

# Complex Assembly Manufacturing Solution 7.2 Security Guide



Version 1.0



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	Example
	Note
	Recommendation
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## Contents

Introduction .....	9
Target Audience .....	9
Why is Security Necessary?.....	9
About this Document .....	9
Overview of the Main Sections.....	9
SAP Notes for the Security Guide .....	11
Technical System Landscape .....	11
User Administration and Authentication.....	12
User Management.....	12
User Data Synchronization.....	14
Authorizations .....	14
Standard Roles.....	14
Network and Communication Security.....	15
Communication Channel Security .....	15
Network Security .....	16
Communication Destinations .....	16
Data Storage Security.....	16
Security for Additional Applications .....	16
Dispensable Functions with Impacts on Security .....	17
SAP Visual Enterprise Generator.....	17
Enterprise Services Security.....	17
Other Security-Relevant Information .....	17
Security Logging and Tracing .....	20



## Introduction



This guide does not replace the administration or operation guides that are available for productive operations.

## Target Audience

The *Complex Assembly Manufacturing Solutions (CAMS) Security Guide* is designed for the following:

- Technology consultants
- System administrators

This *CAMS Security Guide* is not included as part of the Installation Guides, Configuration Guides, Technical Operation Manuals, or Upgrade Guides. Such guides are only relevant for a certain phase of the software life cycle, whereas the *CAMS Security Guide* provides information that is relevant for all life cycle phases.

## Why Is Security Necessary?

With the increasing use of distributed systems and the internet for managing business data, the demands on security are also on the rise. When using a distributed system, you need to be sure that your data and processes support your business needs without allowing unauthorized access to critical information. User errors, negligence, or attempted manipulation on your system should not result in loss of information or processing time. These demands on security apply likewise to the CAMS suite. To assist you in securing the CAMS suite, we provide this *CAMS Security Guide*.

## About this Document

The *CAMS Security Guide* provides an overview of the security-relevant information for CAMS.

## Overview of the Main Sections

The *CAMS Security Guide* comprises the following main sections:

- **Technical System Landscape**

This section provides an overview of the technical components of CAMS.

- **User Administration and Authentication**

This section provides an overview of the following user administration and authentication aspects:

- User management
- User administration tools
- User types
- Standard users that are delivered with CAMS
- Emergency user functionality
- User data synchronization

- **Authorizations**

This section provides an overview of the standard roles delivered with CAMS.

- **Network and Communication Security**

This section addresses network and communication security issues as they relate to CAMS.

- **Data Storage Security**

This section explains CAMS data storage security.

- **Security for Additional Applications**

This section provides security information that applies to third-party applications that are used with CAMS.

- **Dispensable Functions with Impacts on Security**

This section lists an optional CAMS function that impacts security and the consequences of not activating that functionality.

- **Enterprise Services Security**

This section provides an overview of the security aspects that apply to the enterprise services delivered with CAMS.

- **Other Security-Relevant Information**

This section contains information about the following:

- The camsDBInfo file
- The CAMS-INT file
- Configuration files
- Citrix
- Database connect string
- SHA-1 hashing/encryption technology
- Passwords
- Failed logon attempts
- SQL\*Net interface for encryption
- ActiveX
- Auto-logoff
- Personal data viewing
- SAP Visual Enterprise Generator Interface Security
- Virus scanning
- Invalid passwords dictionary

- **Security Logging and Tracing**

This section covers logging and tracing information, including how to track selected system changes and an optional CAMS feature you can configure to reproduce activities if a security breach occurs.

## SAP Notes for the Security Guide

You **must** read the following SAP Notes which contain the most recent information on system security as well as corrections to the security documentation.

Make sure that you have the up-to-date version of the SAP Note, which you can find in the *SAP Service Marketplace* at [service.sap.com/notes](http://service.sap.com/notes).

SAP Note Number	Title	Description
1673442	CAMS 7.2 Security Guide	Information not included in the CAMS Security Guide



