entered are used in the SAR report. Any additional accounts that might be entered are not included in the SAR report.

Note: If branch code is not entered, *000000* will be used for an E-file submission.

Note: For required fields with unknown data, use *XX*.

Historical SAR Reports

All pending and previously submitted SAR reports are available for viewing within each case. If a SAR has been submitted or previously e-filed, a history of this activity appears at the bottom of the case in the e-filing section of the case. You can click on the icon or **Date Report Submitted** to open up the case in the SAR-DI form. The historical SAR reports pull the case information from the report mart; therefore, the case being shown to the user is what the case looked like at the time it was submitted to the report mart.

SAR Report Mart

When you are satisfied with the case and SAR information, data from the static variable macro and other SAS Enterprise Case Management domain database objects needs to be moved to the SAS Enterprise Case Management report mart. The report mart comprises the area where data is collected before submission of the e-file. Also, the report mart maintains data from previously processed SAR submissions. Before a case can be moved into the report mart, the case must have a status of complete on most of the workflow status boxes.

The report mart SAS data sets are found at the following path: **`<SASCONFIGDIR>/lev1/Applications/SASCaseManagementServerCfg/2.2/Libraries/ecmreport`**. To see the report mart SAS data sets, open up a SAS interactive session and run the ecm_autoexec.sas programs. The report mart SAS data sets can be found in the ecm_rpt library. The ecm_autoexec.sas file can be found at the following path: **`<SASCONFIGDIR>/Lev1/Applications/SASCaseManagementServerCfg / 2.2/Source/control`**.

The report mart SAS data sets match the file and field definitions of the e-file layout specifications. Here is a list of the data sets:

Table 7.2 *Report Mart SAS Data Sets*

SAS Data Set Name	SAR Record Name & Record Type
Transmitter	Transmitter (1A)
Parent_institution	Parent Financial Institution (2A)
Branch	Financial Institution Branch (2B)
Suspicious_activity	Suspicious Activity (3A)
Suspect	Suspect Information (4A)
Explain_description	Information Explanation/Description (6A)
Branch_summary	Branch Summary (9A)
Parent_institution_summary	Parent Financial Institution Summary (9B)
File_summary	File Summary (9Z)

There is one additional table in the ecm_rpt library called efile_summary. The efile_summary table stores a list of all cases that have been e-filed, along with the date and time the case was e-filed, the name of the e-file the case was included in, and the e-file status. This table is primary used to show the e-file summary history for a case.

SAR-DI E-File

When you are ready to create and submit the SAR-DI e-file, the data from the report mart needs to be transformed into the required record types and stored in a sequential file. This macro is located in the following locations:

Platform	Directory Path

Windows	**`<sasroot>\SASFoundation \9.2\casemgmtmva\ucmacros`**
	or
	`<sasconfig>\Lev1\Applications \SASCaseManagementServerCfg \2.2\Source\ucmacros`

UNIX	**`<sasroot>/SASFoundation/9.2/ ucmacros/casemgmtmva for Unix`**
	or
	`<sasconfig>/Lev1/ Applications/ SASCaseManagementServerCfg/ 2.2/Source/ucmacros`

If there are additional SAR report types, the macro should be customized to call the additional ecm_generate_batch_<report_type>_efile macros. All e-files generated from the preceding macro are named according to the following file name convention: YYCCMMDD_HH_MM_SS_SARDI.efile. The e-file is created in the following path location:

`<\SAS\config\Lev>\Applications \SASCaseManagementServerCfg \2.1\Source\efiles`.

The SAR-DI form can be accessed from **`http://www.fincen.gov/forms/files/f9022-47_sar-di.pdf`**.

The SAR-DI e-file electronic filing requirements, layouts, and specifications can be accessed from **`http://www.fincen.gov/forms/files/efiling_SARDIspecs.pdf`**.

Chapter 8
Related Items

Related Items

Overview

In the SAS Enterprise Case Management Web application, the user can find cases and other incidents that are related to an unassigned incident. In SAS Enterprise Case Management 2.1, the criterion for relating cases was hardcoded. Cases were considered as related when the national IDs of the case's subject matched any of the national IDs of the unassigned incident's subjects. In SAS Enterprise Case Management 2.2, the matching criteria are expanded to match by subjects and incidents. The match criteria can be configured during the installation and configuration process for SAS Enterprise Case Management.

Related Items Process

The following steps show the process for creating and processing related items:

1. The SAS Enterprise Case Management administrator defines the matching criteria for a related item during installation and configuration.
2. The user logs on to the SAS Enterprise Case Management Web application and selects an unassigned incident to edit.
3. The user clicks the **related item** tab.
4. The SAS Enterprise Case Management Web application calls SAS stored process ecm_related_item_for_incident. The SAS stored process returns a list of related cases and incidents.
5. The SAS Enterprise Case Management Web application displays the result.
6. The user views the related case or incidents.
7. The user assigns a related case to the unassigned incident.

Configuring Match Criteria

The definition of related item match criteria is in ECM_DB.RELATED_ITEM_CONFIG. Below are columns for configuring related items:

Table 8.1 *Related Item Configuration Match Criteria*

Column	Description
RELATED_ITEM_RK	Unique key of the matching criterion.
RELATED_ITEM_ID	32-character field to name the matching criterion.
RELATED_ITEM_DESC	100-character fields to describe the matching criterion.
RELATED_PARTY_FIELD_NM	Name of the subject field that will be used to match the subjects. It can be any character field in PARTY_LIVE or defined in PARTY_UDF_DEF.
RELATED_INCIDENT_FIELD_NM	Name of the incident field that will be used to match the incidents. It can be any character field in INCIDENT_LIVE or defined in INCIDENT_UDF_DEF
RELATED_CASE_FIELD_NM	Name of the case field that will be used to match the cases. This field is not supported in SAS Enterprise Case Management 2.2.
CREATE_USER_ID	ID of the user who added this RELATED_ITEM_CONFIG record.
CREATE_DTTM	Date/time when this RELATED_ITEM_CONFIG record is added.
UPDATE_USER_ID	ID of the user who updated this RELATED_ITEM_CONFIG record.
DELETE_FLG	Flag indicating whether the record is active.

RELATED_ITEM_CONFIG contains one record with PARTY_RELATED_FIELD_NM='NATIONAL_ID'. That means cases and incidents that have subjects with the same national ID as the subjects associated with the unassigned incident are considered as related. Different match paths will be taken when one or more of the RELATED_FIELD are defined. The following table describes how different match paths are taken when PARTY_RELATED_FIELD_NM or INCIDENT_RELATED_FIELD_NM are specified.

Table 8.2 *Different Paths for Related Item*

Paths	Required Related Fields	Description
I-I_C	INCIDENT	1. Find related incident field values of the selected incident. 2. Return incidents with the same related incident field values. 3. Return associated cases of the related incidents.

Paths	Required Related Fields	Description
I _P-P_C or I_P-P_I	PARTY	1. Find subjects associated with the selected incident. 2. Find related party field values of the associated subjects. 3. Find all subjects with the same party field values. 4. Return incidents and cases associated with the related subjects.
I-P_I or I-P_C	INCIDENT and PARTY	1. Find related incident field values of the selected incident. 2. Find subjects with related subject field values matching related incident field values in step one. 3. Return all incidents and cases associated with the related subjects.
I_P-P_I-I or I_P-P_I-C	INCIDENT and PARTY	1. Find subjects associated with the selected incident. 2. Find related party field values of the associated parties. 3. Return incidents with the related incident field values matching related party field values in step two. 4. Return cases associated with the related incidents.

The '_' and '-' in the path represent direct association and indirect relationship respectively. I, P, and C in the path names are Incident, Subject, and Case. Multiple records can be defined in RELATED_ITEM_CONFIG. They are handled as an OR condition meaning the overall result is a union of the results from each criterion. The following examples show how you can configure a related item to define three match criteria.

Criterion 1: Subject full name match
Relate the subjects who have the same full name as any subject of the selected incident. The subject full name is the core field PARTY_FULL_NM in PARTY_LIVE.

Criterion 2: Account number of incident match
Relate all the incidents that contain transactions with the same account number as that of the selected incident. The account number is defined in INCIDENT_UDF_DEF as UDF_TABLE_NM=X_TRANSACTION and UDF_NM=X_TRANSACTION_ACCT_NO.

Criterion 3: Driver license number of incident and driver license number of subject match
Relate all the incidents that contain transactions with the same driver license number as that of the selected incident. Also relate all the subjects that contain the same driver license number as the driver license number of transactions of the selected incident. The subject driver license is defined in PARTY_UDF_DEF as UDF_TABLE_NM=PARTY and UDF_NM=X_DRIVER_LICENSE_ID. The driver license number of an incident is defined in INCIDENT_UDF_DEF as UDF_TABLE_NM=X_TRANSACTION and UDF_NM=X_TRANSACTION_DL.

The following table shows how the RELATED_ITEM_CONFIG might look:

Table 8.3 *RELATED_ITEM_CONFIG*

RELATED_ITEM_RK	RELATED_ITEM_ID	RELATED_ITEM_DESC	RELATED_PARTY_FIELD_NM	RELATED_INCIDENT_FIELD_NM
1	FULL_NAME	Subject full name	PARTY_FULL_NM	
2	ACCT_NO	Incident account number		X_TRANSACTION_ACCT_NO
3	DRIVER_LICENSE	Subject and incident driver license	X_DRIVER_LICENSE_ID	X_ACCOUNT_DL

Note that the UDF_TABLE_NM is not included in the definition. All UDF fields with the same UDF_NM will be used for matching. If that is not what you want, the field should be renamed.

Chapter 9
Financial Items

Financial Items

Overview

A financial item is a dollar amount associated with a financial item type. SAS Enterprise Case Management displays the list of financial items within a case or incident and aggregates these amounts into financial summaries. This chapter discusses the steps needed to configure SAS Enterprise Case Management to support this feature.

Defining Financial Item Types in a Reference Table

All financial items are classified by the financial item types. Only the financial items with the same financial item type can be aggregated from transactional level to case or incident level. Financial item type can also affect the UI used for data entry. Therefore it is critical that the right financial item types are defined up front.

Financial item types are specified in REF_TABLE_VALUE with REF_TABLE_VALUE=‘RT_FINANCIAL_ITEM_TYPE’. The program Load_post_install_data.sas provides an example for defining financial item type.

Defining the UDF for Financial Transactions

FINANCIAL_ITEM_* tables store the financial items at the transactional level. The core fields are included in FINANCIAL_ITEM_LIVE. New user-defined fields can be defined in FINANCIAL_ITEM_UDF_DEF.

Defining the UDF for Financial Summaries

Financial summaries aggregated from financial transactions should be stored with a case or an incident. Therefore the numeric user-defined fields specific for total financial amount should be defined in CASE_UDF_DEF and/or INCIDENT_UDF_DEF.

Adding a FinancialItemsTable Component to a Case or Incident User Interface

For adding the FinancialItemsTable component to a case and/or incident, see "FinancialItemsTable Component " on page 131.

Defining the Financial Items User Interface

Samples included with Enterprise Case Management include fi-gen-01.xml and fi-sa-01.xml. These are UI definitions that will be used when you are adding a financial item type to case or incident. The FINANCIAL_ITEM_CONFIG table needs to be configured for each financial item type you wish to add to the system. The fi-gen-01.xml sample is a generic sample that includes base information for each financial item that will be added to the database. You can choose to use the samples provided or configure your own files and associate them to the appropriate types. If you configure your own, you will need to make sure three steps are completed to be properly configured.

1. Enter the appropriate information in the FINANCIAL_ITEM_CONFIG table.
2. Enter the appropriate user-defined fields that will be referenced in the customized financial items UI definition type.
3. Enter the corresponding financial item types in the REF_TABLE_VALUE table.

Customizing a SAS Stored Process to Compute Financial Summaries

Financial summaries are computed by the ecm_financial_summary_calc stored process. The Web UI passes the financial transactions as an XML file to the stored process, and the stored process returns the summaries as name-value pairs. Ecm_financial_summary_calc handles mainly the input and output formatting. The actual computation is done in the %ECM_FIN_SUM_DRIVER macro. This macro first sums up all the numeric columns and creates a table with the total of each financial item type. It then calls the %ECM_FIN_SUM_CUSTOM macro for more complex computation.

To customize the computation, copy ecm_fin_sum_custom.sas from one of the following locations:

- **`<sasroot>\SASFoundation\9.2\casemgmtmva\ucmacros`** for Windows
- **`<sasroot>/SASFoundation/9.2/ucmacros/casemgmtmva`** for UNIX

Paste it to **`<sasconfig>/Lev1/Applications/SASCaseManagementServerCfg/2.2/Source/ucmacros`** with the same name. Then modify the section marked with 'Start custom code' and 'End custom code' in the new macro. All columns created in this macro will be passed back to the Web UI as name-value pairs. If the results are not populated properly on the screen, there might be a mismatch of column names in the macro and field names in the case/incident UI.

Chapter 10
Case Network Analysis

Case Network Analysis

Overview

The Case Network Analysis (CNA) graph provides a shallow analysis of the parties in the database, looking for parties that are related by the party demographic data such as national ID, name, birth dates, and addresses. The CNA component enables an investigator to identify a network of related parties and the cases and incidents that the parties have been involved in. The business motivation is to provide an investigator with a way of stepping back from an individual case and seeing broader patterns of behavior for a single party or a set of closely related parties.

The component enables users to choose a single party and generate a Case Network Analysis graph of that party. After the initial graph has been rendered, an investigator can dynamically explore the network of parties, cases, and incidents by expanding a node in the graph and "walking" to the other objects linked to that one. This chapter discusses the configuration process for the Case Network Analysis component as well as how to configure the link criteria of the graph and the data fields to be displayed in the graph. Finally, it discusses the logic behind the analysis.

Case Network Analysis Process

The following steps show the process for defining the CNA component:

1. The SAS Enterprise Case Management administrator defines the link criteria for Case Network Analysis.
2. The SAS Enterprise Case Management administrator defines the data fields to be displayed in the graph.
3. The user logs on to the SAS Enterprise Case Management Web application to access the CNA Web component. There are two ways to navigate to the CNA Web component:

- From the party list UI, get a list of parties. Click on the Show Action Menu icon of a party and select **Case Network Analysis** from the action menu.
- Navigate to the detail screen of any party and click the **Case Network Analysis** button on the top of the screen.

4. The CNA Web component passes the surrogate key of the party to the SAS stored process getSocialNetwork.
5. The SAS stored process getSocialNetwork references the link criteria defined in step 1 and returns a list of nodes and links to the CNA Web component. The list also contains the node attributes such as node label and tooltips. The label of the node is always the surrogate key of the case, incident, or party. The content of the tooltip is the concatenation of the data field values of the node. The list of the data fields is configurable and is discussed in "Configuring Displayed Data Fields " on page 162.
6. The CNA Web component displays a CNA graph with the resulting nodes and links. If the party of interest has no associated case, associated incident, or related parties, the screen remains empty.
7. If a CNA graph is displayed, the user can refer to the *SAS Enterprise Case Management: User's Guide* to dynamically explore the graph. As the user explores the CNA graph, there are two actions that will involve the SAS stored process to get more information from the database.

   Show details
   : On any node, the user can double-click or select **Detail** from the node drop-down menu. The CNA Web component passes the node ID and user ID to the SAS stored process getSocialNetworkNodeDetail. getSocialNetworkNodeDetail then returns the node details, based on the user permission and the node type. The CNA Web component renders the node details in name-value pairs. Root node details show up on the bottom pane and leaf node details show up on the right pane. The list of detail fields is configurable and is discussed in "Configuring Displayed Data Fields " on page 162.

   Expand the CNA graph
   : Users can expand the current CNA graph by selecting a non-root party to run a new Case Network Analysis. To do that, the user can click on the plus sign (+) of the new party of interest. The CNA Web component then passes the surrogate key of the new party to the SAS stored process growSocialNetworkNode. growSocialNetworkNode uses the same logic used by getSocialNetwork to return a list of nodes and links. The CNA Web component renders the results by attaching the new nodes and links to the existing CNA graph.

Configuring Link Criteria

There are two tables for configuring Case Network Analysis link criteria, SNA_CONFIG_MASTER and SNA_CONFIG_DETAIL. SNA_CONFIG_MASTER is the master table for configuring the Case Network Analysis link criteria. Parties are considered as linked when one or many of these criteria are met. SNA_CONFIG_DETAIL is the detail definition of SNA_CONFIG_MASTER. It contains one or many records of each SNA_CONFIG_MASTER record. A SNA_CONFIG_MASTER link criterion is considered as met when all of its associated SNA_CONFIG_DETAIL link criteria are met.

SNA_CONFIG_MASTER

- SNA_CONFIG_RK: unique key of the link criterion.
- SNA_CONFIG_ID: 32 character field to name the link criterion.

- SNA_CONFIG_DESC : 100 character fields to describe the link criterion.
- CREATE_USER_ID: ID of the user who added the SNA_CONFIG_MASTER record.
- CREATE_DTTM: date time when the SNA_CONFIG_MASTER record is added.
- UPDATE_USER_ID: ID of the user who updated the SNA_CONFIG_MASTER record.
- DELETE_FLG: flag indicating whether the record is active.

