

Connecting External System Management Tools to CCMS - Interface Framework - 6.10



Documentation for XMI eXternal Monitoring Interface

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1. The XMI Interface

The XMI interface is a general framework for the CCMS external system management interfaces. This has two consequences: firstly, that the XMI functionality can only be usefully employed in conjunction with other interface functions. Secondly, external system management interfaces can only be used in conjunction with the XMI interface.

The XMI interface contains essential function modules and structures with the following two primary aims:

- To coordinate connections between external system management tools and individual CCMS interfaces (also known as SMAPIs¹). This involves checking access authorizations and the interface version as well as monitoring the connection for the whole of its duration.
- To write messages in the R/3 XMI log on behalf of the external tool. The tool can in some sense leave traces of its own activity in the R/3 database. It is possible to tell what has been triggered in the system from outside and by whom, because system control activities triggered by external tools are automatically logged by XMI.

Further XMI interface functions allow you to display the messages in a given language and to delete obsolete messages from the database.

Essentially, the XMI interface controls two database tables in which permanent information is stored.

- The first table contains the XMI log. This is a list of all messages recorded within the SMAPIs and by external programs. It is filled using XMI functions. Message texts appear in English.
- The second table contains the message texts (for an external message) in various languages. We call these text templates *formats*. For the sake of multiple language support, you can fill this table directly from the external system management tools. You can think of this as a “interpreter table”.

Additionally, the interface stores temporary information about the logon status of the individual SMAPIs.

1.1 The XMI Concept

All CCMS external interfaces use common function modules within the R/3 System. These common function modules can in turn be grouped together into an interface. Since this interface is primarily responsible for logging external access, it is called XMI, the eXternal Monitoring Interface.

Figure 1.1 shows how XMI is addressed along with a concrete SMAPI (e.g. XBP) by external agents. It also shows that the SMAPI functions use XMI functionality internally.

¹SMAPI = System Management Application Programmer's Interface

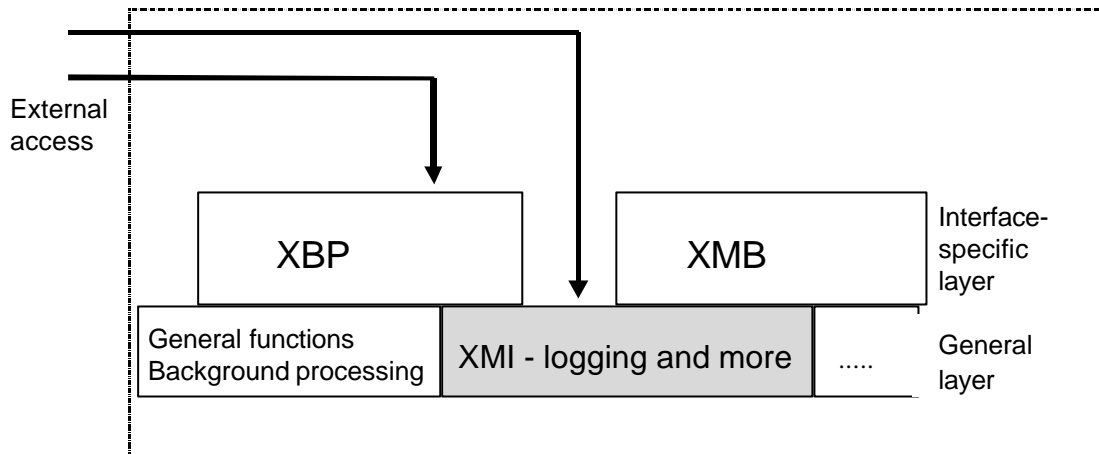


Fig 1.1: XMI as a general layer for external interfaces.

Access to the R/3 System from an external agent consists therefore of calling SMAPI functions and XMI functions as well.

The SMAPI functions carry out the tasks required by the external agent and the XMI functions generate the access log and enable functions beyond the scope of the SMAPI which are also required.

1.2 Realizing the XMI Concept

Most XMI functions remain invisible to developers who want to integrate external tools with CCMS. When external tools are used, XMI only appears at the beginning and end of the CCMS session in the form of two functions - `SXMI_LOGON` and `SXMI_LOGOFF`. These functions are obligatory. All others are optional.

- **SXMI_LOGON:** Log an agent onto an external interface
- **SXMI_LOGOFF:** Log an agent off from an external interface
- **SXMI_LOGMSG_ENTER:** Write a message in the XMI log
- **SXMI_AUDITLEVEL_SET:** Set the global XMI audit level
- **SXMI_LOG_SELECT:** Read the XMI log messages
- **SXMI_VERSIONS_GET:** Query the current version(s) of the interfaces
- **SXMI_VERSION_CHECK:** Check whether a particular version is supported
- **SXMI_INTERFACE_DESCRIBE:** Find the SMAPI name for a SMAPI short name
- **SXMI_MESSAGE_FORMATS_UPLOAD:** Upload language-specific messages

These functions are listed in order of their relevance. The XMI reference manual further on in this document contains a comprehensive description of the functions.