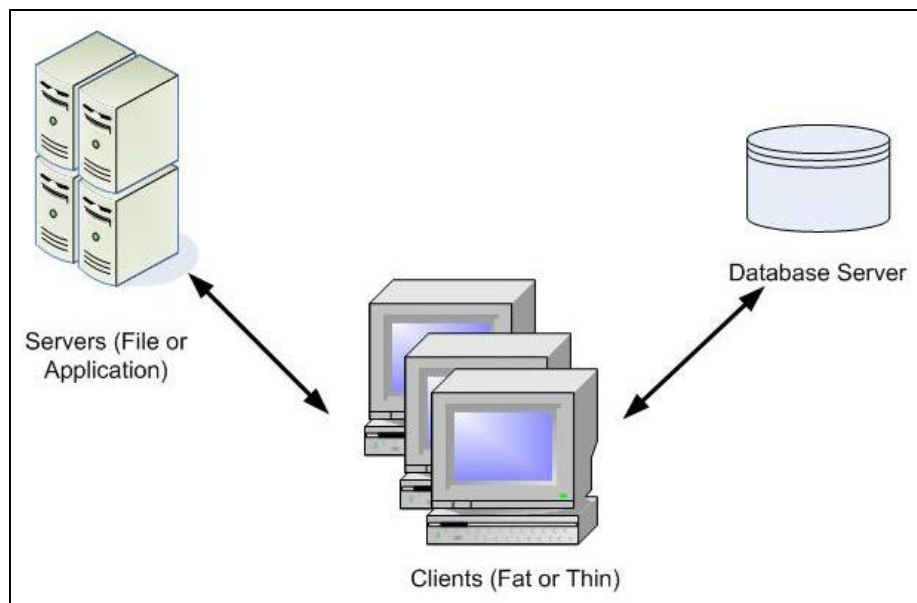
## Technical System Landscape

Figure 1 shows the system landscape for CAMS. In this landscape, the following is true:

- The servers can either store files or run the application in a Citrix environment.
- Clients can be fat or thin.
- The database is on a separate server accessed by clients through an Oracle SQL\*Net connection.

The number and types of servers and the client configuration for CAMS depend on your sizing, availability, infrastructure, and security requirements.

**Figure 1 – System Landscape**





## User Administration and Authentication

CAMS includes functionality to manage users and groups. This section covers the following:

- **User Management**

This section describes the CAMS user management tools, the types of users required, the standard users that are delivered with CAMS, and the emergency user functionality.

- **User Data Synchronization**

This topic describes the options for synchronizing user data.

### User Management

CAMS includes the following components:

- Profiles
- User IDs
- Logon IDs
- Group maintenance

### User Administration Tools

The following table lists the CAMS user management and administration tools. For more information about the tools, see the CAMS System Maintenance application help.

Tool	Description
User Maintenance	You use User Maintenance to create and modify user IDs in CAMS. For more information, see the <i>CAPP System Maintenance → User Maintenance</i> section in the CAMS System Maintenance application help.
Employee Master	You use the Employee Master to work with user IDs and logon IDs for the Shop Floor Management (SFM) application. For more information, see the <i>SFM System Maintenance → Employee Master</i> section in the CAMS System Maintenance application help.
Profile Maintenance	You use Profile Maintenance to create profiles that are assigned privileges to use CAMS functions. You then assign profiles to users via User Maintenance. For more information, see the <i>CAPP System Maintenance → Profile Maintenance</i> and <i>User Maintenance</i> sections in the CAMS System Maintenance application help.
Group Maintenance	You use Group Maintenance to create groups. You can then assign users to groups via User Maintenance. For more information, see the <i>CAPP System Maintenance → Group Maintenance</i> and <i>User Maintenance</i> sections in the CAMS System Maintenance application help.

## User Types

The following application user types are required for CAMS:

- System administrators with access to all CAMS functions
- Maintenance users with limited maintenance privileges
- Users who can edit CAMS data
- Users who can view CAMS data but cannot edit it

## Standard Users

The following table lists the standard users that are necessary to operate CAMS.



We recommend changing the user IDs and passwords for users that are automatically created during installation.

System	User ID	Type	Password	Description
CAPP	<b>system</b>	System administrator	There is no initial password for the <b>system</b> user ID. You should create a password once the <b>system</b> user is logged on to CAMS. For more information, see <i>CAPP System Maintenance → User Maintenance → Creating or Editing a User ID Password</i> in the CAMS System Maintenance application help.	The <b>system</b> user is automatically created during installation and is the initial user for CAMS with access to all functions.
SFM	<b>wipadmin</b>	System administrator	There is no initial password for the <b>wipadmin</b> user ID. You must create a password once the <b>wipadmin</b> user is logged on to SFM. For more information, see <i>SFM System Maintenance → Employee Master → User IDs → Changing a Password</i> in the CAMS System Maintenance application help.	The <b>wipadmin</b> user is automatically created during installation. The <b>wipadmin</b> user is the initial user for CAMS SFM with access to all functions.