SNA_CONFIG_DETAIL

- SNA_CONFIG_RK: unique key of the each link criterion.
- SNA_CONFIG_SEQ_NO: secondary key to uniquely identify a SNA_CONFIG_DETAIL record.
- FROM_PARTY_FIELD_EXP: Expression to be used to define FROM_PARTY_FIELD_NM. If blank, FROM_PARTY_FIELD_NM will be used for linking parties.
- FROM_PARTY_FIELD_NM: name of the party field for linking parties. This is the 'link from' field.
- FROM_PARTY_TABLE_NM: name of the table where FROM_PARTY_FIELD_NM is found.
- TO_PARTY_FIELD_EXP: Expression to be used to define TO_PARTY_FIELD_NM. If blank, TO_PARTY_FIELD_NM will be used for linking parties.
- TO_PARTY_FIELD_NM: name of the party field for linking parties. This is the 'link to' field.
- TO_PARTY_TABLE_NM: name of the table where TO_PARTY_FIELD_NM is found.

The expression defined in FROM_PARTY_FIELD_EXP or TO_PARTY_FIELD_EXP has to be a valid SAS expression. If you have very complicated logic, you might consider using PROC FCMP to create some user-defined functions. In SAS Enterprise Case Management 2.2, there is one record in SNA_CONFIG_MASTER and two associated records in SNA_CONFIG_DETAIL. The definition is for linking the parties when both the NATIONAL_ID_TYPE_CD and NATIONAL_ID fields match. Additional definitions can be found in the following locations:

Platform	**Directory Path**
Windows	`<sasroot>\SASFoundation\9.2\casemgmtmva\sasmisc\sample\config\load_post_install_data.sas.`
UNIX	`<sasroot>/SASFoundation/9.2/misc/casemgmtmva/sample/config/load_post_install_data.sas.`

There are eight linking criteria defined in the sample.

Table 10.1 *Case Network Analysis Linking Criteria*

CNA Configuration ID	Matched fields	Description
P_ADDRESS	PARTY.X_PRIMARY_ADDRESS_1_TXT +PARTY.X_PRIMARY_ADDRESS_2_TXT, PARTY.X_PRIMARY_CITY_NM PARTY.X_PRIMARY_POSTAL_CD	Link by primary address. A SAS expression is used to concatenate two street address lines into one.
PASSPORT_ID	PARTY.X_PASSPORT_ID	Link by passport ID.
DRIVER_ID	PARTY.X_DRIVER_LICENSE_ID	Link by driver license ID.
HOME_PHONE	PARTY.X_HOME_PHONE_NO	Link by home phone number.
WORK_PHONE	PARTY.X_WORK_PHONE_NO	Link by work phone number.
CELL_PHONE	PARTY.X_CELL_PHONE_NO	Link by cell phone number.
EMAIL	X_PARTY_EMAIL.X_PARTY_EMAIL	Link by any e-mail addresses that party has.
L_NM_B_DT	PARTY.X_LAST_NM PARTY_X_BIRTH_DT	Link by party last name and birth date.

Configuring Displayed Data Fields

The SAS macro %ECM_SNA_GET_DETAIL_NODE_VARS defines the list of data fields to be used for CNA node tooltip and node details. Macro variables PARTY_TOOLTIP_VAR_LIST, INCIDENT_TOOLTIP_VAR_LIST, and CASE_TOOLTIP_VAR_LIST define the list of data fields to be included in the tooltip of party, incident, and case respectively. The tooltips fields are limited to the fields in the ECM_DB.<node type>_LIVE. Macro variables PARTY_VAR_LIST_FULL, INCIDENT_VAR_LIST_FULL, CASE_VAR_LIST_FULL, PARTY_VAR_LIST_SHORT, INCIDENT_VAR_LIST_SHORT, and CASE_VAR_LIST_SHORT define the list of data fields to be included in the **Detail** tab.

When the user has Write permission to the party, case, or incident record in the rest of the SAS Enterprise Case Management system, <node_type>_VAR_LIST_FULL is used. If the user has only Read permission, <node_type>_VAR_LIST_SHORT is used. Details on how the user group permissions work can be found in "Configurations" on page 56 under the "Case Configuration", "Incident Configuration", and "Party Configuration" subsections. The node detail fields are limited to the fields in <node type>_LIVE or user defined fields in ECM_DB.<node type >_UDF_DEF. UDF_TABLE_NM equals <node_type>. All field names must be separated by blanks in the macro.

Case Network Analysis Logic

%ECM_SNA_DRIVER is the driver program for obtaining the nodes and links of the CNA graph. The following process is used for the logic behind the analysis.

1. Include only the active link criteria in SNA_CONFIG_MASTER.

2. Include only the parties that are associated with one or more cases or incidents.
3. Transform the party data in step 2 into rectangle structure to include all core and UDF fields into one record.
4. Create views of the party data with derived fields defined in SNA_CONFIG_DETAIL.
5. For each active link criterion defined in SNA_CONFIG_MASTER, find the parties who are related to the root party by matching all data fields (that is, FROM_PARTY_FIELD_NM and TO_PARTY_FIELD_NM) defined in SNA_CONFIG_DETAIL.
6. Combine all the related parties found in step 5 to form the combined list of related parties.
7. Combine the list of associated cases of the related parties in step 6 with the list of associated cases of the related parties' associated incidents in step 6 to form the final list of case nodes.
8. Combine the list of the associated incidents of the cases in step 7 with the list of associated incidents of the related parties in step 5 to form the final list of incident nodes.
9. Obtain the list of associated parties of the cases and incidents in step 7 and 8 and add this list of associated parties to the related parties list in step 6 to form the final list of party nodes.
10. Construct the links of the nodes based on their relationships found in step 6,7,8, and 9.

Chapter 11
Report Mart

SAS Enterprise Case Management Report Mart

To facilitate user-defined columns and user-defined reference tables, much of the data for SAS Enterprise Case Management and configuration data is stored in “tall skinny” data tables. SAS Enterprise Case Management provides a facility to pivot “tall skinny” data tables into “short wide” data tables for easier reporting. The ECM_RPT library stores the normalized pivoted data. It also keeps the data that is specific for generating e-files in batch. The non-SAR related data tables in the ECM_RPT library can be created (or re-created) by running %ECM_REPORTING_DRIVER with ecm_autoexec.sas in the following locations:

Platform	Directory Path
Windows	`\SAS\Config\Lev1\Applications\SASCaseManagementServerCfg\2.2\Source\control`
UNIX	`/SAS/Config/Lev1/Applications/SASCaseManagementServerCfg/2.2/Source/control`

The tables in this library contain only the current revision of each record (no historical revisions). You can run the %ECM_REPORTING_DRIVER macro nightly or whenever you need to run reports against this library.

%ECM_REPORTING_DRIVER is the driver program for six major macro calls. Five of these macros are related to reporting pivot tables or views. Five calls are to create pivoted data tables for cases, parties, incidents, generic data, and financial items respectively. One call is for creating user-defined reference tables. There is also a PROC COPY call to copy all the ECM relationship tables from ECM_DB to ECM_RPT.

Note: The table names in the SELECT statement are required to be uppercase to facilitate the search of SQLServer tables.

Here is a summary of the derived tables in the ECM_RPT library that are generated by %ECM_PIVOT_DATATYPE and %ECM_PIVOT_REF.

Table 11.1 Derived Tables in the ECM_RPT library

Table	Description
CASE_PIVOT	This is a derived case table with user-defined columns added.
PARTY_PIVOT	This is a derived party table with user-defined columns added .
INCIDENT_PIVOT	This is a derived incident table with user-defined columns added.
FINANCIAL_ITEM_PIVOT	This is a derived financial item table with user-defined columns added.
CASE_X_PARTY	This is a direct copy of ECM_DB.CASE_X_PARTY.
CASE_X_USER_GROUP	This is a direct copy of ECM_DB.CASE_X_USER_GROUP.
INCIDENT_X_PARTY	This is a direct copy of ECM_DB.INCIDENT_X_PARTY.
INCIDENT_X_USER_GROUP	This is a direct copy of ECM_DB.INCIDENT_X_USER_GROUP.
PARTY_X_USER_GROUP	This is a direct copy of ECM_DEB.PARTY_X_USER_GROUP.
<C/I/P/G/F>_X_	These are derived tables for all user-defined columns that can have more than one value selected or specified. • C = case • I = incident • P = party • G = generic data • F = financial item For example, email addresses of subjects will be P_X_PARTY_EMAIL.

Table	Description
• X_RT_	These are derived tables for all user-defined reference tables, such as X_RT_ID_TYPE. Derived tables for all in-product reference tables including the following: • RT_CASE_CATEGORY • RT_CASE_STATUS • RT_CASE_TYPE • RT_PARTY_CATEGORY • RT_PARTY_TYPE • RT_INCIDENT_CATEGORY • RT_INCIDENT_TYPE • RT_SOURCE_SYSTEM

SAS has a limit of 32,767 characters for column width. Since the LNGVARCHAR UDF field can be longer than 32,767 characters, the pivot macro is reading the <data_object>_UDF_LGCHAR_VIEW instead of <data_object>_UDF_LGCHAR_VALUE to get the field values. In the view, the LNGVARCHAR UDF field is broken into two 32,727 fields and the field value column is called UDF_VALUE_1 and UDF_VALUE_2. In the resulting table, the field names are suffixed with '_1' and '_2'. For example, in the sample SAR UDF definition, there is a LNGVARCHAR field called X_ACTIVITY_DESC_LONG_TXT. It is broken into X_ACTIVITY_DESC_LONG_TXT_1 and X_ACTIVITY_DESC_LONG_TXT_2 in ECM_RPT.CASE_PIVOT table.

Chapter 12
Internationalization

Internationalization

Overview

The default language used in SAS Enterprise Case Management is English. This chapter discusses the processes related to configuring SAS Enterprise Case Management for use with other languages.

Specify the Database Character Encoding

Before you install SAS Enterprise Case Management, you must decide which database character encoding to use for your environment. Determining an appropriate encoding to use for your SAS Enterprise Case Management database is dependent upon the following:

- the languages that the application needs to support now.
- the languages that the application needs to support in the future.
- consideration of the performance implications associated with choosing a database character set. For example, a single-byte character set provides better performance when compared with multi-byte character sets. Single-byte character sets also tend to take up less space in your environment. However, they offer only restricted multilingual support.

The character set that you choose affects what kind of encoding scheme is used. For example:

Scenario 1
: If you need to support English, French, and Portuguese languages, then single-byte, 8-bit encoding schemes are appropriate because they define up to 256 characters and can often support a group of related languages. One example is the ISO 8859-1 character set, which supports many Western European languages. For Oracle databases, you could also use the WE8ISO8859P1 character set. When you use a character set that supports a group of languages, your database has restricted multilingual support.

Scenario 2
: If you need to support double-byte character languages (for example, Japanese, Chinese, or Korean), then you can use legacy ANSI-based double-byte character set (DBCS) encodings such as shift-jis, gbk, krc, or big5. By using these encodings, you can use one DBCS language and English (for example, Japanese and English).

Scenario 3
: If you need to accommodate data for multiple DBCS languages (for example, Japanese and Korean), or DBCS languages with European languages (for example, Chinese with French), or Western and Central European languages (for example, German and Polish), then you must use Unicode (UTF-8) encoding. If you are using an Oracle database, then you can also use the AL32UTF8 character set, which is based on the Unicode UTF-8 character set.

SAS Session Encoding Consideration and DBCS Support

If your database encoding supports multiple DBCS languages, then you must also use UTF-8 for the SAS session encoding. For example, if you use SAS to produce reports that contain data for multiple languages, then you must specify UTF-8 for the SAS session encoding. If you need to support one double-byte language and English, then you must also use a DBCS encoding for the SAS session encoding.

Although DBCS encoding is supported in SAS, SAS tables are still ASCII based. That means any column defined in SAS tables needs to be doubled in length. For example, if X_BRANCH_ADDRESS_TXT is defined as follows in ECM_DB.CASE_UDF_DEF, the field length of X_BRANCH_ADDRESS_TXT in SAS table should be 200.

```
 UDF_TABLE_NM='CASE'
UDF_NM= 'X_BRANCH_ADDRESS_TXT'
UDF_TYPE_NM= 'VARCHAR'
UDF_DESC= 'Branch address where activity occurred'
MAX_CHAR_CNT= 100
```

This requirement impacts the creation of the SAS Enterprise Case Management report mart and stored processes that process data in SAS tables. SAS Enterprise Case Management 2.2 does not handle this situation properly. As a result, data can be truncated in the ECM_RPT tables and in the Case Network Analysis node detail UI. To work around the limitation, the macros %ECM_PIVOT_CREATE_TABLE and %ECM_PIVOT_TRANSPOSE_UDF_BY_TYPE should be modified as shown below.

1. Make copies of ecm_pivot_create_table.sas and ecm_pivot_transpose_udf_by_type.sas and place them in **`/SAS/Config/Lev1/Applications/SASCaseManagementServerCfg/2.2/Source/ucmacros`**.
2. In the SAS file **`/SAS/Config/Lev1/Applications/SASCaseManagementServerCfg/2.2/`**

Source/ucmacros/ecm_pivot_create_table.sas, replace this section of code:

```
if max_char_cnt > 1 then sql=catx(' ',sql,'('||strip(put(max_char_cnt,best.))||')');
```

with the following code:

```
sql=catx(' ',sql,'('||strip(put(max_char_cnt*2,best.))||')');
```

3. In the SAS file **/SAS/Config/Lev1/Applications/SASCaseManagementServerCfg/2.2/Source/ucmacros/ecm_transpose_udf_by_type.sas**, replace this section of code:

```
&&&char_var_nm&k character(&&&char_var_len&k)
```

with the following code:

```
&&&char_var_nm&k character(%eval(&&&char_var_len&k*2))
```

Default Encoding for Databases Supported by SAS Enterprise Case Management

SAS Enterprise Case Management supports Oracle, PostgreSQL, and SQL Server databases.

- _ Oracle
- _ PostgreSQL
- _ SQLServer

Naming Conventions for Locales

When the translation of an object is loaded, the locale that is associated with that translation must follow the standard Java naming convention for locales. The naming convention for locales requires that the language code must be a lowercase two-letter code from the ISO 639 specification and that the country code must be an uppercase two-letter code from ISO 3166. For example, fr is the language code for French; en is the language code for English. For more information, see the following Web site: **http://java.sun.com/developer/technicalArticles/J2SE/locale.**

The macro variables locale_sas and locale_def in **/SAS/Config/Lev1/Applications/SASCaseManagementServerCfg/2.2/Source/control/ecm_autoexec.sas** are used to define the SAS session locale and the default locale when text in the SAS session locale is not available. These macro variables are initialized as follows:

```
%let locale_sas=%SYSFUNC(getpxlocale()) ;

  %let locale_default=%substr(&locale_sas,1,2);
```

If you want set the SAS session locale to German, you can change

```
'%let locale_sas=%SYSFUNC(getpxlocale()) ; '
```

into

```
' %let locale_sas=de_DE ;'
```

Create and Use Custom Translated Messages or Labels

All SAS macros and stored processes in SAS Enterprise Case Management make use of the SASMSG function to retrieve translated log messages and field labels based on the locale of the server. To localize these strings, you can use the %SMD2DS macro to add messages that can be used by the SASMSG function. Refer to the appendix for the syntax of %SMD2SD and SASMSG function.

Two message files are shipped in SAS Enterprise Case Management: entcm and ecmlbl. They are SAS tables created by %sMD2SD and located in **`<!sasroot>\casemgmtmva\sashelp`** on Windows and **`<!sasroot>/sashelp`** on UNIX. Sashelp.ecmlbl contains the labels of the SAS Enterprise Case Management core fields and sashelp.entcm contains all other messages and labels. Sashelp.ecmlbl is used by macros %ECM_PIVOT_CREATE_TABLE and %ECM_SNA_GET_NODE_DETAIL to generate the field labels of the report mart tables in ECM_RPT and the node detail in the Case Network Analysis component. The naming convention of the message key (KEY) is <table name>.<field name> and the maximum message key length is 60 characters. Sashelp.ecmlbl can be customized to change the existing core field labels, to add UDF labels, or to define core or UDF labels in different languages.

Follow these steps to create a site-specific sashelp.ecmlbl file.

1. Create a directory where the new message text files will reside (for example, **`C:\myECMsmd`**).
2. Invoke SAS Display Manager where SAS Enterprise Case Management is installed and run the following code to export sashelp.ecmlbl into a text file.

   ```
   data _null_;
           /* adjust the file path if necessary */
           file 'c:\myECMsmd\ecmlbl.smd';
           set sashelp.ecmlbl;
           where locale='en';
           put key '= ' text;
         run;
   ```

3. Make sure the output SMD file contains the key and text column values of all records in sashelp.ecmlbl with locale='en'.
4. For English labels, enhance ecmlbl.smd by adding more key and text name-value pairs or edit the existing text values.
5. To define labels for a different language, copy ecmlbl.smd to create a new SMD file called ecmlbl_<locale>.smd. For example, use ecmlbl_de.smd for German. Then edit the new SMD file.
6. To create a SAS message data set from the SMD file, first make sure that sashelp.ecmlbl is writable. Then run the following code in SAS Display Manager.