1.3 The XMI Session - Logging External Management Tools onto the R/3 System

External System Management tools use one or more of the CCMS external interfaces to carry out their tasks. They do this by setting up an RFC connection with the R/3 System. Within this RFC connection, the tool must establish a separate session with each individual interface with which it wants to work.

The RFC connection checks the authentication and authorization of the external tool with respect to R/3, since this is a “normal” R/3 logon procedure. The external tool is logged on as an R/3 user for the duration of the RFC connection. During this time the external program can connect to or disconnect from one or more interfaces. These SMAPI connections can occur in any order and may overlap. More than one SMAPI session is therefore possible during a single RFC connection.

The XMI monitors the SMAPI connections and their duration. The tool identifies itself to each interface and receives an identification in return. This session ID is always the same for the entire duration of an RFC connection.

So that the external tools do not need to know in advance which SMAPI version of an interface is used in a particular R/3 Release, the XMI interface contains functions which query the interface version. The XMI is therefore the central reference regarding current versions and available interfaces.

Thus there is the special case that an XMI session is not opened for a SMAPI, but is only used to execute XMI functions. You can not only query the version of a SMAPI with it, but also load language-specific formats in this type of session.

Each interface contains global variables during a session which characterize the status of the SMAPI connection between a tool and the interface. Should several external tools log on to a single CCMS interface, this status information is created for each instance (and also for the various RFC connections).

1.4 XMI Sessions for more than one SMAPI

Each session between the R/3 System and an external management tool begins by establishing an RFC connection. An RFC session consists of one or more XMI sessions. Each XMI session contains a series of function calls to the function modules in the individual interfaces. The following example demonstrates this (indentations indicate the nesting levels):

| | |
|---------------------------------|----------------------------------|
| Open RFC session | <i>R/3 authorization</i> |
| Open XMI session for XBP | <i>Agent identification</i> |
| Call XBP functions | <i>Agent user identification</i> |
| Open XMI session for XMB | <i>Agent identification</i> |
| Call XMB functions | <i>Agent user identification</i> |
| Call XBP functions | <i>Agent user identification</i> |
| Close XMI session | |
| Close RFC session | |

If one of the session partners (the R/3 System or the external tool) is affected by a program crash and a new RFC session is initiated, the changed situation is recognizable through a new session ID.

1.5 XMI Session without using a SMAPI

It is possible and useful to establish an XMI session without actually connecting to a SMAPI. In this case the Agent can not call SMAPI functions subsequently. However XMI functions can be called. This variant might be useful to query the actual versions of the SMAPIs that your R/3 supports and for uploading language specific texts into R/3.

| | |
|------------------------------------|-----------------------------|
| Open RFC session | <i>R/3 authorization</i> |
| Open XMI session (no SMAPI) | <i>Agent identification</i> |
| Call XMI functions | |
| Close XMI session | |
| Close RFC session | |

This minimal session was necessary to allow external agents to get in touch with XMI even if the version of the agent does not fit the version of the R/3 SMAPI.

1.6 Generating the XMI Log and the Audit Level Function

The XMI log is a table containing English message texts. The messages can have various degrees of detail. The audit level determines the degree of detail to which messages in the XMI log are written.

The XMI log contains messages from external tools and also messages which arise in SMAPI functions. Although the XMI log was conceived as a log of externally-triggered actions, the programmer can also use it to localize errors when programming external tools and using SMAPIs.

The routine which stores the messages has a parameter called the audit level. The audit level determines whether the message should always be logged (auditlevel=0), or is simply a message which supplies further detail (higher detail degree). This works as follows:

XMI itself has a global XMI audit level (default=0). This can be set explicitly from a tool using an XMI function module. It works like a filter for stored messages. If an external tool logs onto more than one SMAPI within an RFC session, the XMI audit level is the last audit level to be set of all of those addressed up to that point.