## Emergency User

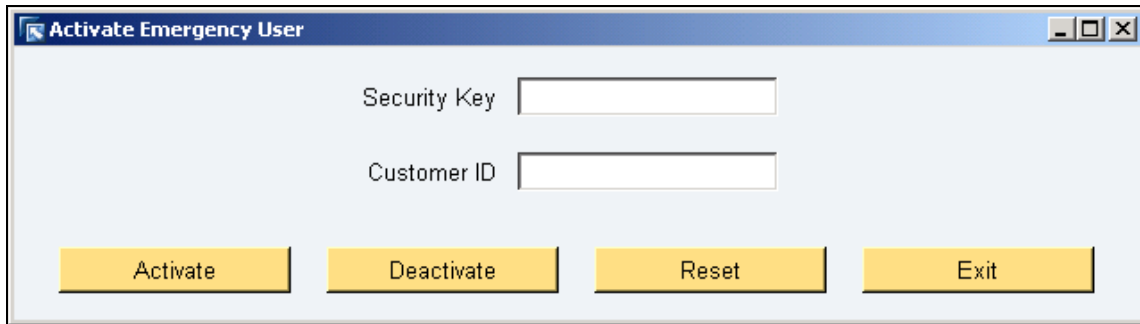
The emergency user functionality provides system administrators with a way to activate a super user that can gain access to the system to diagnose problems when there is no user access to the system.

In order to gain access, the system administrator must know the customer Security Key and Customer ID numbers (provided to you by your SAP representative).

To use this function, there is a bat file located in the main folder of the release named `RunManageEmergencyUser.bat`. You need to update the bat file to reflect your release folder locations, TNS name, etc. See the *CAMS Installation Guide* for instructions.

Running this bat file displays the window shown below. Once the system administrator enters the *Security Key* and *Customer ID*, clicking *Activate* activates the emergency user, "cams-em." (Note that if the upgrade script has not been run, the system administrator will get an error message to that effect when he or she tries to activate the emergency user.) Once activated, the system administrator can now log into CAMS as `cams-em`. The `cams-em` password is the same as the user ID.

Clicking *Deactivate* deactivates the emergency user so the user can no longer log in to CAMS. The *Reset* button is used to restore the emergency user to its original settings in the event that someone edits the `cams-em` user privileges via User Maintenance.



## User Data Synchronization

CAMS does not provide preconfigured integration that supports user authentication using Lightweight Directory Access Protocol (LDAP). It also does not support synchronization of specific user data with external applications. However, you can use customized code programmed by SAP representatives to support user authentication using LDAP and user data synchronization with external systems.

## Authorizations

This section provides an overview of the standard roles delivered with CAMS.

### Standard Roles

The following table lists standard roles used by CAMS. System administrators can manually create and customize other roles. For more information about creating roles, see *CAPP System Maintenance* → *Profile Maintenance* in the CAMS System Maintenance application help. For information about assigning profiles to users, see *CAPP System Maintenance* → *User Maintenance* in the CAMS System Maintenance application help.

Role	Description
system	Role with privileges for system administration functions. The <b>system</b> user has this role.
ME (Manufacturing Engineer)	Role with privileges to view and edit most planning data in CAMS.

Role	Description
IE (Industrial Engineer)	Role with privileges to view most planning data and edit some data in CAMS.



## Network and Communication Security

Your network infrastructure is extremely important in protecting your system. Your network needs to support the communication necessary for your business needs without allowing unauthorized access. A well-defined network topology can eliminate many security threats based on software flaws (at both the operating system and application level) or network attacks such as eavesdropping. If users cannot log on to your application or database servers at the operating system or database layer, then there is no way for intruders to compromise the machines and gain access to the backend system's database or files. Additionally, if users are not able to connect to the server local area network (LAN), they cannot exploit well-known bugs and security holes in network services on the server machines.

For more information, see the following sections:

- **Communication Channel Security**  
This section covers communication channel security for SAP Visual Enterprise Generator.
- **Network Security**  
This section provides network security information.
- **Communication Destinations**  
This section describes the information needed to configure communication paths.

## Communication Channel Security

CAMS uses Web services to communicate with SAP Visual Enterprise Generator (formerly Deep Server).

The table below shows the communication channels used by CAMS, the protocol used for the connection, and the type of data transferred.

Communication Path	Protocol Used	Type of Data Transferred	Data Requiring Special Protection
CAMS BOMM to SAP Visual Enterprise Generator	SOAP	Part instance data	None

CAMS retrieves part instance information from Visual Enterprise Generator and loads it into the BOMM module. This functionality requires a user name and password to connect to Visual Enterprise Generator. The password is stored (encrypted) in the CAMS database.