   ```
   libname ecmhelp '!sasroot\casemgmtmva\sashelp'; /*for windows */
        *libname ecmhelp '!sasroot/sashelp'; /* use this statement for unix */
        %SMD2DS(DIR=c:\myECMsmd, BASENAME=entlbl, lib=ecmhelp);
        %SMD2DS(DIR=c:\myECMsmd, BASENAME=entlbl, locale=de, lib=ecmhelp);
   ```

7. Check the content of sashelp.entlbl to make sure that correct labels are loaded for different locales.
8. To test, run the following code to get the German label of CASE_ID:

   ```
   Option locale=de;
   %put %sysfunc(sasmsg(&ecmlbl, CASE.CASE_ID, NOQUOTE)); /* replace
   ```

```
<table_name and case_name to the field of which the label has been changed,
 for example CASE.CASE_ID */
```

To set the locale of the ECM SAS server, change the value of the LOCALE_SAS macro variable to the desired locale in **\SAS\Config\Lev1\Applications \SASCaseManagementServerCfg\2.2\Source\control \ecm_autoexec.sas**.

For example,

```
%let locale_sas=DE; /* for German */
```

Restart the SAS Object Spawner to put this into effect.

Localizing Reference Tables

In SAS Enterprise Case Management 2.2, two additional tables and a view are added to support multiple languages:

REF_TABLE_TRANS
: holds the translations for all the codes in REF_TABLE_TRANS.

ECM_LOCALE
: holds the list of supported locales along with instructions for which locale to use if there is no translation for that locale.

FULL_REF_TABLE_TRANS is a view that corresponds to a cross product of the REF_TABLE_VALUE table and the ECM_LOCALE table. Each row would hold the proper translation for that supported locale. The following is an example of a SAS program to set the priority look-up table in German.

```
proc sql;

   insert into ecm_db.ecm_locale values ('de_CN','def');

   delete from ecm_db.ref_table_trans
   where ref_table_nm='X_RT_PRIORITY' and locale='de';


   insert into ecm_db.ref_table_trans values ('X_RT_PRIORITY', 'H', 'de', ' hoch');
   insert into ecm_db.ref_table_trans values ('X_RT_PRIORITY', 'M', 'de', ' mittler');
   insert into ecm_db.ref_table_trans values ('X_RT_PRIORITY', 'L', 'de',' niedrig');
```

Localizing Workflow Activities and Statuses

In SAS Enterprise Case Management 2.2, the names of workflow activities and statuses can be localized. The following steps show this process:

1. Save a localization key in the description of the workflow activity or status. The format for the description must be “key = <your translation key>”. For example, key = ecm.sample.workflow.status.open.txt.
2. Include translations for that key in the appropriate custom properties files and upload the modified custom properties file to the server. For example, ecm.sample.workflow.status.open.txt = Open

If a key is specified in the workflow. But no translation is found, the name of the activity or status will be used.

Chapter 13
Adding Custom SAS Code

Adding Custom SAS Code

Existing SAS macros can be overridden by adding a SAS macro program in **`<sasconfig>\source\ucmacros\`** with the same file name. You can also add a new macro and save it in the same location. Here are some tips for writing your own code.

1. The following statement should be added to the beginning of the program if it is not being called by any calling program.

   ```
   %inc '<SASCONFIG>/lev1/Applications/SASCaseManagementServerCfg/2.2/
   Source/control/ecm_autoexec.sas';
   ```

2. The %ECM_PIVOT_DATATYPE_SUBSET macro can be used to convert the ECM data from its native format into rectangular structure. For example, if you want to retrieve case records with all the core and UDF fields for CASE_TYPE='FIN' , you can use the following code:

   ```
   data case_subset;
   set ecm_db.case_live (keep=case_rk);
   where case_type='FIN';
   run;
   %ecm_pivot_datatype_subset(datatype=CASE,src_lib=ECM_DB,
   tgt_lib=WORK,subset_data_lib=work,
   subset_data_dsn=case_subset);
   ```

   The output tables are WORK.CASE_PIVOT for the case table and WORK.C_X_<UDF_TABLE_NM> for the case subtables. <UDF_TABLE_NM> is the name of the UDF_TABLE_NM defined in CASE_UDF_DEF. These tables contain only the most current data. Therefore <data_object_RK> without VALID_FROM_DTTM can be used to join the tables.

3. To place a generic data table in rectangular structure, use the following code:

   ```
   %let table_nm=X_BRANCH ;  /* specific generic table name */
   %ecm_pivot_datatype(datatype=GENERIC_DATA,in_lib=ECM_DB,
   out_lib=WORK, table_wh="&table_nm");
   ```

   The output table is WORK.G_X_BRANCH.

Chapter 14
Event Logging

Event Logging

Overview

SAS Enterprise Case Management enables you to log events for cases, incidents, and parties. The event logs provide a history of activities performed on cases, incidents and parties for audit purposes. All events include a timestamp when the event happened and the user who performed the event unless otherwise noted.This chapter describes the events that are logged within SAS Enterprise Case Management 2.2 for cases, incidents, and parties.

Currently Supported Events

All events include a timestamp when the event happened and the user who performed the event unless otherwise noted below.

Event Type	Event Description
Save Entity Event	A save event is logged when an entity is saved. The version number of the saved record is saved in the description column.
Load Entity Event	A load event is logged when an entity is loaded into the system from an ETL (Extract, Transform and Load) process or Web service call. For information on saving load events in an ETL process, see "Creating a Batch Load Event" on page 180.
Lock Case Event	A lock case event is logged when a user locks a case. The user who locked the case is saved in the description column.

Event Type	Event Description
Unlock Case Event	An unlock case event is logged when a user unlocks a case. The user who unlocked the case is saved in the description column.
Status Change Event	A status change event is logged when a user changes the status of a workflow activity from the Edit Case page. The original status and the new status are stored in the description column.
New Status Event	A new status event is logged when the status of a case has changed as a result of a change within the associated workflow. The Created By column is blank because these events are triggered from the associated workflow and might not necessarily be caused by a user action (for example, a status change could result from an expired timer). If the new status event immediately follows a status change event, you can deduce that the new status was caused by the status change user action.
Assign Owner Event	An assign owner event is logged when a case is assigned to a new owner. The user who now owns the case is saved in the description column.
Add Comment Event	An add comment event is logged when a comment is added to a case, incident, or party. The comment subject is saved in the description column.
Edit Comment Event	An edit comment event is logged when an existing comment has been edited. The comment subject is saved in the description column.
Delete Comment Event	A delete comment event is logged when a comment is deleted from a case, incident, or party. The comment subject is saved in the description column.
Add Attachment Event	An add attachment event is logged when an attachment is added to a case, incident, or party. The attachment file name is saved in the description column.
Delete Attachment Event	A delete attachment event is logged when an attachment is deleted from a case, incident, or party. The attachment file name is saved in the description column.
Add Incident Event	An add incident event is logged when an incident is added to a case. The key for the incident is saved with the event, and the ID and source system code of the incident is shown in the description.
Delete Incident Event	A delete incident event is logged when an incident is removed from a case. The key for the incident is saved with the event, and the ID and source system code of the incident is shown in the description.

Event Type	**Event Description**
Add Financial Item Event	An add financial item event is logged when a new financial item is added to an incident or a case. The key for the financial item is saved with the event, and the ID and the source system code of the financial item is shown in the description.
Edit Financial Item Event	An edit financial item event is logged when a financial item is modified. The key for the financial item is saved with the event, and the ID and the source system code of the financial item is shown in the description.
Delete Financial Item Event	A delete financial item event is logged when a financial item is removed from an incident or a case. The key for the financial item is saved with the event, and the ID and the source system code of the financial item is shown in the description.
Add Party Relationship Event	An add party relationship event is logged when a party is linked to an incident or case with a given relationship. The key for the party is saved with the event, and the ID and source system code of the party is shown in the description.
Remove Party Relationship Event	A remove party relationship event is logged when a party relationship is unlinked from an incident or case. The key for the party is saved with the event, and the ID and source system code of the party is shown in the description.
Add Linked Case Event	An add linked case event is logged when one or more cases are linked to a case. The key for the linked case is saved with the event, and the ID and source system code of the case is shown in the description.
Remove Linked Cases	A remove linked case event is logged when one or more linked cases are removed from a case. The key for the linked case is saved with the event, and the ID and source system code of the case is shown in the description.
Add Identical Party Event	An add identical party event is logged when one or more parties are identified as identical parties. The key for the identical party is saved with the event, and the ID and source system code of the party is shown in the description.
Remove Identical Party Event	A remove identical party event is logged when one or more parties are removed from an identical parties list. The key for the identical party is saved with the event, and the ID and source system code of the party is shown in the description.
Submit Regulatory Report Event	A submit regulatory report event is logged when a regulatory report is submitted from the Case Detail page by clicking the **Submit Report** button.

Creating a Batch Load Event

Load events are logged when a case, incident, or party is loaded into the system from an Extract, Transform and Load (ETL) process or Web service call. ETL processes must manually add this event when loading a case, incident,or party. The following SAS program provides an example of how to insert an ETL load event for a case.

```
/********** SETUP LIBNAME **********/
%let DB_SERVICE = …;
%let DB_SCHEMA = …;
%let DB_USER = …;
%let DB_PASSWORD = …;
libname ecm_db oracle
path="&DB_SERVICE" user="&DB_USER" password="&DB_PASSWORD" schema="&DB_SCHEMA";
/********** GET NEXT CASE KEY AND NEXT CASE EVENT KEY **********/
proc sql noprint;
connect to oracle (
path="&DB_SERVICE" user="&DB_USER" password="&DB_PASSWORD" connection=global);
select * into :CASE_KEY from connection to oracle
(select &DB_SCHEMA..case_rk_seq.nextval from dual);
select * into :CASE_EVENT_KEY from connection to oracle
(select &DB_SCHEMA..event_rk_seq.nextval from dual);
disconnect from oracle;
quit;
%let CASE_KEY = %trim(&CASE_KEY);
%let CASE_EVENT_KEY = %trim(&CASE_EVENT_KEY);
/********** GET CURRENT DATE/TIME **********/
%let CURRENT_DATETIME = %sysfunc(datetime(), datetime);
%let CURRENT_DATETIME_SQL = "&CURRENT_DATETIME"dt;
/********** INSERT CASE **********/
…
/********** COPY TO CASE_VERSION TABLE **********/
…
/********** INSERT USER DEFINED FIELD VALUES **********/
…
/********** INSERT GROUP PERMISSIONS **********/
…
/********** INSERT ETL CASE EVENT **********/
proc sql noprint;
insert into ecm_db.case_event values (
&CASE_EVENT_KEY,
&CASE_KEY,
'LOADEN',
'event.etl.load.txt',
null,
```

In the preceeding example, you use sequences to get the next record key (CASE_RK_SEQ, INCIDENT_RK_SEQ or PARTY_RK_SEQ) and event key (EVENT_RK_SEQ). LOADEN is the event-type code for load events. event.etl.load.txt is the resource bundle property key defined in AppResources.properties for the ETL load event description. Null is the user ID (you can load an actual user ID instead of null). The final value in the insert statement is the timestamp when the event took place. For Web service loads, the load event is automatically created if the source system of the loaded record is not SASECM.

Chapter 15
Additional Tasks

Case Routing Configurations for SAS Enterprise Case Management: Regional Manager Setup

This chapter describes how to configure SAS Enterprise Case Management to support routing the review capability of cases to regional managers, based on region.

Add the Region Case User-Defined Field

This field is used to store the region code.

```
insert into ecm_db.case_udf_def values (
   'CASE', 'X_REGION_CD', 'VARCHAR', 'Region code', 3);
```

Create the Region User-Defined Reference Table

This reference table contains all possible regions.

```
insert into ecm_db.ref_table_value values (
   'X_RT_REGION', 'N', 'North', null, null, 0);
insert into ecm_db.ref_table_value values (
   'X_RT_REGION', 'S', 'South', null, null, 0);
insert into ecm_db.ref_table_value values (
   'X_RT_REGION', 'E', 'East', null, null, 0);
```

```
insert into ecm_db.ref_table_value values (
   'X_RT_REGION', 'W', 'West', null, null, 0);
```

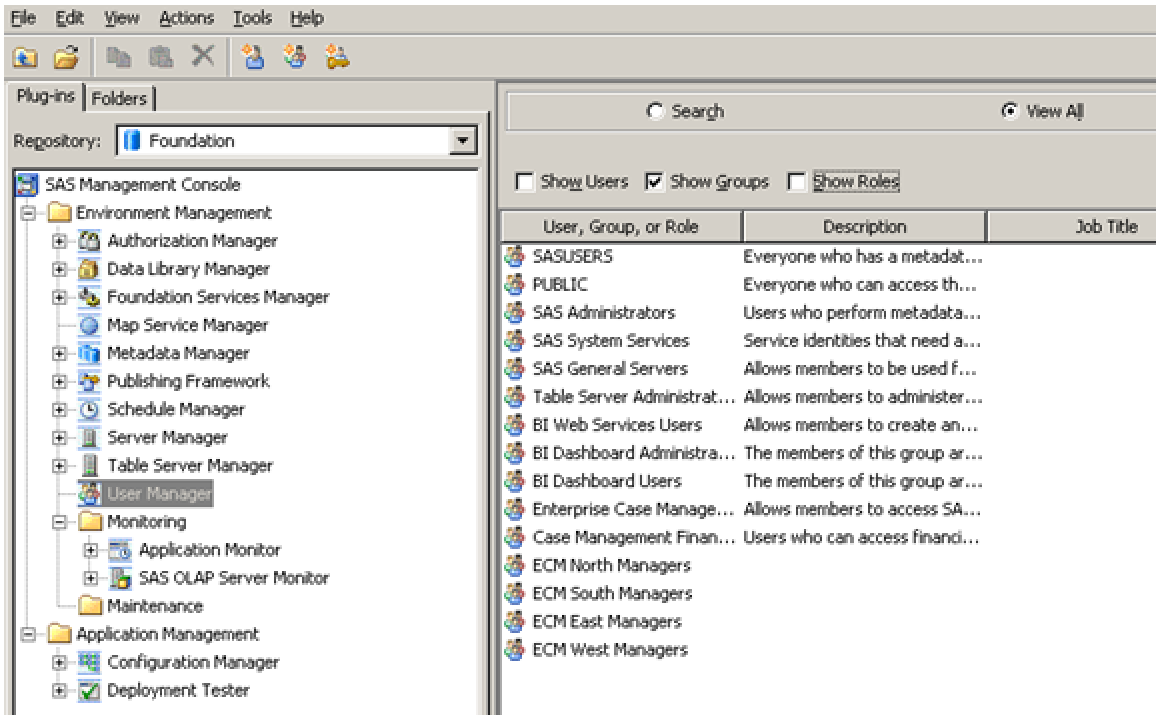
Create a Group in SAS Management Console for Each Region

Each group contains the managers assigned to that region. Here is a list of those managers:

- SAS Enterprise Case Management North managers
- SAS Enterprise Case Management South managers
- SAS Enterprise Case Management East managers
- SAS Enterprise Case Management West managers

In the following display, the previously listed groups were created to correspond to each region.

Display 15.1 *Create a Group – SAS Management Console*



User, Group, or Role	Description	Job Title
SASUSERS	Everyone who has a metadat…	
PUBLIC	Everyone who can access th…	
SAS Administrators	Users who perform metadata…	
SAS System Services	Service identities that need a…	
SAS General Servers	Allows members to be used f…	
Table Server Administrat…	Allows members to administer…	
BI Web Services Users	Allows members to create an…	
BI Dashboard Administra…	The members of this group ar…	
BI Dashboard Users	The members of this group ar…	
Enterprise Case Manage…	Allows members to access SA…	
Case Management Finan…	Users who can access financi…	
ECM North Managers		
ECM South Managers		
ECM East Managers		
ECM West Managers		

Create the Regional Manager Group Case User-Defined Field

This field is used to store the regional manager group name assigned to review the case. This field is derived from the region user-defined field.

```
insert into ecm_db.case_udf_def values (
   'CASE', 'X_MANAGER_GROUP_NM', 'VARCHAR', 'Manager group name', 60);
```

Add the Region User-Defined Field To the User Interface Definition

You can now prompt for the region on the Case Detail page by adding the following code to the case user interface definition.

```
<field name="CASE.X_REGION_CD" type="dropdown" required="true"
       values="GetLabelValues('X_RT_REGION')">
   <label>Region:</label>
</field>
```

Derive the Regional Manager Group Name from Region

The case user interface definition should be updated to derive the regional manager group name from region in the finalize section of the Case Detail page as follows:

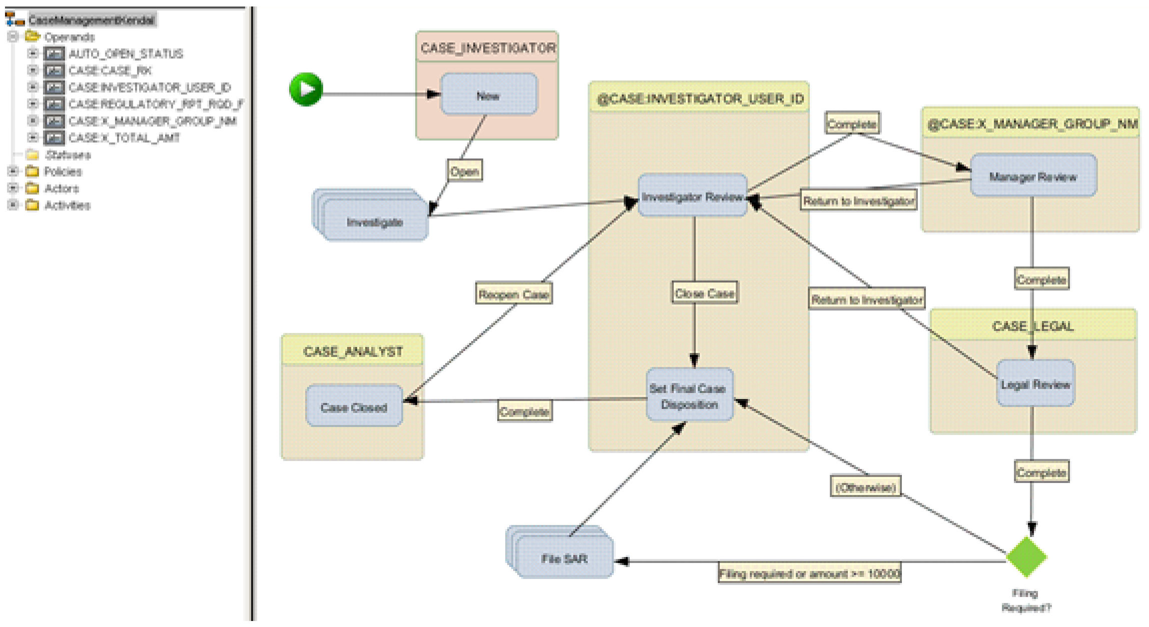
```
<finalize>
   <set name="CASE.X_MANAGER_GROUP_NM"
        value="if(CASE.X_REGION_CD = 'N', 'ECM North Managers',
                  CASE.X_MANAGER_GROUP_NM)"/>
   <set name="CASE.X_MANAGER_GROUP_NM"
        value="if(CASE.X_REGION_CD = 'S', 'ECM South Managers',
                  CASE.X_MANAGER_GROUP_NM)"/>
   <set name="CASE.X_MANAGER_GROUP_NM"
        value="if(CASE.X_REGION_CD = 'E', 'ECM East Managers',
                  CASE.X_MANAGER_GROUP_NM)"/>
   <set name="CASE.X_MANAGER_GROUP_NM"
        value="if(CASE.X_REGION_CD = 'W', 'ECM West Managers',
                  CASE.X_MANAGER_GROUP_NM)"/>
</finalize>
```

Whenever the case is saved, the regional manager group user-defined field is derived from the region.

Use the Regional Manager Group Field in the Workflow

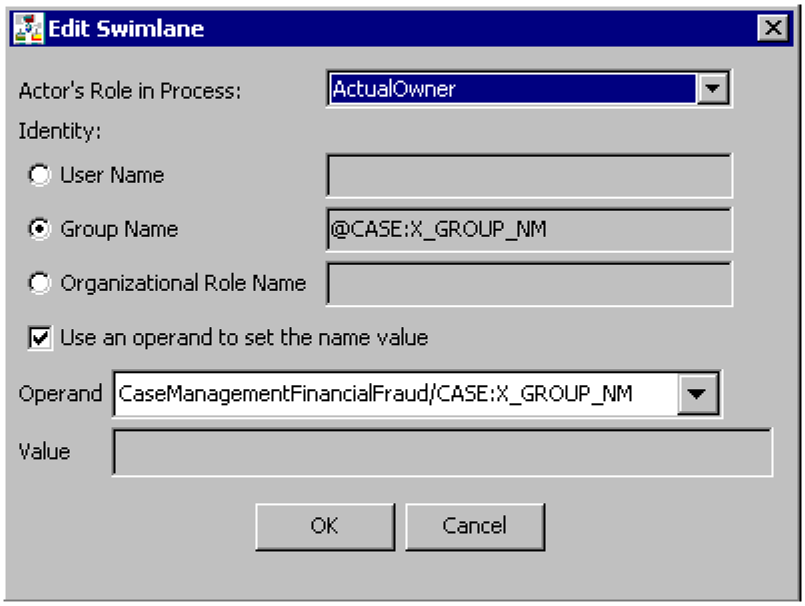
Add an operand for the regional manager group user-defined field (CASE__X_MANAGER_GROUP_NM) in SAS Workflow Studio. Use the value of this field as the actor (also known as swimlane) for the Manager Review activity. This allows the value of this field to determine which group can perform the Manager Review activity. The following display shows a workflow diagram in SAS Workflow Studio.

***Display 15.2** SAS Workflow Studio*



In addition, the **Use an operand to set the name value** check box must be selected on the Edit Swimlane dialog box. The following figure shows the Edit Swimlane dialog box in SAS Workflow Studio.

***Display 15.3** Edit Swimlane Dialog Box*


Edit Swimlane

Actor's Role in Process: ActualOwner

Identity:

User Name

[✓ Group Name] @CASE:X_GROUP_NM

Organizational Role Name

☑ Use an operand to set the name value

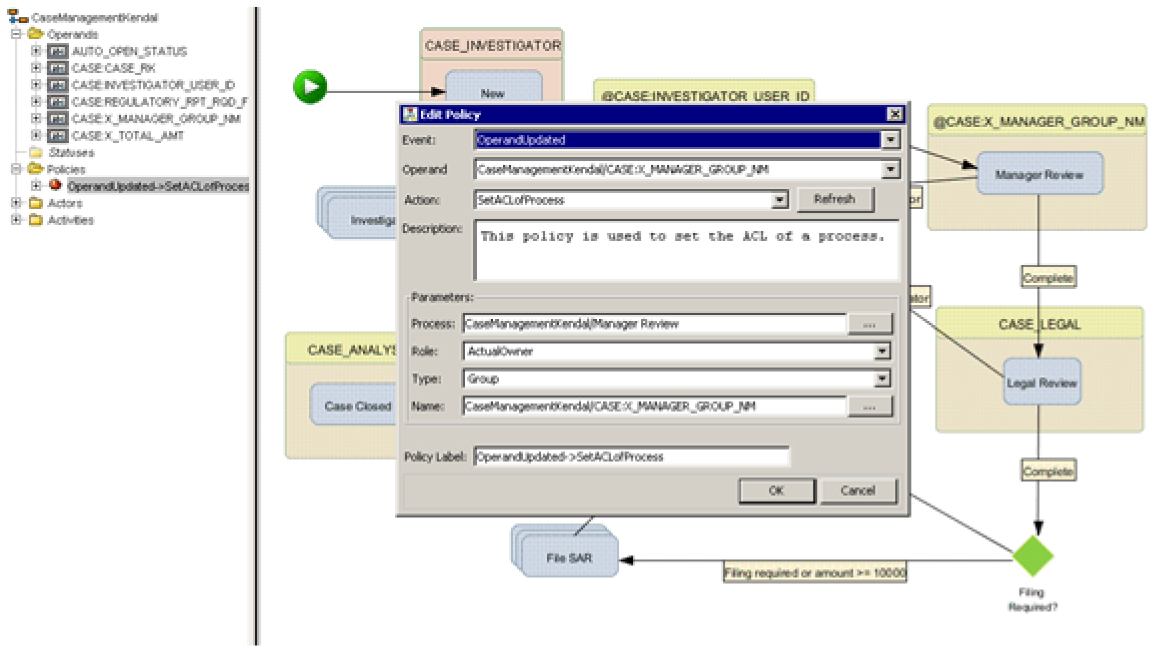
Operand CaseManagementFinancialFraud/CASE:X_GROUP_NM

Value

Add the OperandUpdated Root-Level Policy to the Workflow

The OperandUpdated policy allows the access control entries to be updated for the Manager Review activity whenever the CASE__X_MANAGER_GROUP_NM operand is updated. This enables the Manager Review activity to be reassigned to a different regional manager group if the region is changed after the activity has started. The following display shows the Edit Policy dialog box in SAS Workflow Studio.

Display 15.4 *Edit Policy – SAS Workflow Studio*



Event: OperandUpdated
Operand: CaseManagementKendal/CASE:X_MANAGER_GROUP_NM
Action: SetACLofProcess
Description: This policy is used to set the ACL of a process.
Parameters:
Process: CaseManagementKendal/Manager Review
Role: ActualOwner
Type: Group
Name: CaseManagementKendal/CASE:X_MANAGER_GROUP_NM
Policy Label: OperandUpdated->SetACLofProcess

Upload the User Interface Definition and Workflow

Upload the user interface definition from the SAS Enterprise Case Management **Administration** tab. Upload the workflow definition from SAS Workflow Studio.

Test Your New Configuration

1. Create a new case, setting the region user-defined field.
2. Move through the workflow until you reach the Manager Review activity.
3. Verify that only the managers in the corresponding region can perform the activity.
4. Log on as someone who can edit the case.
5. Change the region to another region.
6. Verify that managers from the new region can perform the activity.

Setting up Data Management Jobs

It is recommended that programs for refreshing the SAS Enterprise Case Management report mart and generating e-files should be set up to run regularly as batch jobs. There are many ways to set up scripts to run SAS programs in batch. This section provides a simple example for Windows.

1. Create a directory where the job script and SAS batch code will be stored. For example:

```
<sasconfigDir>\Lev1\Applications\SASCaseManagementServerCfg
\2.2\Source\jobs
```

2. Create a SAS program to call the SAS Enterprise Case Management macro (for example, ecm_job_generate_batch_efile.sas). Add the following line to the program.

   ```
   %ecm_generate_batch_efile;
   ```

3. Create a Windows command file to call SAS (for example, ecm_job_generate_batch_efile.cmd). Use the following statement as a reference and define the content of the command file with your site information.

   ```
   "<sasroot>\SASFoundation\9.2\sas.exe" -config "<sasconfig>\Lev1\
   SASApp\WorkspaceServer\sasv9.cfg"
   -autoexec "<sasconfig>\Lev1\Applications\SASCaseManagementServerCfg\
   2.2\Source\control\autoexec.sas" -SYSIN
   "<sasconfig>\Lev1\Applications\SASCaseManagementServerCfg\2.2\Source \
   jobs\ ecm_job_generate_batch_efile.sas" -log
   "<sasconfig>\Lev1\Applications\SASCaseManagementServerCfg\2.2\Source\
   jobs\ ecm_job_generate_batch_efile .log" -nodms
   ```

   Note:

   - <sasroot> should be the path where SAS is installed
   - <sasconfig> should be the path where SAS Enterprise Case Management is configured.
   - Make sure that there are no line breaks in the command program.

4. Repeat step 1 through 3 to create a different job for running the %ECM_REPORTING_DRIVER.

SAS Enterprise Case Management – Backup Requirements

To ensure the integrity of the SAS Enterprise Case Management system, you should establish a formal, regularly scheduled backup process. It is important to back up all of the following items at the same point in time so that related information will be synchronized if a restore becomes necessary:

SAS Metadata
: SAS Metadata contains ECM server and middle-tier configuration information, user/group/capabilities, and more. The instructions for backing up all SAS metadata can be found in the topic “Backing up and Restoring Your System” in the *SAS 9.2 Intelligence Platform: System Administration Guide*.

SAS Content Server
: All UI definition files, custom properties files, and attachments to cases or incidents are stored in the SAS Content Server in **`<sasconfig>/Lev1/AppData/SASContentServer`**. Instructions for backing up the SAS Content Server can be found at

  `http://support.sas.com/documentation/cdl/en/bisag/60945/HTML/default/a003133703.htm#a003266477`

SAS Shared Service Database
: SAS Enterprise Case Management utilizes SAS Shared Services to manage workflows, attachments, alerts, and more. The database associated with SAS Shared Services should be backed up regularly.

SAS Enterprise Case Management Database
: The SAS Enterprise Case Management database contains all cases, incidents, subjects records, reference tables, and configuration data of various SAS Enterprise Case Management components. This database should be backed up regularly.

SAS Enterprise Case Management Configuration Directory
: **`<sasconfig>\Lev1\Applications\SASCaseManagementServerCfg\2.2`** contains SAR e-file data and any custom code defined at your site. The complete directory should be backed up regularly.

Appendix 1

SAS Enterprise Case Management Data Dictionary

Table A1.1 *SAS Enterprise Case Management Data Dictionary*

Name	Definition
CASE_LIVE	Details of a case involving one or more suspicious incidents. This table contains the current version of the case.
CASE_CONFIG	Contains case configuration details.
CASE_CONFIG_X_USER_GROUP	Intersection table linking the initial groups of users who can access a case to a case configuration.
CASE_EVENT	Details of all actions taken on a case.
CASE_SEARCH_CRITERIA_FIELD	Contains search criteria field configurations for the case search screen.
CASE_SEARCH_FILTER_FIELD	Contains search filter field configurations for the case search screen.
CASE_SEARCH_RESULT_FIELD	Contains search result field configurations for the case search screen.
CASE_UDF_CHAR_VALUE	Contains character data typed user-defined field values for cases.
CASE_UDF_DATE_VALUE	Contains date data typed user-defined field values for cases.
CASE_UDF_DEF	Details of user-defined field definitions for cases.
CASE_UDF_LGCHR_VALUE	Contains CLOB datatypes for user defined field values for cases.
CASE_UDF_NUM_VALUE	Contains number data typed user-defined field values for cases.
CASE_VERSION	Details of a case involving one or more suspicious incidents.
CASE_X_PARTY	Intersection table linking parties to cases.
CASE_X_USER_GROUP	Intersection table linking cases to groups of users who can access the case.

Name	Definition
ECM_LOCALE	Contains localization data supported by the application.
FINANCIAL_ITEM_CONFIG	The FINANCIAL_ITEM_CONFIG table maps which UI definition to use for each financial_item type. The FINANCIAL_ITEM_CONFIG table differs from the other config tables. Financial items are configured solely on the financial_item type code. Case, incident, and party are configured based on type, category, and sub-category.
FINANCIAL_ITEM_LIVE	A financial item is associated with a case or an incident and stores the monetary value associated with a suspicious transaction or exposure. This table contains the current version of the financial item.
FINANCIAL_ITEM_UDF_CHAR_VALUE	Contains user-defined field values of CHAR data type for cases.
FINANCIAL_ITEM_UDF_DATE_VALUE	Contains user-defined field values of DATE data type for financial items.
FINANCIAL_ITEM_UDF_DEF	Details of user-defined field definitions for financial items.
FINANCIAL_ITEM_UDF_LGCHR_VALUE	Contains CLOB data types for financial items.
FINANCIAL_ITEM_UDF_NUM_VALUE	Contains user-defined field values of NUM data type for financial items.
FINANCIAL_ITEM_VERSION	A financial item is associated with a case or an incident and stores the monetary value associated with a suspicious transaction or exposure.
GENERIC_DATA_UDF_CHAR_VALUE	Contains character data types for generic user-defined values.
GENERIC_DATA_UDF_DATE_VALUE	Contains date data types for generic user-defined values.
GENERIC_DATA_UDF_DEF	Details of user defined field definitions for a generic item.
GENERIC_DATA_UDF_LGCHR_VALUE	Contains CLOB data types for generic user-defined values.
GENERIC_DATA_UDF_NUM_VALUE	Contains number data types for generic user-defined values.
INCIDENT_LIVE	Details of a suspicious incident. This table contains the current version of the incident.
INCIDENT_CONFIG	Contains incident configuration details.
INCIDENT_CONFIG_X_USER_GROUP	Intersection table linking the initial groups of users who can access an incident to an incident configuration.
INCIDENT_EVENT	Details of all actions taken on incident.
INCIDENT_SEARCH_CRITERIA_FIELD	Contains search criteria field configurations for the incident search screen.

Name	**Definition**
INCIDENT_SEARCH_FILTER_FIELD	Contains search filter field configurations for the incident search screen.
INCIDENT_SEARCH_RESULT_FIELD	Contains search result field configurations for the incident search screen.
INCIDENT_UDF_CHAR_VALUE	Contains character data typed user defined field values for incidents.
INCIDENT_UDF_DATE_VALUE	Contains date data typed user defined field values for incidents.
INCIDENT_UDF_DEF	Details of user defined field definitions for incidents.
INCIDENT_UDF_LGCHR_VALUE	Contains CLOB or long character data typed user defined field values for incidents.
INCIDENT_UDF_NUM_VALUE	Contains number data typed user defined field values for incidents.
INCIDENT_VERSION	Details of a suspicious incident.
INCIDENT_X_PARTY	Intersection table linking parties to incidents.
INCIDENT_X_USER_GROUP	Intersection table linking incidents to groups of users who can access the incident.
PARTY_LIVE	Details of an individual or organization that plays a role in a case or a suspicious incident. This table contains the current version of the party.
PARTY_CONFIG	Contains party configuration details.
PARTY_CONFIG_X_USER_GROUP	Intersection table linking the initial groups of users who can access a party to a party configuration.
PARTY_EVENT	Details of all actions taken on a party.
PARTY_SEARCH_CRITERIA_FIELD	Contains search criteria field configurations for the party search screen.
PARTY_SEARCH_FILTER_FIELD	Contains search filter field configurations for the party search screen.
PARTY_SEARCH_RESULT_FIELD	Contains search result field configurations for the party search screen.
PARTY_UDF_CHAR_VALUE	Contains character data typed user defined field values for parties.
PARTY_UDF_DATE_VALUE	Contains date data typed user defined field values for parties.
PARTY_UDF_DEF	Details of user defined field definitions for parties.