For secure communications between CAMS and Visual Enterprise Generator, use https:// instead of http:// as URL to the Visual Enterprise Generator SOAP service. This requires that you have setup IIS (which hosts the Visual Enterprise Generator Web service) to support HTTPS protocol and that you have a server authentication certificate installed on the IIS machine.

The *Visual Enterprise ActiveX Parameters* configuration parameters are used to configure the user name, password, web services description language (WSDL) interface address, the full file path to the WSDL file used to pass data in or out in order to transfer requests and results

generated from calls to web services, and additional Visual Enterprise Generator settings. See the *CAMS Configuration Guide* for details on these configuration parameters. To set these configuration parameters, select the *CAPP Maintenance* → *Configuration Parameters* → *CAPP* menu and click the *Visual Enterprise ActiveX Parameters* bar.

## Network Security

Since CAMS is a two-tier application, the only way it can be split is by having the application (fat client) separate from the database. SAP uses Web services for implementation-specific and core interfaces.

## Communication Destinations

The database administrator configures the communication port from the client to the Oracle database during Oracle installation. For more information, see the Oracle technical documentation.

The Transaction Daemon is configured by default for port 2541, but this can be changed.

NetWeaver uses communication ports; see the appropriate NetWeaver documentation.

The system administrator must set up the SAP Visual Enterprise Generator configuration parameters as discussed above.



## Data Storage Security

All CAMS data is stored in an Oracle database. For security information, see the Oracle technical documentation.

CAMS is executed with a connection to a single database schema, referred to as the “CAMS” schema. The CAMS schema has access to other database schemas that are used to contain the data specific to the various features provided by CAMS. The (basic) schema names are: CAMS, CAMSBOM, CAMSCAPP, CAMSSHOP, CAMSMCM, CAMSNCM, CAMSPROJ, CAMSTOOL, and CAMSTCA. However, these names are usually modified (enhanced) to include the specific environment, e.g., DEV72CAMS, TEST72CAMS, PROD72CAMS, etc.

Each of the database schemas used by CAMS must have privileges to insert and delete data to the various database objects contained within the schemas in order for CAMS to function properly. However, in order to provide additional security to avoid accidental removal of objects owned by the various schemas, the privilege to delete schema objects may be removed from the schema owner name. Refer to Oracle technical documentation for how to remove the privileges for schema owners to delete objects owned by the schema.



## Security for Additional Applications

CAMS uses third-party applications to display and print graphics; however, no additional security settings are required.



## Dispensable Functions with Impacts on Security

This section lists an optional CAMS function that impacts security and the consequences of not activating that functionality.

### SAP Visual Enterprise Generator

If you do not activate the SAP Visual Enterprise Generator interface, the ability to import instance-based BOMs is lost.



## Enterprise Services Security

The following chapters in the NetWeaver Security Guide are relevant for all enterprise services delivered with CAMS:

- User Administration and Authentication
- Network and Communication Security

You can find the NetWeaver Security Guide on the SAP Help Portal at <http://help.sap.com/netweaver>. Select *SAP NetWeaver Platform* → *SAP NetWeaver 7.3* → *Security Information*.



## Other Security-Relevant Information

The following are additional CAMS security-relevant information:

- **camsDBInfo File**  
CAMS will not run without this file. It is created during installation and named by your installers or implementers. You must back it up and protect it from unauthorized access by allowing read-only access.
- **CAMS-INT File**  
CAMS cannot communicate with CAMS-INT without this file. It is created during installation and named by your installers or implementers. You must back it up and protect it from unauthorized access by allowing read-only access.
- **Configuration Files**

The following files are modified during the implementation process:

- HMSConfig.tcl
- HMSCappConfig.tcl
- HMSShopConfig.tcl

You must back up and protect these files from unauthorized access by setting them as read-only. CAMS will run without these files, but they will use the default configuration settings rather than your settings.

Changes made to the system configuration parameters or the configuration text files are not logged in CAMS. You must manually track changes made to the configuration parameters and configuration text files.



Once CAMS is implemented at your site, configuration parameters and configuration text files should not be changed without consulting with your SAP representative.

- **Citrix**

If you are using a Citrix environment, see their related documentation for additional security information.

- **Database Connect String**

For database access security, CAMS uses a routine to convert the information used to establish the connection to the Oracle database into characters masking the real connect string information and stores it in the `camsDBInfo` file. When CAMS starts, that masked connection information is converted back using the same routine so that the connection from the client to the database can be established.

- **SHA-1 Hashing/Encryption Technology**

CAMS uses SHA-1 hashing/encryption technology. The password is stored in the `HMS_USERS` database table. The table has an encrypted column that identifies the password format.