Name	Definition
PARTY_UDF_LGCHR_VALUE	Contains CLOB or long character data typed user defined field values for parties.
PARTY_UDF_NUM_VALUE	Contains number data typed user defined field values for parties.
PARTY_VERSION	Details of an individual or organization that plays a role in a case or a suspicious incident.
PARTY_X_PARTY	Intersection table linking parties to other parties.
PARTY_X_USER_GROUP	Intersection table linking parties to groups of users who can access the party.
REF_TABLE_TRANS	A record in the translation table corresponds to a single translation of a single entry in the REF_TABLE_VALUE table. The locale column should be to a Java-compliant locale-specifier.
REF_TABLE_VALUE	Contains code value definitions for reference tables.
RELATED_ITEM_CONFIG	This table is used to define different scenarios to find related incidents, cases, and parties.
SCHEMA_VERSION	Contains the schema version.
SNA_CONFIG_DETAIL	This table stores the detail definition of SNA_CONFIG_MASTER. It contains one or many records of each SNA_CONFIG_MASTER record. A SNA_CONFIG_MASTER match criterion is considered as met when all of its associated SNA_CONFIG_DETAIL match criteria are met.
SNA_CONFIG_MASTER	This table is used to configure the match criteria for Case Network Analysis. Subjects are considered as 'Networked' when one or many of these match criteria are met.
TASK_LIST	Stores "to-do" list or task information related to a case or an incident with automatic reminders.

Table A1.2 *Column(s) of "CASE_LIVE" Table*

Name	Datatype	Null Option	Definition
CASE_CATEGORY_CD	VARCHAR2(10)	NULL	Case category code.
CASE_DESC	VARCHAR2(100)	NULL	Case description.
CASE_DISPOSITION_CD	VARCHAR2(10)	NULL	Case disposition code.
CASE_ID	VARCHAR2(32)	NOT NULL	Case identifier.

Name	Datatype	Null Option	Definition
CASE_LINK_SK	NUMBER(10)	NULL	System-generated surrogate key for linking related cases.
CASE_RK	NUMBER(10)	NOT NULL	System-generated case surrogate key.
CASE_STATUS_CD	VARCHAR2(10)	NULL	Case status code.
CASE_SUBCATEGORY_CD	VARCHAR2(10)	NULL	Case subcategory code.
CASE_TYPE_CD	VARCHAR2(10)	NULL	Case type code.
CLOSE_DTTM	TIMESTAMP	NULL	Date and time when the case was closed.
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the case was created.
CREATE_USER_ID	VARCHAR2(60)	NULL	User who created the case.
DELETE_FLG	CHAR(1)	NOT NULL	This flag indicates whether or not the case has been logically deleted and is now obsolete.
INVESTIGATOR_USER_ID	VARCHAR2(60)	NULL	Investigator who owns the case.
LOCK_USER_ID	VARCHAR2(60)	NULL	User who locked the case.
OPEN_DTTM	TIMESTAMP	NULL	Date and time when the case was opened.
PRIORITY_CD	VARCHAR2(10)	NULL	The priority code of a case is used for sorting. (i.e., High, Medium, Low).
REGULATORY_RPT_RQD_FLG	CHAR(1)	NOT NULL	Regulatory report required flag.
REOPEN_DTTM	TIMESTAMP	NULL	Date and time when the case was last re-opened.
SOURCE_SYSTEM_CD	VARCHAR2(10)	NOT NULL	Source system code.
UI_DEF_FILE_NM	VARCHAR2(100)	NULL	Custom Page Builder user interface file name.
UPDATE_USER_ID	VARCHAR2(60)	NULL	User who last updated the case.

Name	Datatype	Null Option	Definition
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VERSION_NO	NUMBER(10)	NOT NULL	Version number used to implement optimistic locking.

Table A1.3 *Column(s) of "CASE_CONFIG" Table*

Name	Datatype	Null Option	Definition
CASE_CATEGORY_CD	VARCHAR2(10)	NULL	Case category code.
CASE_CONFIG_SEQ_NO	NUMBER(10)	NOT NULL	The CASE_CONFIG table defines the rules which determine the ui definition to display for a given case, based on the case's type, category and subcategory values. If a record includes null for category or subcategory, that is treated as a wildcard and that rule would apply for any value in that column. In situations where multiple rules apply, the sequence number is treated as the priority; the matching rule with the smallest sequence number will be selected.
CASE_SUBCATEGORY_CD	VARCHAR2(10)	NULL	Case subcategory code.
CASE_TYPE_CD	VARCHAR2(10)	NOT NULL	Case type code.

Name	Datatype	Null Option	Definition
INVESTIGATE_ WORKFLOW_DEF_NM	VARCHAR2(100)	NOT NULL	Investigate case workflow definition name.
INVESTIGATOR_USER_ ID	VARCHAR2(60)	NULL	Investigator who initially owns the case.
REOPEN_WORKFLOW_ DEF_NM	VARCHAR2(100)	NULL	Reopen case workflow definition name.
UI_DEF_FILE_NM	VARCHAR2(100)	NOT NULL	User interface definition file name.

***Table A1.4** Column(s) of "CASE_CONFIG_X_USER_GROUP" Table*

Name	Datatype	Null Option	Definition
CASE_CONFIG_SEQ_NO	NUMBER(10)	NOT NULL	Case configuration sequence number.
USER_GROUP_NM	VARCHAR2(60)	NOT NULL	User group name.

***Table A1.5** Column(s) of "CASE_EVENT" Table*

Name	Datatype	Null Option	Definition
CASE_EVENT_RK	NUMBER(10)	NOT NULL	System-generated case event surrogate key.
CASE_RK	NUMBER(10)	NOT NULL	System-generated case surrogate key.
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the case event was created.
CREATE_USER_ID	VARCHAR2(60)	NULL	User who created the case event.
EVENT_DESC	VARCHAR2(100)	NULL	Event description.
EVENT_TYPE_CD	VARCHAR2(10)	NOT NULL	Event type code.
LINKED_OBJECT_NM	VARCHAR2(100)	NULL	Linked object name.
LINKED_OBJECT_RK	NUMBER(10)	NULL	Linked object surrogate key

Table A1.6 *Column(s) of "CASE_SEARCH_CRITERIA_FIELD" Table*

Name	Datatype	Null Option	Definition
DISPLAY_ORDER_NO	NUMBER(6)	NOT NULL	Display order number.
FIELD_NM	VARCHAR2(30)	NOT NULL	Field name.
FORMAT_TXT	VARCHAR2(40)	NULL	Name of the resource bundle key that contains the display format for numeric fields. *Note:* This column is not available for use in SAS Enterprise Case Management 2.1.
REF_TABLE_NM	VARCHAR2(30)	NULL	Reference table name to render a selection list criteria filter for the field.
TABLE_NM	VARCHAR2(30)	NOT NULL	Field table name.
USER_ID	VARCHAR2(60)	NOT NULL	User whom this configuration applies to. Equals '*' for the default configuration for all users.

Table A1.7 *Column(s) of "CASE_SEARCH_FILTER_FIELD" Table*

Name	Datatype	Null Option	Definition
DISPLAY_ORDER_NO	NUMBER(6)	NOT NULL	Display order number.
FIELD_NM	VARCHAR2(30)	NOT NULL	Field name.
REF_TABLE_NM	VARCHAR2(30)	NOT NULL	Reference table name to render a selection list filter for the field.
TABLE_NM	VARCHAR2(30)	NOT NULL	Field table name.
USER_ID	VARCHAR2(60)	NOT NULL	User whom this configuration applies to. Equals '*' for the default configuration for all users.

Table A1.8 *Column(s) of "CASE_SEARCH_RESULT_FIELD" Table*

Name	Datatype	Null Option	Definition
DISPLAY_ORDER_NO	NUMBER(6)	NOT NULL	Display order number.
FIELD_NM	VARCHAR2(30)	NOT NULL	Field name.

Name	Datatype	Null Option	Definition
FORMAT_TXT	VARCHAR2(40)	NULL	Name of the resource bundle key that contains the display format for numeric and date fields. *Note:* This column is not available for use in SAS Enterprise Case Management 2.1.
REF_TABLE_NM	VARCHAR2(30)	NULL	Reference table name to render coded values as displayable values.
TABLE_NM	VARCHAR2(30)	NOT NULL	Field table name.
USER_ID	VARCHAR2(60)	NOT NULL	User whom this configuration applies to. Equals '*' for the default configuration for all users.

Table A1.9 *Column(s) of "CASE_UDF_CHAR_VALUE" Table*

Name	Datatype	Null Option	Definition
CASE_RK	NUMBER(10)	NOT NULL	System-generated case surrogate key.
ROW_NO	NUMBER(10)	NOT NULL	Row number.
UDF_NM	VARCHAR2(30)	NOT NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User-defined field table name.
UDF_VALUE	VARCHAR2(4000)	NOT NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.10 *Column(s) of "CASE_UDF_DATE_VALUE" Table*

Name	Datatype	Null Option	Definition
CASE_RK	NUMBER(10)	NOT NULL	System-generated case surrogate key.
ROW_NO	NUMBER(10)	NOT NULL	Row number.
UDF_NM	VARCHAR2(30)	NOT NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User-defined field table name.
UDF_VALUE	TIMESTAMP	NOT NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.11 *Column(s) of "CASE_UDF_DEF" Table*

Name	Datatype	Null Option	Definition
MAX_CHAR_CNT	NUMBER(6)	NULL	Maximum number of characters for a user-defined field of CHAR data type.
UDF_DESC	VARCHAR2(100)	NULL	User-defined field description.
UDF_NM	VARCHAR2(30)	NOT NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User-defined field table name.
UDF_TYPE_NM	VARCHAR2(10)	NOT NULL	User-defined field data type (VARCHAR, BIGINT, DOUBLE, BOOLEAN, DATE, TIMESTAMP).

Table A1.12 *Column(s) of “CASE_UDF_LGCHR_VALUE”*

Name	Datatype	Null Option	Definition
CASE_RK	NUMBER(10)	NULL	System generated case surrogate key

Name	Datatype	Null Option	Definition
ROW_NO	NUMBER(10)	NULL	Row number
UDF_NM	VARCHAR2(30)	NULL	User defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User defined field table name.
UDF_VALUE	CLOB	NULL	User defined field value.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.13 *Column(s) of "CASE_UDF_NUM_VALUE" Table*

Name	Datatype	Null Option	Definition
CASE_RK	NUMBER(10)	NOT NULL	System-generated case surrogate key.
ROW_NO	NUMBER(10)	NOT NULL	Row number.
UDF_NM	VARCHAR2(30)	NOT NULL	User defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User defined field table name.
UDF_VALUE	DOUBLE PRECISION	NOT NULL	User defined field value.
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.14 *Column(s) of "CASE_VERSION" Table*

Name	Datatype	Null Option	Definition
CASE_CATEGORY_CD	VARCHAR2(10)	NULL	Case category code.

Name	Datatype	Null Option	Definition
CASE_DESC	VARCHAR2(100)	NULL	Case description.
CASE_DISPOSITION_CD	VARCHAR2(10)	NULL	Case disposition code.
CASE_ID	VARCHAR2(32)	NOT NULL	Case identifier.
CASE_LINK_SK	NUMBER(10)	NULL	System-generated surrogate key for linking related cases.
CASE_RK	NUMBER(10)	NOT NULL	System-generated case surrogate key.
CASE_STATUS_CD	VARCHAR2(10)	NULL	Case status code.
CASE_SUBCATEGORY_CD	VARCHAR2(10)	NULL	Case subcategory code.
CASE_TYPE_CD	VARCHAR2(10)	NULL	Case type code.
CLOSE_DTTM	TIMESTAMP	NULL	Date and time when the case was closed.
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the case was created.
CREATE_USER_ID	VARCHAR2(60)	NULL	User who created the case.
DELETE_FLG	CHAR(1)	NOT NULL	This flag indicates whether or not the case has been logically deleted and is now obsolete.
INVESTIGATOR_USER_ID	VARCHAR2(60)	NULL	Investigator who owns the case.
LOCK_USER_ID	VARCHAR2(60)	NULL	User who locked the case.
OPEN_DTTM	TIMESTAMP	NULL	Date and time when the case was opened.
PRIORITY_CD	VARCHAR2(10)	NULL	The priority code of a case is used for sorting. (i.e. High, Medium, Low).
REGULATORY_RPT_RQD_FLG	CHAR(1)	NOT NULL	Regulatory report required flag.
REOPEN_DTTM	TIMESTAMP	NULL	Date and time when the case was last re-opened.
SOURCE_SYSTEM_CD	VARCHAR2(10)	NOT NULL	Source system code.

Name	Datatype	Null Option	Definition
UI_DEF_FILE_NM	VARCHAR2(100)	NULL	Custom Page Builder user interface file name.
UPDATE_USER_ID	VARCHAR2(60)	NULL	User who last updated the case.
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VERSION_NO	NUMBER(10)	NOT NULL	Version number used to implement optimistic locking.

Table A1.15 *Column(s) of "CASE_X_PARTY" Table*

Name	Datatype	Null Option	Definition
CASE_RK	NUMBER(10)	NOT NULL	System-generated case surrogate key.
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the case or party relationship was created.
PARTY_RK	NUMBER(10)	NOT NULL	System-generated party-retained surrogate key.
RELATION_DESC	VARCHAR2(100)	NULL	Relationship description.
RELATION_TYPE_CD	VARCHAR2(10)	NOT NULL	Relationship type code.

Table A1.16 *Column(s) of "CASE_X_USER_GROUP" Table*

Name	Datatype	Null Option	Definition
CASE_RK	NUMBER(10)	NOT NULL	System-generated case surrogate key.
USER_GROUP_NM	VARCHAR2(60)	NOT NULL	User group name. Equals '*' if any user may access the case.

Table A1.17 *Column(s) of “ECM_LOCALE” Table*

Name	Datatype	Null Option	Definition
FALLBACK_LOCALE	VARCHAR2(5)	NULL	The locale to consult next if there is no translation available for the locale specified by the LOCALE column. For example, if "en_GB" is a supported locale, it's fallback would be "en". If the supported locale is "en", then the fallback would be the default locale/ translation "def".
LOCALE	VARCHAR2(5)	NULL	A locale supported by the application. The locale should follow the Java locale naming convention: a valid 2-letter lowercase ISO 639 language code optionally appended with an underscore and a 2-letter uppercase ISO 3166 country code (for example, "en", "en_US", "en_GB", "fr_FR").

Table A1.18 *Column(s) of “FINANCIAL_ITEM_CONFIG” Table*

Name	Datatype	Null Option	Definition
FINANCIAL_ITEM_CON FIG_SEQ_NO	NUMBER(10)	NULL	The primary key for the FINANCIAL_ITEM_CON FIG table.

Name	Datatype	Null Option	Definition
FINANCIAL_ITEM_TYPE_CD	VARCHAR2(10)	NULL	The financial item type being configured. This value should reference an entry in the financial item type reference table (stored in the REF_TABLE_VALUE table with REF_TABLE_NM = 'RT_FINANCIAL_ITEM_TYPE').
UI_DEF_FILE_NM	VARCHAR2(100)	NULL	The UI definition file to use for financial items of the given financial item type.

Table A1.19 *Column(s) of "FINANCIAL_ITEM_LIVE" Table*

Name	Datatype	Null Option	Definition
BASE_AMT	REAL	NULL	Base amount.
CREATE_DTTM	TIMESTAMP	NULL	Date/time of the financial item.
CREATE_USER_ID	VARCHAR2(60)	NULL	User who created the financial item.
CURRENCY_CONVERSION_DT	DATE	NULL	Currency conversion date.
DELETE_FLG	CHAR(1)	NULL	Has the financial item been logically deleted?
FINANCIAL_ITEM_ID	VARCHAR2(32)	NULL	Financial item ID.
FINANCIAL_ITEM_RK	NUMBER(10)	NULL	Since source data for FINANCIAL_ITEM_LIVE might come from multiple systems, the business-supplied keys mmight not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for FINANCIAL_ITEM_LIVE. Used with VALID_FROM_DTTM for versioning of rows.
FINANCIAL_ITEM_TYPE_CD	VARCHAR2(10)	NULL	Financial item type code.
INCLUDE_IN_SUMMARY_FLG	CHAR(1)	NULL	Include in summary flag.

Name	Datatype	Null Option	Definition
LOCAL_AMT	REAL	NULL	Local amount.
LOCAL_CURRENCY_CD	VARCHAR2(10)	NULL	Local currency code.
PARENT_OBJECT_NM	VARCHAR2(100)	NULL	The parent object name links a financial item to a case or an incident along with the surrogate key of that parent object.
PARENT_OBJECT_RK	NUMBER(10)	NULL	This key links the financial item to a case or an incident.
SOURCE_FINANCIAL_ITEM_RK	NUMBER(10)	NULL	This contains the key to link multiple financial items together.
SOURCE_SYSTEM_CD	VARCHAR2(10)	NULL	The source system from which this financial item originated. This value should reference an entry in the source system reference table (stored in the REF_TABLE_VALUE table with REF_TABLE_NM = 'RT_SOURCE_SYSTEM').
UI_DEF_FILE_NM	VARCHAR2(100)	NULL	Custom Page Builder user interface file name.
UPDATE_USER_ID	VARCHAR2(60)	NULL	User who last updated the financial item.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VERSION_NO	NUMBER(10)	NULL	Version number.