- **Passwords**

If the `system` and `wipadmin` users need to reset their passwords, they must be reset at the database level using the following script:

```
ACCEPT userId CHAR DEFAULT wipadmin PROMPT "Enter user ID
to have password reset : [wipadmin]"

/*

It is only used when the CAMS system user has forgotten
his/her password. The password will be changed and the
Administrator's account will be set to prompt for a
password change upon system logon. The new password will be
set to "ChangeOnInstall."

*/

update hms_users set user_password = '3e68ab201de17c93edc3b4e435b59300',
        PASSWORD_EXPIRATION_DATE = sysdate -1,
        PASSWORD_EXPIRATION = 'X'

where user_id = '&&userId';

/*
```

This will enable the password expiration feature. If the system administrator does not want this feature turned on, then it will need to be reset once the system administrator has gained access to the system.

```
*/  
  
update wip_control_parameters set parameter_value = '1'  
  
where array_index = 'passwordexpiration' and  
parameter_value = '0';  
  
commit;
```

In the event that all user IDs, including `system` and `wipadmin`, become unavailable for some reason, your SAP representative or database administrator (DBA) can activate an emergency user. See the Emergency User section.

You can configure passwords so that users (including `system` and `wipadmin` users) are prompted to change their passwords when they first log on to CAMS. For more information on configuring passwords, see the CAMS System Maintenance application help.

- **Failed Logon Attempts**

You can configure CAMS so that a user ID is inactivated after a specified number of failed logon attempts.

In addition, when a user successfully logs into CAMS and the number of invalid login attempts prior to this login is greater than zero, a warning message displays. It tells the user the number of invalid attempts for his or her user ID since the current logon and alerts the user to contact the system administrator.

System administrators can also view failed logon information in CAMS from either the *CAPP User Maintenance* or the *SFM User Maintenance* dialog boxes. For instructions on how to access and view this information, see the CAMS System Maintenance application help.

- **SQL\*Net Interface for Encryption**

You can set up the SQL\*Net interface for encryption. For more information, see the Oracle technical documentation. SAP does not install or configure SQL\*Net security; your company's network and Oracle administrators must handle the configuration.

- **ActiveX**

If you deactivate ActiveX in your Internet Explorer browser, you cannot view the CAMS application helps properly in the HTML Help format.

- **Auto-logout**

Users can be automatically logged off after a specified time period. By default, auto-logout is not enabled.

- **Personal Data Viewing**

Users can view the personal data that is stored about them in CAMS. System administrators can view personal data reports for all users. For more information on this functionality, see the CAPP and the CAMS System Maintenance application helps.

- **SAP Visual Enterprise Generator Interface Security**

Integration to SAP Visual Enterprise Generator requires specification of a user and password for connection. These must be specified in *Visual Enterprise ActiveX Parameters*. See the *CAMS Configuration Guide* for details.

- **Virus Scanning**

If configured, the system will use the SAP VSI interface to scan files for viruses when users import them into CAMS. The *Use Anti Virus Scanner* and *Virus Scan Adapter DLLs* configuration parameters must be set up as described in the *CAMS Configuration Guide*.

- **Invalid Password Dictionary**

System administrators can build a dictionary of invalid passwords, which stops users from using these passwords. For more information, see the CAMS System Maintenance application help.



## Security Logging and Tracing

SAP advises that you establish a very limited number of system administrators with privileges to make changes to users and authorizations and the CAMS system configuration.

CAMS logs changes made to users, profiles, and authorizations. System administrators can access this information from the *CAPP User Maintenance* and *Profile Maintenance* dialog boxes and from the *SFM User Maintenance* dialog box by clicking the *Security Audit* button. For more details on how to view and print the information, see the CAMS System Maintenance application help.

CAMS also logs changes made to the configuration parameters. System administrators can access this information by clicking the *Parameter Audit* button in the *Configuration Parameter* or *Control File* dialog boxes. For more details on how to view and print the information, see the CAMS System Maintenance application help.



Remember, changes to configuration files are not logged by CAMS; refer to Configuration Files on page 17 for more details. Once CAMS is implemented at your site, configuration parameters should not be changed without consulting with your SAP representative.

CAMS security and configuration logs identify what was changed, the old value, the new value (with the exception of passwords), who made the change, and when.

CAMS includes a console logging feature to capture anything that an unauthorized user might try to do in the system. The console logging feature uses configuration parameters. For more information, see the *CAMS Operations Guide* in the `Documentation` folder of the CAMS core delivery.



There is a deviation in CAMS version 7.2 from the above described configuration parameter change logging, which is described in the previously referenced SAP Note.