Table A1.20 *Column(s) of "FINANCIAL_ITEM_UDF_CHAR_VALUE" Table*

Name	**Datatype**	**Null Option**	**Definition**
FINANCIAL_ITEM_RK	NUMBER(10)	NULL	Since source data for FINANCIAL_ITEM_UDF_CHAR_VALUE might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for FINANCIAL_ITEM_UDF_CHAR_VALUE. Used with VALID_FROM_DTTM for versioning of rows.
ROW_NO	NUMBER(10)	NULL	Row number.
UDF_NM	VARCHAR2(30)	NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User-defined field table name.
UDF_VALUE	VARCHAR2(4000)	NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.21 *Column(s) of "FINANCIAL_ITEM_UDF_DATE_VALUE" Table*

Name	**Datatype**	**Null Option**	**Definition**
FINANCIAL_ITEM_RK	NUMBER(10)	NULL	Since source data for FINANCIAL_ITEM_UDF_DATE_VALUE might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for FINANCIAL_ITEM_UDF_DATE_VALUE. Used with VALID_FROM_DTTM for versioning of rows.
ROW_NO	NUMBER(10)	NULL	Row number.

Name	Datatype	Null Option	Definition
UDF_NM	VARCHAR2(30)	NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User-defined field table name.
UDF_VALUE	TIMESTAMP	NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.22 *Column(s) of "FINANCIAL_ITEM_UDF_DEF" Table*

Name	Datatype	Null Option	Definition
MAX_CHAR_CNT	NUMBER(6)	NULL	Maximum number of characters for a user-defined field of CHAR data type.
UDF_DESC	VARCHAR2(100)	NULL	User-defined field description.
UDF_NM	VARCHAR2(30)	NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User-defined field table name.
UDF_TYPE_NM	VARCHAR2(10)	NULL	User-defined field data type (VARCHAR, BIGINT, DOUBLE, BOOLEAN, DATE, TIMESTAMP).

Table A1.23 *Column(s) of "FINANCIAL_ITEM_UDF_LGCHR_VALUE" Table*

Name	Datatype	Null Option	Definition
FINANCIAL_ITEM_RK	NUMBER(10)	NULL	Since source data for FINANCIAL_ITEM_UDF_DATE_VALUE might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for FINANCIAL_ITEM_UDF_DATE_VALUE. Used with VALID_FROM_DTTM for versioning of rows.
ROW_NO	NUMBER(10)	NULL	Row number.
UDF_NM	VARCHAR2(30)	NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User-defined field table name.
UDF_VALUE	CLOB	NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.24 *Column(s) of "FINANCIAL_ITEM_UDF_NUM_VALUE" Table*

Name	Datatype	Null Option	Definition
FINANCIAL_ITEM_RK	NUMBER(10)	NULL	Since source data for FINANCIAL_ITEM_UDF_DATE_VALUE might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for FINANCIAL_ITEM_UDF_DATE_VALUE. Used with VALID_FROM_DTTM for versioning of rows.
ROW_NO	NUMBER(10)	NULL	Row number.

Name	Datatype	Null Option	Definition
UDF_NM	VARCHAR2(30)	NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User-defined field table name.
UDF_VALUE	DOUBLE PRECISION	NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.25 *Column(s) of "GENERIC_DATA_UDF_CHAR_VALUE" Table*

Name	Datatype	Null Option	Definition
GENERIC_DATA_RK	NUMBER(10)	NULL	Since source data for GENERIC_DATA_UDF _CHAR_VALUE might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for GENERIC_DATA_UDF _CHAR_VALUE. Used with VALID_FROM_DTTM for versioning of rows.
UDF_NM	VARCHAR2(30)	NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User-defined field table name.
UDF_VALUE	VARCHAR2(4000)	NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Name	Datatype	Null Option	Definition
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.26 *Column(s) of "GENERIC_DATA_UDF_DATE_VALUE" Table*

Name	Datatype	Null Option	Definition
GENERIC_DATA_RK	NUMBER(10)	NULL	Since source data for GENERIC_DATA_UDF _CHAR_VALUE might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for GENERIC_DATA_UDF _CHAR_VALUE. Used with VALID_FROM_DTTM for versioning of rows.
UDF_NM	VARCHAR2(30)	NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User-defined field table name.
UDF_VALUE	TIMESTAMP	NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

***Table A1.27** Column(s) of "GENERIC_DATA_UDF_DEF" Table*

Name	Datatype	Null Option	Definition
MAX_CHAR_CNT	NUMBER(6)	NULL	Maximum number of characters for user-defined field of CHAR data type.
UDF_DESC	VARCHAR2(100)	NULL	User-defined field description.
UDF_NM	VARCHAR2(30)	NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User-defined field table name.
UDF_TYPE_NM	VARCHAR2(10)	NULL	User-defined field data type (VARCHAR, BIGINT, DOUBLE, BOOLEAN, DATE, TIMESTAMP).

***Table A1.28** Column(s) of "GENERIC_DATA_UDF_LGCHR_VALUE" Table*

Name	Datatype	Null Option	Definition
GENERIC_DATA_RK	NUMBER(10)	NULL	Since source data for GENERIC_DATA_UDF_LGCHR_VALUE might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for GENERIC_DATA_UDF_LGCHR_VALUE. Used with VALID_FROM_DTTM for versioning of rows.
UDF_NM	VARCHAR2(30)	NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User-defined field table name.
UDF_VALUE	CLOB	NULL	User-defined field value.

Name	Datatype	Null Option	Definition
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.29 *Column(s) of "GENERIC_DATA_UDF_NUM_VALUE" Table*

Name	Datatype	Null Option	Definition
GENERIC_DATA_RK	NUMBER(10)	NULL	Since source data for GENERIC_DATA_UDF _LGCHR_VALUE might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for GENERIC_DATA_UDF _LGCHR_VALUE. Used with VALID_FROM_DTTM for versioning of rows.
UDF_NM	VARCHAR2(30)	NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User-defined field table name.
UDF_VALUE	DOUBLE PRECISION	NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Name	Datatype	Null Option	Definition
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.30 *Column(s) of "INCIDENT_LIVE" Table*

Name	Datatype	Null Option	Definition
CASE_RK	NUMBER(10)	NULL	System-generated case surrogate key.
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the incident was created.
CREATE_USER_ID	VARCHAR2(60)	NULL	User who created the incident.
DELETE_FLG	char(1)	NOT NULL	Has the incident been logically deleted?
DETECTION_DT	DATE	NULL	Incident detection date.
DETECTION_TM	char(8)	NULL	Incident detection time (format = HH:MM:SS).
INCIDENT_CATEGORY_CD	VARCHAR2(10)	NULL	Incident category code.
INCIDENT_DESC	VARCHAR2(100)	NULL	Incident description.
INCIDENT_FROM_DT	DATE	NULL	Incident start date.
INCIDENT_FROM_TM	char(8)	NULL	Incident start time (format = HH:MM:SS).
INCIDENT_ID	VARCHAR2(32)	NOT NULL	Incident identifier.
INCIDENT_RK	NUMBER(10)	NOT NULL	System-generated incident surrogate key.
INCIDENT_SUBCATEGORY_CD	VARCHAR2(10)	NULL	Incident subcategory code.
INCIDENT_TO_DT	DATE	NULL	Incident end date.
INCIDENT_TO_TM	char(8)	NULL	Incident end time (format = HH:MM:SS).

Name	Datatype	Null Option	Definition
INCIDENT_TYPE_CD	VARCHAR2(10)	NULL	Incident type code.
NOTIFICATION_DT	DATE	NULL	Incident notification date.
NOTIFICATION_TM	char(8)	NULL	Incident notification time (format = HH:MM:SS).
SOURCE_SYSTEM_CD	VARCHAR2(10)	NOT NULL	Source system code.
UI_DEF_FILE_NM	VARCHAR2(100)	NULL	Custom Page Builder user interface file name.
UPDATE_USER_ID	VARCHAR2(60)	NULL	User who last updated the incident.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VERSION_NO	NUMBER(10)	NOT NULL	Version number used to implement optimistic locking.

Table A1.31 *Column(s) of "INCIDENT_CONFIG" Table*

Name	Datatype	Null Option	Definition
INCIDENT_CATEGORY_CD	VARCHAR2(10)	NULL	Incident category code.

Name	Datatype	Null Option	Definition
INCIDENT_CONFIG_SEQ_NO	NUMBER(10)	NOT NULL	Incident configuration sequence number. The sequence number is also used as a priority when multiple configurations apply for a given incident. If multiple configurations apply, the one with the smaller sequence number will be chosen.
INCIDENT_SUBCATEGORY_CD	VARCHAR2(10)	NULL	Incident subcategory code.
INCIDENT_TYPE_CD	VARCHAR2(10)	NOT NULL	Incident type code.
UI_DEF_FILE_NM	VARCHAR2(100)	NOT NULL	User interface definition file name.

Table A1.32 *Column(s) of "INCIDENT_CONFIG_X_USER_GROUP" Table*

Name	Datatype	Null Option	Definition
INCIDENT_CONFIG_SEQ_NO	NUMBER(10)	NOT NULL	Incident configuration sequence number.
USER_GROUP_NM	VARCHAR2(60)	NOT NULL	User group name.

Table A1.33 *Column(s) of "INCIDENT_EVENT" Table*

Name	Datatype	Null Option	Definition
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the incident event was created.
CREATE_USER_ID	VARCHAR2(60)	NULL	User who created the incident event.
EVENT_DESC	VARCHAR2(100)	NULL	Event description.
EVENT_TYPE_CD	VARCHAR2(10)	NOT NULL	Event type code.
INCIDENT_EVENT_RK	NUMBER(10)	NOT NULL	System-generated incident event surrogate key.
INCIDENT_RK	NUMBER(10)	NOT NULL	System-generated incident surrogate key.
LINKED_OBJECT_NM	VARCHAR2(100)	NULL	Linked Object Name

Name	Datatype	Null Option	Definition
LINKED_OBJECT_RK	NUMBER(10)	NULL	Linked Object Retained Surrogate Key

Table A1.34 *Column(s) of "INCIDENT_SEARCH_CRITERIA_FIELD" Table*

Name	Datatype	Null Option	Definition
DISPLAY_ORDER_NO	NUMBER(6)	NOT NULL	Display order number.
FIELD_NM	VARCHAR2(30)	NOT NULL	Field name.
FORMAT_TXT	VARCHAR2(40)	NULL	Name of the resource bundle key that contains the display format for numeric fields. *Note:* This column is not available for use in SAS Enterprise Case Management 2.1.
REF_TABLE_NM	VARCHAR2(30)	NULL	Reference table name to render a selection list criteria filter for the field.
TABLE_NM	VARCHAR2(30)	NOT NULL	Field table name.
USER_ID	VARCHAR2(60)	NOT NULL	User whom this configuration applies to. Equals '*' for the default configuration for all users.

Table A1.35 *Column(s) of "INCIDENT_SEARCH_FILTER_FIELD" Table*

Name	Datatype	Null Option	Definition
DISPLAY_ORDER_NO	NUMBER(6)	NOT NULL	Display order number.
FIELD_NM	VARCHAR2(30)	NOT NULL	Field name.
REF_TABLE_NM	VARCHAR2(30)	NOT NULL	Reference table name to render a selection list filter for the field.
TABLE_NM	VARCHAR2(30)	NOT NULL	Field table name.
USER_ID	VARCHAR2(60)	NOT NULL	User whom this configuration applies to. Equals '*' for the default configuration for all users.

Table A1.36 *Column(s) of "INCIDENT_SEARCH_RESULT_FIELD" Table*

Name	Datatype	Null Option	Definition
DISPLAY_ORDER_NO	NUMBER(6)	NOT NULL	Display order number.
FIELD_NM	VARCHAR2(30)	NOT NULL	Field name.
FORMAT_TXT	VARCHAR2(40)	NULL	Name of the resource bundle key that contains the display format for numeric and date fields. *Note:* This column is not available for use in SAS Enterprise Case Management 2.1.
REF_TABLE_NM	VARCHAR2(30)	NULL	Reference table name to render coded values as displayable values.
TABLE_NM	VARCHAR2(30)	NOT NULL	Field table name.
USER_ID	VARCHAR2(60)	NOT NULL	User whom this configuration applies to. Equals '*' for the default configuration for all users.

Table A1.37 *Column(s) of "INCIDENT_UDF_CHAR_VALUE" Table*

Name	Datatype	Null Option	Definition
INCIDENT_RK	NUMBER(10)	NOT NULL	System-generated incident surrogate key.
ROW_NO	NUMBER(10)	NOT NULL	Row number.
UDF_NM	VARCHAR2(30)	NOT NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User-defined field table name.
UDF_VALUE	VARCHAR2(4000)	NOT NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.38 *Column(s) of "INCIDENT_UDF_DATE_VALUE" Table*

Name	Datatype	Null Option	Definition
INCIDENT_RK	NUMBER(10)	NOT NULL	System-generated incident surrogate key.
ROW_NO	NUMBER(10)	NOT NULL	Row number.
UDF_NM	VARCHAR2(30)	NOT NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User-defined field table name.
UDF_VALUE	TIMESTAMP	NOT NULL	User-defined field value.
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.39 *Column(s) of "INCIDENT_UDF_DEF" Table*

Name	Datatype	Null Option	Definition
MAX_CHAR_CNT	NUMBER(6)	NULL	Maximum number of characters for a user-defined field of CHAR data type.
UDF_DESC	VARCHAR2(100)	NULL	User-defined field description.
UDF_NM	VARCHAR2(30)	NOT NULL	User-defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User defined field table name.
UDF_TYPE_NM	VARCHAR2(10)	NOT NULL	User defined field data type (VARCHAR, BIGINT, DOUBLE, BOOLEAN, DATE, TIMESTAMP).

Table A1.40 *Column(s) of “INCIDENT_UDF_LGCHR_VALUE” Table*

Name	Datatype	Null Option	Definition
INCIDENT_RK	NUMBER(10)	NULL	System generated incident surrogate key.

Name	Datatype	Null Option	Definition
ROW_NO	NUMBER(10)	NULL	Row number.
UDF_NM	VARCHAR2(30)	NULL	User defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User defined field table name.
UDF_VALUE	CLOB	NULL	User defined field value.
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.41 *Column(s) of "INCIDENT_UDF_NUM_VALUE" Table*

Name	Datatype	Null Option	Definition
INCIDENT_RK	NUMBER(10)	NOT NULL	System-generated incident surrogate key.
ROW_NO	NUMBER(10)	NOT NULL	Row number.
UDF_NM	VARCHAR2(30)	NOT NULL	User defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User defined field table name.
UDF_VALUE	DOUBLE PRECISION	NOT NULL	User defined field value.
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.42 *Column(s) of "INCIDENT_VERSION" Table*

Name	Datatype	Null Option	Definition
CASE_RK	NUMBER(10)	NULL	System-generated case surrogate key.

Name	Datatype	Null Option	Definition
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the incident was created.
CREATE_USER_ID	VARCHAR2(60)	NULL	User who created the incident.
DELETE_FLG	char(1)	NOT NULL	Has the incident been logically deleted?
DETECTION_DT	DATE	NULL	Incident detection date.
DETECTION_TM	char(8)	NULL	Incident detection time (format = HH:MM:SS).
INCIDENT_CATEGORY_ CD	VARCHAR2(10)	NULL	Incident category code.
INCIDENT_DESC	VARCHAR2(100)	NULL	Incident description.
INCIDENT_FROM_DT	DATE	NULL	Incident start date.
INCIDENT_FROM_TM	char(8)	NULL	Incident start time (format = HH:MM:SS).
INCIDENT_ID	VARCHAR2(32)	NOT NULL	Incident identifier.
INCIDENT_RK	NUMBER(10)	NOT NULL	System-generated incident surrogate key.
INCIDENT_ SUBCATEGORY_CD	VARCHAR2(10)	NULL	Incident subcategory code.
INCIDENT_TO_DT	DATE	NULL	Incident end date.
INCIDENT_TO_TM	char(8)	NULL	Incident end time (format = HH:MM:SS).
INCIDENT_TYPE_CD	VARCHAR2(10)	NULL	Incident type code
NOTIFICATION_DT	DATE	NULL	Incident notification date.
NOTIFICATION_TM	char(8)	NULL	Incident notification time (format = HH:MM:SS).
SOURCE_SYSTEM_CD	VARCHAR2(10)	NOT NULL	Source system code.
UI_DEF_FILE_NM	VARCHAR2(100)	NULL	Custom Page Builder user interface file name.
UPDATE_USER_ID	VARCHAR2(60)	NULL	User who last updated the incident.

Name	Datatype	Null Option	Definition
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VERSION_NO	NUMBER(10)	NOT NULL	Version number used to implement optimistic locking.

Table A1.43 *Column(s) of "INCIDENT_X_PARTY" Table*

Name	Datatype	Null Option	Definition
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the incident/party relationship was created.
INCIDENT_RK	NUMBER(10)	NOT NULL	System-generated incident surrogate key.
PARTY_RK	NUMBER(10)	NOT NULL	System-generated party-retained surrogate key.
RELATION_DESC	VARCHAR2(100)	NULL	Relationship description.
RELATION_TYPE_CD	VARCHAR2(10)	NOT NULL	Relationship type code.

Table A1.44 *Column(s) of "INCIDENT_X_USER_GROUP" Table*

Name	Datatype	Null Option	Definition
INCIDENT_RK	NUMBER(10)	NOT NULL	System-generated incident surrogate key.
USER_GROUP_NM	VARCHAR2(60)	NOT NULL	User group name. Equals '*' if any user may access the incident.

Table A1.45 *Column(s) of "PARTY_LIVE" Table*

Name	Datatype	Null Option	Definition
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the party was created.
CREATE_USER_ID	VARCHAR2(60)	NULL	User who created the party.
DELETE_FLG	CHAR(1)	NOT NULL	This flag indicates whether or not the party has been logically deleted and is now obsolete.
IDENTICAL_PARTY_ LINK_SK	NUMBER(10)	NULL	System-generated surrogate key for linking identical parties.
INDIVIDUAL_FLG	char(1)	NOT NULL	Is the party an individual?
NATIONAL_ID	VARCHAR2(32)	NULL	National identification number.
NATIONAL_ID_TYPE_ CD	VARCHAR2(10)	NULL	National identification number type code.
PARTY_CATEGORY_CD	VARCHAR2(10)	NULL	Party category code.
PARTY_FULL_NM	VARCHAR2(100)	NULL	Party full name.
PARTY_ID	VARCHAR2(32)	NOT NULL	Party identifier.
PARTY_RK	NUMBER(10)	NOT NULL	System-generated party retained surrogate key.
PARTY_SUBCATEGORY _CD	VARCHAR2(10)	NULL	Party subcategory code.
PARTY_TYPE_CD	VARCHAR2(10)	NULL	Party type code.
SOURCE_SYSTEM_CD	VARCHAR2(10)	NOT NULL	Source system code.
UI_DEF_FILE_NM	VARCHAR2(100)	NULL	Custom Page Builder user interface file name.
UPDATE_USER_ID	VARCHAR2(60)	NULL	User who last updated the party.

Name	Datatype	Null Option	Definition
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VERSION_NO	NUMBER(10)	NOT NULL	Version number used to implement optimistic locking.

Table A1.46 *Column(s) of "PARTY_CONFIG" Table*

Name	Datatype	Null Option	Definition
PARTY_CATEGORY_CD	VARCHAR2(10)	NULL	Party category code.
PARTY_CONFIG_SEQ_NO	NUMBER(10)	NOT NULL	Party configuration sequence number. The sequence number is also used as a priority when multiple configurations apply for a given party. If multiple configurations apply, the one with the smaller sequence number will be chosen.
PARTY_SUBCATEGORY_CD	VARCHAR2(10)	NULL	Party subcategory code.
PARTY_TYPE_CD	VARCHAR2(10)	NOT NULL	Party type code.
UI_DEF_FILE_NM	VARCHAR2(100)	NOT NULL	Custom Page Builder user interface definition file name.

Table A1.47 *Column(s) of "PARTY_CONFIG_X_USER_GROUP" Table*

Name	Datatype	Null Option	Definition
PARTY_CONFIG_SEQ_ NO	NUMBER(10)	NOT NULL	Party configuration sequence number.
USER_GROUP_NM	VARCHAR2(60)	NOT NULL	User group name.

Table A1.48 *Column(s) of "PARTY_EVENT" Table*

Name	Datatype	Null Option	Definition
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the party event was created.
CREATE_USER_ID	VARCHAR2(60)	NULL	User who created the party event.
EVENT_DESC	VARCHAR2(100)	NULL	Event description.
EVENT_TYPE_CD	VARCHAR2(10)	NOT NULL	Event type code.
PARTY_EVENT_RK	NUMBER(10)	NOT NULL	System-generated party event surrogate key.
PARTY_RK	NUMBER(10)	NOT NULL	System-generated party retained surrogate key.
LINKED_OBJECT_NM	VARCHAR2(100)	NULL	Linked Object Name
LINKED_OBJECT_RK	NUMBER(10)	NULL	Linked Object Retained Surrogate Key

Table A1.49 *Column(s) of "PARTY_SEARCH_CRITERIA_FIELD" Table*

Name	Datatype	Null Option	Definition
DISPLAY_ORDER_NO	NUMBER(6)	NOT NULL	Display order number.
FIELD_NM	VARCHAR2(30)	NOT NULL	Field name.
FORMAT_TXT	VARCHAR2(40)	NULL	Name of the resource bundle key that contains the display format for numeric fields. *Note:* This column is not available for use in SAS Enterprise Case Management 2.1.
REF_TABLE_NM	VARCHAR2(30)	NULL	Reference table name to render a selection list criteria filter for the field.

Name	Datatype	Null Option	Definition
TABLE_NM	VARCHAR2(30)	NOT NULL	Field table name.
USER_ID	VARCHAR2(60)	NOT NULL	User whom this configuration applies to. Equals '*' for the default configuration for all users.

***Table A1.50** Column(s) of "PARTY_SEARCH_FILTER_FIELD" Table*

Name	Datatype	Null Option	Definition
DISPLAY_ORDER_NO	NUMBER(6)	NOT NULL	Display order number.
FIELD_NM	VARCHAR2(30)	NOT NULL	Field name.
REF_TABLE_NM	VARCHAR2(30)	NOT NULL	Reference table name to render a selection list filter for the field.
TABLE_NM	VARCHAR2(30)	NOT NULL	Field table name.
USER_ID	VARCHAR2(60)	NOT NULL	User whom this configuration applies to. Equals '*' for the default configuration for all users.

***Table A1.51** Column(s) of "PARTY_SEARCH_RESULT_FIELD" Table*

Name	Datatype	Null Option	Definition
DISPLAY_ORDER_NO	NUMBER(6)	NOT NULL	Display order number.
FIELD_NM	VARCHAR2(30)	NOT NULL	Field name.
FORMAT_TXT	VARCHAR2(40)	NULL	Name of the resource bundle key that contains the display format for numeric and date fields. *Note:* This column is not available for use in SAS Enterprise Case Management 2.1.
REF_TABLE_NM	VARCHAR2(30)	NULL	Reference table name to render coded values as displayable values.
TABLE_NM	VARCHAR2(30)	NOT NULL	Field table name.

Name	Datatype	Null Option	Definition
USER_ID	VARCHAR2(60)	NOT NULL	User whom this configuration applies to. Equals '*' for the default configuration for all users.

Table A1.52 *Column(s) of "PARTY_UDF_CHAR_VALUE" Table*

Name	Datatype	Null Option	Definition
PARTY_RK	NUMBER(10)	NOT NULL	System-generated party-retained surrogate key.
ROW_NO	NUMBER(10)	NOT NULL	Row number.
UDF_NM	VARCHAR2(30)	NOT NULL	User defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User defined field table name.
UDF_VALUE	VARCHAR2(4000)	NOT NULL	User defined field value.
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.53 *Column(s) of "PARTY_UDF_DATE_VALUE" Table*

Name	Datatype	Null Option	Definition
PARTY_RK	NUMBER(10)	NOT NULL	System-generated party-retained surrogate key.
ROW_NO	NUMBER(10)	NOT NULL	Row number.
UDF_NM	VARCHAR2(30)	NOT NULL	User defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User defined field table name.
UDF_VALUE	TIMESTAMP	NOT NULL	User defined field value.

Name	Datatype	Null Option	Definition
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given dentifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.54 *Column(s) of "PARTY_UDF_DEF" Table*

Name	Datatype	Null Option	Definition
MAX_CHAR_CNT	NUMBER(6)	NULL	Maximum number of characters for a user-defined field of CHAR data type.
UDF_DESC	VARCHAR2(100)	NULL	User defined field description.
UDF_NM	VARCHAR2(30)	NOT NULL	User defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User defined field table name.
UDF_TYPE_NM	VARCHAR2(10)	NOT NULL	User defined field data type (VARCHAR, BIGINT, DOUBLE, BOOLEAN, DATE, TIMESTAMP).

Table A1.55 *Column(s) of "PARTY_UDF_LGCHR_VALUE" Table*

Name	Datatype	Null Option	Definition
PARTY_RK	NUMBER(10)	NULL	System generated party surrogate key.
ROW_NO	NUMBER(10)	NULL	Row number.
UDF_NM	VARCHAR2(30)	NULL	User defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NULL	User defined field table name.
UDF_VALUE	CLOB	NULL	User defined field value.

Name	Datatype	Null Option	Definition
VALID_FROM_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.56 *Column(s) of "PARTY_UDF_NUM_VALUE" Table*

Name	Datatype	Null Option	Definition
PARTY_RK	NUMBER(10)	NOT NULL	System-generated party-retained surrogate key.
ROW_NO	NUMBER(10)	NOT NULL	Row number.
UDF_NM	VARCHAR2(30)	NOT NULL	User defined field name.
UDF_TABLE_NM	VARCHAR2(30)	NOT NULL	User defined field table name.
UDF_VALUE	DOUBLE PRECISION	NOT NULL	User defined field value.
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Table A1.57 *Column(s) of "PARTY_VERSION" Table*

Name	Datatype	Null Option	Definition
CREATE_DTTM	TIMESTAMP	NOT NULL	Date and time when the party was created.
CREATE_USER_ID	VARCHAR2(60)	NULL	User who created the party.
DELETE_FLG	CHAR(1)	NOT NULL	This flag indicates whether or not the party has been logically deleted and is now obsolete.

Name	Datatype	Null Option	Definition
IDENTICAL_PARTY_LINK_SK	NUMBER(10)	NULL	System-generated surrogate key for linking identical parties.
INDIVIDUAL_FLG	char(1)	NOT NULL	Is the party an individual?
NATIONAL_ID	VARCHAR2(32)	NULL	National identification number.
NATIONAL_ID_TYPE_CD	VARCHAR2(10)	NULL	National identification number type code.
PARTY_CATEGORY_CD	VARCHAR2(10)	NULL	Party category code.
PARTY_FULL_NM	VARCHAR2(100)	NULL	Party full name.
PARTY_ID	VARCHAR2(32)	NOT NULL	Party identifier.
PARTY_RK	NUMBER(10)	NOT NULL	System-generated party-retained surrogate key.
PARTY_SUBCATEGORY_CD	VARCHAR2(10)	NULL	Party subcategory code.
PARTY_TYPE_CD	VARCHAR2(10)	NULL	Party type code.
SOURCE_SYSTEM_CD	VARCHAR2(10)	NOT NULL	Source system code.
UI_DEF_FILE_NM	VARCHAR2(100)	NULL	Custom Page Builder user interface file name.
UPDATE_USER_ID	VARCHAR2(60)	NULL	User who last updated the party.
VALID_FROM_DTTM	TIMESTAMP	NOT NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
VALID_TO_DTTM	TIMESTAMP	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Name	Datatype	Null Option	Definition
VERSION_NO	NUMBER(10)	NOT NULL	Version number used to implement optimistic locking.

Table A1.58 *Column(s) of "PARTY_X_PARTY" Table*

Name	Datatype	Null Option	Definition
MEMBER_DESC	VARCHAR2(100)	NULL	Membership description.
MEMBER_PARTY_RK	NUMBER(10)	NOT NULL	Surrogate key of a party that is a member of another party.
MEMBER_TYPE_CD	VARCHAR2(10)	NOT NULL	Membership type code.
PARTY_RK	NUMBER(10)	NOT NULL	System-generated party-retained surrogate key.

Table A1.59 *Column(s) of "PARTY_X_USER_GROUP" Table*

Name	Datatype	Null Option	Definition
PARTY_RK	NUMBER(10)	NOT NULL	System-generated party-retained surrogate key.
USER_GROUP_NM	VARCHAR2(60)	NOT NULL	User group name. Equals '*' if any user may access the party.

Table A1.60 *Column(s) of “REF_TABLE_TRANS” Table*

Name	Datatype	Null Option	Definition
LOCALE	VARCHAR2(5)	NULL	A locale supported by the application. The locale should follow the Java locale naming convention: a valid 2-letter lowercase ISO 639 language code optionally appended with an underscore and a 2-letter uppercase ISO 3166 country code (for example "en", "en_US", "en_GB", "fr_FR").
REF_TABLE_NM	VARCHAR2(30)	NULL	Reference table name.
VALUE_CD	VARCHAR2(10)	NULL	Coded value.

Name	Datatype	Null Option	Definition
VALUE_DESC	VARCHAR2(100)	NULL	Displayable value.

Table A1.61 *Column(s) of "REF_TABLE_VALUE" Table*

Name	Datatype	Null Option	Definition
DISPLAY_ORDER_NO	NUMBER(6)	NOT NULL	Display order number.
PARENT_REF_TABLE_NM	VARCHAR2(30)	NULL	Reference table name.
PARENT_VALUE_CD	VARCHAR2(10)	NULL	Coded value.
REF_TABLE_NM	VARCHAR2(30)	NOT NULL	Reference table name.
VALUE_CD	VARCHAR2(10)	NOT NULL	Coded value.
VALUE_DESC	VARCHAR2(100)	NOT NULL	Displayable value.

Table A1.62 *Column(s) of “RELATED_ITEM_CONFIG” Table*

Name	Datatype	Null Option	Definition
CREATE_USER_ID	VARCHAR2(60)	NULL	ID of the user who created the Related Item Config record.
CREATE_DTTM	TIMESTAMP	NULL	Date and time of when record was added.
DELETE_FLG	CHAR(1)	NULL	Has the record been logically deleted?
RELATED_CASE_FIELD_NM	VARCHAR2(30)	NULL	Name of the case field that will be used to match the cases.
RELATED_INCIDENT_FIELD_NM	VARCHAR2(30)	NULL	Name of the incident field that will be used to match incidents.
RELATED_ITEM_DESC	VARCHAR2(100)	NULL	Description field.
RELATED_ITEM_ID	VARCHAR2(32)	NULL	Related item ID.

Name	Datatype	Null Option	Definition
RELATED_ITEM_RK	NUMBER(10)	NULL	Since source data for RELATED_ITEM_CONFIG might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for RELATED_ITEM_CONFIG. Used with VALID_FROM_DTTM for versioning of rows.
RELATED_PARTY_FIELD_NM	VARCHAR2(30)	NULL	Name of the subject field that will be used to match the subjects.
UPDATE_USER_ID	VARCHAR2(60)	NULL	ID of the user who updated this record.

Table A1.63 *Column(s) of "SCHEMA_VERSION" Table*

Name	Datatype	Null Option	Definition
VERSION_ID	VARCHAR2(10)	NOT NULL	Schema version identifier (single row).

Table A1.64 *Column(s) of "SNA_CONFIG_DETAIL" Table*

Name	Datatype	Null Option	Definition
DELETE_FLG	CHAR(1)	NULL	Has the record been logically deleted?
FROM_PARTY_FIELD_EXP	VARCHAR2(4000)	NULL	Expression to be used to define FROM_PARTY_FIELD_NM. If blank, FROM_PARTY_FIELD_NM will be used for matching subjects.
FROM_PARTY_FIELD_NM	VARCHAR2(30)	NULL	Name of the subject form matching subjects. This is the 'match from' field.
FROM_PARTY_TABLE_NM	VARCHAR2(30)	NULL	Name of the table where FROM_PARTY_FIELD_NM is found.

Name	Datatype	Null Option	Definition
SNA_CONFIG_RK	NUMBER(10)	NULL	Since source data for SNA_CONFIG_DETAIL might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for SNA_CONFIG_DETAIL. Used with VALID_FROM_DTTM for versioning of rows.
SNA_CONFIG_SEQ_NO	NUMBER(10)	NULL	System-generated sequence. The combination of SNA_CONFIG_RK and SNA_CONFIG_SEQ_NO make the record unique.
TO_PARTY_FIELD_EXP	VARCHAR2(4000)	NULL	Expression to be used to define TO_PARTY_FIELD_NM. If blank, TO_PARTY_FIELD_NM will be used for matching subjects
TO_PARTY_FIELD_NM	VARCHAR2(30)	NULL	Name of the subject field for matching subjects. This is the 'match to' field.
TO_PARTY_TABLE_NM	VARCHAR2(30)	NULL	Name of the table where TO_PARTY_FIELD_NM is found

Table A1.65 *Column(s) of “SNA_CONFIG_MASTER” Table*

Name	Datatype	Null Option	Definition
CREATE_DTTM	TIMESTAMP	NULL	Date and time of when record was added.
CREATE_USER_ID	VARCHAR2(60)	NULL	ID of the user who created the Related Item Config record.
DELETE_FLG	CHAR(1)	NULL	Has the record been logically deleted?
SNA_CONFIG_DESC	VARCHAR2(100)	NULL	Description of the Case Network Analysis match criterion.

Name	Datatype	Null Option	Definition
SNA_CONFIG_ID	VARCHAR2(32)	NULL	ID of the Case Network Analysis match criterion
SNA_CONFIG_RK	NUMBER(10)	NULL	Since source data for SNA_CONFIG_MASTER might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for SNA_CONFIG_MASTER. Used with VALID_FROM_DTTM for versioning of rows.
UPDATE_USER_ID	VARCHAR2(60)	NULL	Id of the user who updated this record.

Table A1.66 *Column(s) of “TASK_LIST” Table*

Name	Datatype	Null Option	Definition
ALERT_ID	NUMBER(38)	NULL	The alert ID for the reminder to be issued.
BUSINESS_OBJECT_NM	VARCHAR2(100)	NULL	The business object name links a task to a case or an incident along with the surrogate key of that business object.
BUSINESS_OBJECT_RK	NUMBER(10)	NULL	This key links the task to a case or an incident.
COMPLETE_FLG	CHAR(1)	NULL	Is this task complete?
OWNER_ID	VARCHAR2(60)	NULL	The user ID of the current task owner.
REMINDER_DTTM	DATE	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.

Name	Datatype	Null Option	Definition
REMINDER_SENT_DTTM	DATE	NULL	Standard dates used for versioning. The row content is valid within the time range specified by FROM and TO dates. For a given identifier, versions of its rows are distinguished by different non-overlapping FROM and TO date ranges.
REMINDER_USER_ID	VARCHAR2(60)	NULL	The user ID of the reminder receipient.
TASK_DESC	VARCHAR2(1000)	NULL	The description of the task.
TASK_GOAL_DT	DATE	NULL	The expected completion date for this task.
TASK_LIST_RK	NUMBER(10)	NULL	Since source data for TASK_LIST might come from multiple systems, the business-supplied keys might not be unique. A surrogate key is added in the ETL process to ensure a unique identifier for TASK_LIST. Used with VALID_FROM_DTTM for versioning of rows.

Appendix 2
Troubleshooting

The following topics describe troubleshooting procedures for SAS Enterprise Case Management.

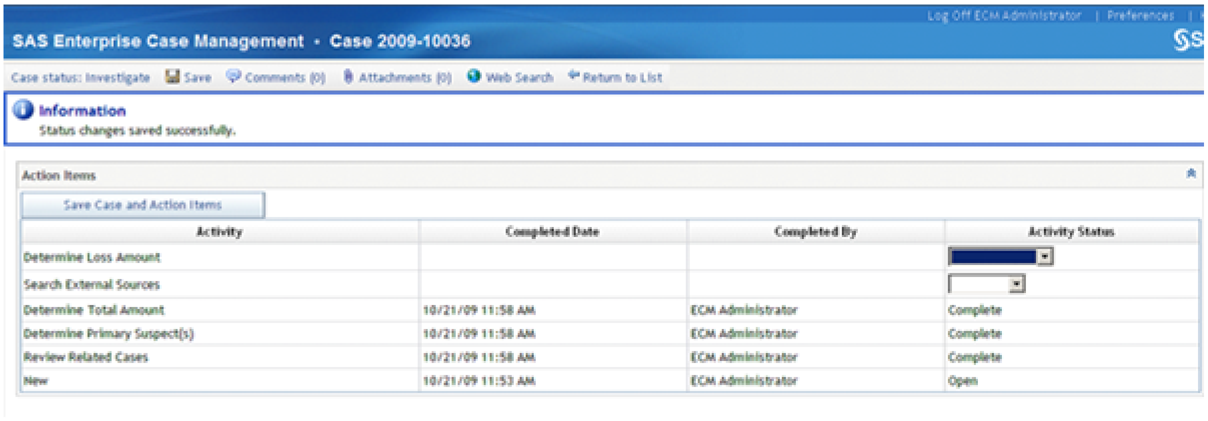
Workflow Status Updates

After you select and open a case in SAS Enterprise Case Management, you can update the activity status for that case on the Action Items panel. In the **Activity Status** column, select the needed activity status for an activity. Then, when you select **Save Case and Action Items**, the activity status changes are saved. The time that the activity status was changed is then listed in the **Completed Date** column.

Note: The time that is displayed in the **Completed Date** column is the SAS Enterprise Case Management server time.

Below is a display of the Action Items panel for a case.

Display A2.1 *Workflow Status*


Log Off ECM Administrator | Preferences
SAS Enterprise Case Management • Case 2009-10036
Case status: Investigate
Save
Comments (0)
Attachments (0)
Web Search
Return to List
Action Items
Save Case and Action Items

Information
Status changes saved successfully.

Activity	Completed Date	Completed By	Activity Status
Determine Loss Amount			
Search External Sources			
Determine Total Amount	10/21/09 11:58 AM	ECM Administrator	Complete
Determine Primary Suspect(s)	10/21/09 11:58 AM	ECM Administrator	Complete
Review Related Cases	10/21/09 11:58 AM	ECM Administrator	Complete
New	10/21/09 11:53 AM	ECM Administrator	Open

Database Error Warnings and SAS Deployment Wizard

When you are using the SAS Deployment Wizard to install SAS Enterprise Case Management, you may encounter possible warnings when configuring your database. If a yellow check is listed during the configure step in the SAS Deployment Wizard, a warning was encountered during your configuration. This is most likely a database error and is received for any of the following reasons:

- The database doesn't exist.
- The user name (schema) does not exist on the database.

- The user name and database exist but the tables have already been created.

In addition, if you receive the warning message "SAS Enterprise Case Management Server-Tier Configuration Failed to Deploy Successfully because of an invalid database connection", you should be aware that on some platforms, SAS programs will fail if the relational database version does not match the default SAS/ACCESS configuration. On UNIX platforms, SAS/ACCESS needs to be configured to the correct version of the relational database. You should use **`SAS_HOME/SASFoundation/9.2/sassetup`** for this purpose.

Note: Errors have been reported when Oracle schema users don't have the authority to create views. In this case, the sequences, tables and indexes are created, but the views are not. This may require manually dropping and recreating the files using the scripts in **`<SASCONFIG>/Lev1/Applications/SASCaseManagementServerCfg/N.N/Source/sasmisc/inst all/Oracle`**.

Specifying the Version Number for SAS Enterprise Case Management

If the SAS Enterprise Case Management version number is not specified in the SAS Enterprise Case Management database, the SAS Enterprise Case Management Web application will not execute correctly when you attempt to log on.

DBMS Jar File and Multiple Machine Installations

In a multiple-machine installation, the SAS Deployment Wizard prompts you for the name of the DBMS jar file that is used on the middle tier. However, this file may not be available on the middle tier because the DBMS jar file is installed on the server machine. Therefore, you will need to transfer this file to the middle-tier machine before the middle-tier installation.

Note: The JDBC jar files should be copied to a secure location where they will be kept for the life of the application.

JDBC Jar Files

If an error message is displayed while the SAS Deployment Wizard is trying to deploy SAS Enterprise Case Management Mid-Tier, ensure that the only jars in the SASDomain \lib should be jdbc jars. The version of the jars in the SAS Enterprise Case Management application should be selected over the ones in the WebLogic container.

Loading ETL Cases Into SAS Enterprise Case Management

When working in SAS Enterprise Case Management, you may need to import ETL cases from another system. You can import cases into SAS Enterprise Case Management as new cases. A workflow instance is automatically created when a new case is created. The following is an example program of how to load ETL cases into SAS Enterprise Case Management.

```
/***********************************************************************
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  respective companies.
******************************************************************************/


/******************************************************************************
  SETUP LIBNAME
******************************************************************************/

%let DB_SERVICE = ormdev3u;
%let DB_SCHEMA = ormdev4_casemgmt;
%let DB_USER = &DB_SCHEMA;
%let DB_PASSWORD = &DB_SCHEMA;

libname ecm_db oracle
   path="&DB_SERVICE" user="&DB_USER" password="&DB_PASSWORD" schema="&DB_SCHEMA";


/*******************************************************************************
  GET NEXT CASE KEY
*******************************************************************************/

proc sql noprint;

   connect to oracle (
      path="&DB_SERVICE" user="&DB_USER" password="&DB_PASSWORD" connection=global);

   select * into :CASE_KEY from connection to oracle
      (select &DB_SCHEMA..case_rk_seq.nextval from dual);

   disconnect from oracle;

quit;

%let CASE_KEY = %trim(&CASE_KEY);


/*******************************************************************************
  GET CURRENT DATE/TIME
*******************************************************************************/

%let CURRENT_DATETIME = %sysfunc(datetime(), datetime);
%let CURRENT_DATETIME_SQL = "&CURRENT_DATETIME"dt;


/*******************************************************************************
  INSERT CASE
*******************************************************************************/
```

```
proc sql noprint;

   insert into ecm_db.case (
      case_rk,
      valid_from_dttm,
      case_id,
      source_system_cd,
      case_type_cd,
      case_category_cd,
      case_status_cd,
      case_disposition_cd,
      case_desc,
      regulatory_rpt_rqd_flg,
      investigator_user_id,
      open_dttm,
      close_dttm,
      ui_def_file_nm,
      create_user_id,
      create_dttm,
      update_user_id,
      version_no,
      delete_flg
   ) values (
      &CASE_KEY,
      &CURRENT_DATETIME_SQL,
      "ETL-TEST-CASE-&CASE_KEY",
      'LEGACY',
      'FIN',
      'C',
      'C',
      'G',
      "ETL test case #&CASE_KEY from legacy system",
      '1',
      'rdtest0001',
      '23may2003:09:22:13'dt,
      '05sep2004:16:49:55'dt,
      'case-fin-01.xml',
      'ETL',
      &CURRENT_DATETIME_SQL,
      'ETL',
      1,
      '0'
   );

quit;


/*******************************************************************************
  COPY TO CASE_VERSION TABLE
*******************************************************************************/

proc sql noprint;

   insert into ecm_db.case_version
      select * from ecm_db.case where case_rk = &CASE_KEY;
```

```
quit;


/******************************************************************************
  ADD USER DEFINED FIELD VALUES
******************************************************************************/

proc sql noprint;

   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_CORRECT_PRIOR_RPT_FLG', 1, '0');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_FED_REGULATOR_CD', 1, 'D');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_BRANCH_ID', 1, '123');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_BRANCH_ADDRESS_TXT', 1, '100 Main Street');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_BRANCH_CITY_NM', 1, 'Cary');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_BRANCH_STATE_CD', 1, 'NC');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_BRANCH_ZIP_CD', 1, '27513');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_BRANCH_COUNTRY_CD', 1, 'US');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_MULTI_BRANCH_FLG', 1, '0');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'X_ACCOUNT', 'X_ACCOUNT_ID', 1, '000111222333');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'X_ACCOUNT', 'X_ACCOUNT_ID', 2, '000111444555');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'X_ACCOUNT', 'X_CLOSED_FLG', 1, '0');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'X_ACCOUNT', 'X_CLOSED_FLG', 2, '1');
   insert into ecm_db.case_udf_date_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_ACTIVITY_START_DT', 1, '16may2003:00:00:00'dt);
   insert into ecm_db.case_udf_date_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_ACTIVITY_END_DT', 1, '16may2003:00:00:00'dt);
   insert into ecm_db.case_udf_num_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_TOTAL_AMT', 1, 165000.00);
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'X_SUSPICIOUS_ACTIVITY', 'X_SUSPICIOUS_ACTIVITY_CD', 1, 'C');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'X_SUSPICIOUS_ACTIVITY', 'X_SUSPICIOUS_ACTIVITY_CD', 2, 'H');
   insert into ecm_db.case_udf_num_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_LOSS_AMT', 1, 165000.00);
   insert into ecm_db.case_udf_num_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_RECOVERY_AMT', 1, 0.00);
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_INSTITUTION_IMPACT_FLG', 1, '0');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_BONDING_CO_NOTIFIED_FLG', 1, '1');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'X_LAW_AGENCY', 'X_LAW_AGENCY_CD', 1, 'C');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'X_LAW_AGENCY', 'X_LAW_AGENCY_CD', 2, 'H');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_LAW_AGENCY_NM', 1, 'State of North Carolina');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_LAW_CONTACT_PERSON_NM', 1, 'Elliot Ness');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_LAW_CONTACT_AREA_CD', 1, '919');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'CASE', 'X_LAW_CONTACT_PHONE_NO', 1, '7770077');
   insert into ecm_db.case_udf_char_value values (&CASE_KEY, &CURRENT_DATETIME_SQL,
      'X_ACTIVITY_DESC', 'X_DESCRIPTION_LINE_TXT', 1, 'THE BAD GUY WROTE A BAD CHECK
AND ALMOST GOT AWAY WITH IT UNTIL SAS FRAUD DETECTION SOFTWARE SNIFFED HIM OUT.');

quit;


/******************************************************************************
  ADD GROUP PERMISSIONS
******************************************************************************/

proc sql noprint;

   insert into ecm_db.case_x_user_group values (&CASE_KEY, 'CASE_FINANCIAL');

quit;
```

Assigning the Primary Owner to a Case

When a case is created in SAS Enterprise Case Management, a user is assigned as the Primary Owner of the case. The Primary Owner is determined by settings for CASE_CONFIG. If there is a Primary Owner configured in CASE_CONFIG for the case type, category, and subcategory, then that user will be designated as the Primary Owner. If there is not a Primary Owner configured for the case, the Primary Owner is assigned when a user first edits the case. In this scenario, the first to person to edit the case automatically becomes the Primary Owner.

You can also assign the Primary Owner to a case if you are currently the Primary Owner. On the **Cases** tab of the SAS Enterprise Case Management window, select the **Actions** menu for a case. Select **Set Primary Owner**. The Set Primary Owner dialog box opens. You can now select an owner from the **New Owner** drop-down list. Select **OK** to save the change.

Adding the Custom Column Type VARCHAR

When adding a custom column of type VARCHAR, make sure the **`max_char_cnt`** is a number greater than 0, preferably the maximum possible size for your custom column.

Adding Comments to a Case

Comments added to a case in SAS Enterprise Case Management have a limit of 2000 characters.

Locking and Unlocking a Case

In SAS Enterprise Case Management, you can lock a case for restricted use or unlock a case to enable another user to edit. You can access the **Lock** and **Unlock** functions for a case from the case **Actions** menu. If you do not have access to these functions for a case, the functions will be inactive.

To lock a case, select **Lock** from the **Actions** menu. Locking a case disables the **Edit** and **Unlock** functions for that case for other users. You can, however, view the case. If you try to edit a case that is locked, and you do not have access to the case, a message will display stating that the case is locked by another user. If a case is already locked by yourself or another user, the **Lock** function will be disabled.

If you have access to a locked case, you can unlock the case. To unlock a case, select **Unlock** from the **Actions** menu. When you unlock a case, a message will state that the case is unlocked. The **Unlock** function is disabled if the case is already unlocked or you do not have access to unlock it.

Another way to lock a case is to edit a case. You can select the **Edit** function for a case from the **Actions** menu, or you can select the case from the **Case ID** column in the case Results panel. This automatically locks the case and opens the case for editing. If the case is locked by another user, the **Edit** function is disabled in the **Actions** menu.

A case can have other cases linked to it. A linked case is identified by the **Case ID** on the **Linked Case** tab on the Cases Information panel. If the case is unlocked, clicking on the linked **Case ID** locks the case and opens the case for editing.

Using the Search Function In SAS Enterprise Case Management

When working in SAS Enterprise Case Management, you may need to search for existing cases, incidents, and subjects. The Search panel for cases, incidents, and subjects contains three functions that enable you to modify the search criteria and results that are displayed. You can select from the available search fields and then select one of the following functions:

Search
The Search function enables you to search for existing cases, incidents, or subjects based on the search fields that are selected. It is possible that one or more search fields are selected by default. Enter the search criteria needed in the available search fields. Select **Search**. Any existing records that match the search criteria are displayed in the Results panel.

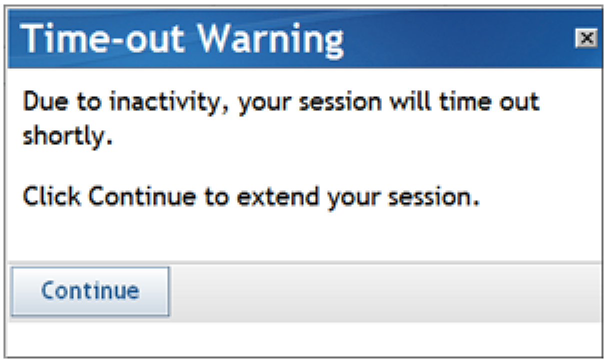
Clear
The Clear function clears all search field selections and any records that are displayed in the Results panel. This includes any search fields that have been selected by default. Select **Clear**. All search fields and search records are cleared.

Reset
The Reset function resets the search fields to their initial value. This function can be used to reset the search fields to their initial value *before* a search is performed. Fields that are selected by default and records that are displayed in the Results panel are not affected by the Reset function. Select **Reset.** Any search fields that were changed *before* a search is executed are reset to their initial value.

Note: If the Clear function is used, the Reset function does not reset any fields that were select by default. Those fields remain cleared.

Session Time-Out Warning Message

When you are working in SAS Enterprise Case Management, your session can expire. A session Time-out Warning dialog box is shown if a time-out period has elapsed with no user activity. The default time-out period is five minutes before the actual session time-out occurs. In the Time-out Warning dialog box, click **Continue** to extend your session. Below is a display of the Time-out Warning dialog box.


Time-out Warning

Due to inactivity, your session will time out shortly.

Click Continue to extend your session.

Instructions for setting the session time-out depend on the type of Web Application Server that you are using. You should refer to documentation for your Web Application Server for instructions on setting the session time-out value.

SAR Reports and the Default SAS Line Size

When entering values for the static SAR report macros, you may encounter a conflict between the macro variable definition length and the default SAS line size length. The default SAS line size is 195. If your macro variable definition is longer than 195 characters, then you'll either need to wrap your macro variable definition to a new line or modify your SAS line size value. If you choose to modify your macro variable definition, then simply add a carriage return at line 195 and place the remaining macro variable value on a second line. A second option would be to modify the sasv9.cfg file in order to change your line size value to a different value.

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Your Turn