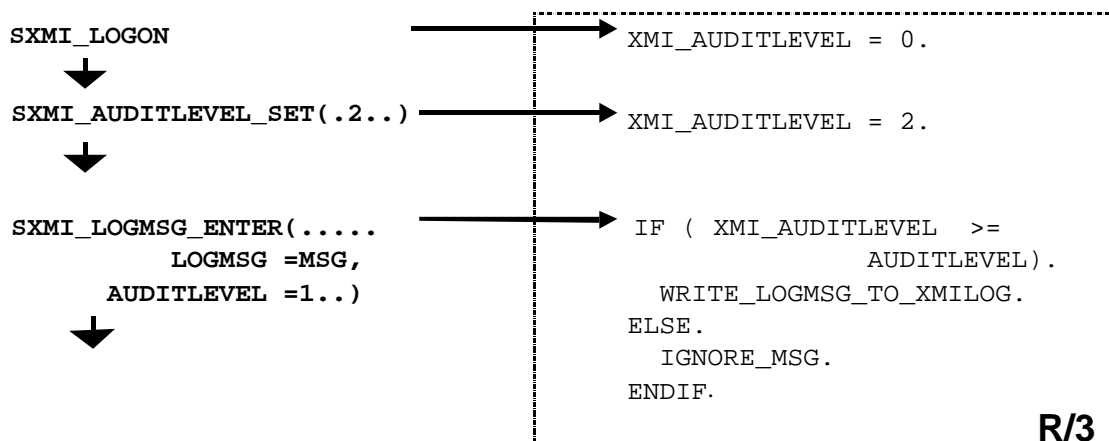


Fig. 1.2 How the global audit level works

If a message is now generated destined for the XMI log, the XMI audit level is compared with the audit level of the message function. If the value within the function module called is less than or equal to the global XMI audit level, an entry is made in the XMI log. To demonstrate with an example: If at the end of the procedure in Fig. 1.2, messages with audit level 3 are generated, these will not be stored, since the XMI audit level is only 2.

If the global XMI audit level is not explicitly set by the external tool, it is set to 0 (minimal). This means that only the most important audit trail is logged.

When you open a new RFC session, the audit level is reset to 0.

1.7 Using the XMI Log

You can review the access monitoring information which has been collected and logged in the R/3 System by using transaction **RZ15**. Here, the following details (amongst others) are displayed (see R/3 table TXMILOGRAW):

- Log ID,
- Time at which the entry was triggered,
- Manufacturer's name,
- Name of the agent product trying to log onto R/3,
- SAP user ID,
- external User ID (if reported by the external tool)
- SessionID,
- Interface version
- Changes carried out within the system (e.g. alert reset).

All SMAPI functions which make modifications inside R/3 always record a message in the XMI log. The implementation of the interface in R/3 is responsible for this. To trace errors you can also log all external operations which read from the system.

It is also possible to read information from the XMI log with an external tool using the `SXMI_LOG_SELECT` function. You can use this to read parts of the XMI log in a particular language (as long as the message texts have previously been installed in this language).

You can only delete old XMI log entries using transaction RZ15. The process of deleting entries itself creates an entry in the XMI log, recording that deletion has taken place. There is no external function for this kind of reorganization. This prevents external agents from being able to cover up their own tracks.

1.8 Messages for the XMI Log

The XMI framework contains formats and mechanisms for supporting language-specific flexible messages. These messages can be generated by the external program. In the following we try to explain what components messages consist of, how they can be translated to different languages and finally what arguments they can carry.

1.8.1 Message Components

Messages consist of three components. First of all there is the message identifier, then comes the message text (can be translated), and finally the message arguments which are language independent.

1. The message identifier is split into the MSGCLASS and the MSGID. The MSGCLASS specifies the name space of the external program. Therefore SAP SMAPIS use the name of the software company as the MSGCLASS. The MSGID on the other hand is a unique identifier chosen relatively to this name space. By convention SAP uses numbers for the MSGID but in general it can be chosen freely by the developer.
2. The message text is the 'pure text' part of a message. At generation time of the message this informative text is English. At display time the message text can be translated to some other

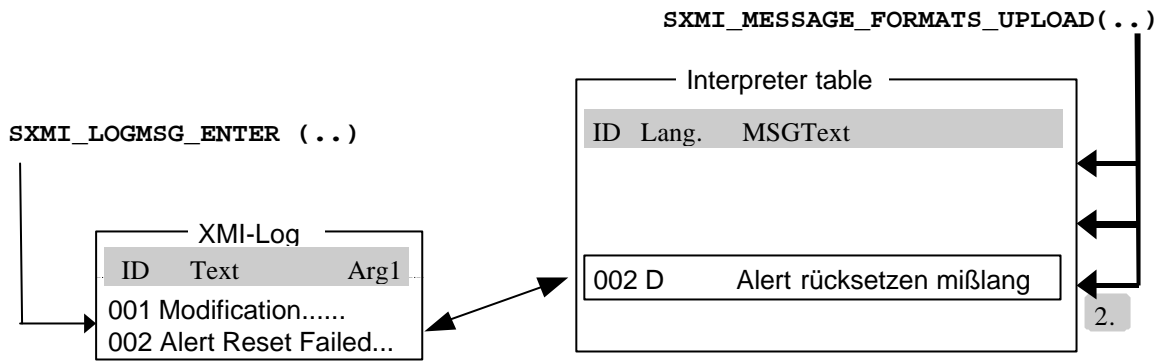


Fig. 1.4: Load time. Messages are loaded in additional languages.

3. The **Display time** is the time at which a user attempts to display the XMI log.

A user, logged on in a particular language, wants to display a previously-generated XMI log. It is only at this point that the XMI log is translated into the display log. If the desired language exists in the system interpreter table, the message text is displayed in this language. If it has not been installed, the parameters for displaying the messages in this language are set. However, the rest of the text is displayed in English.

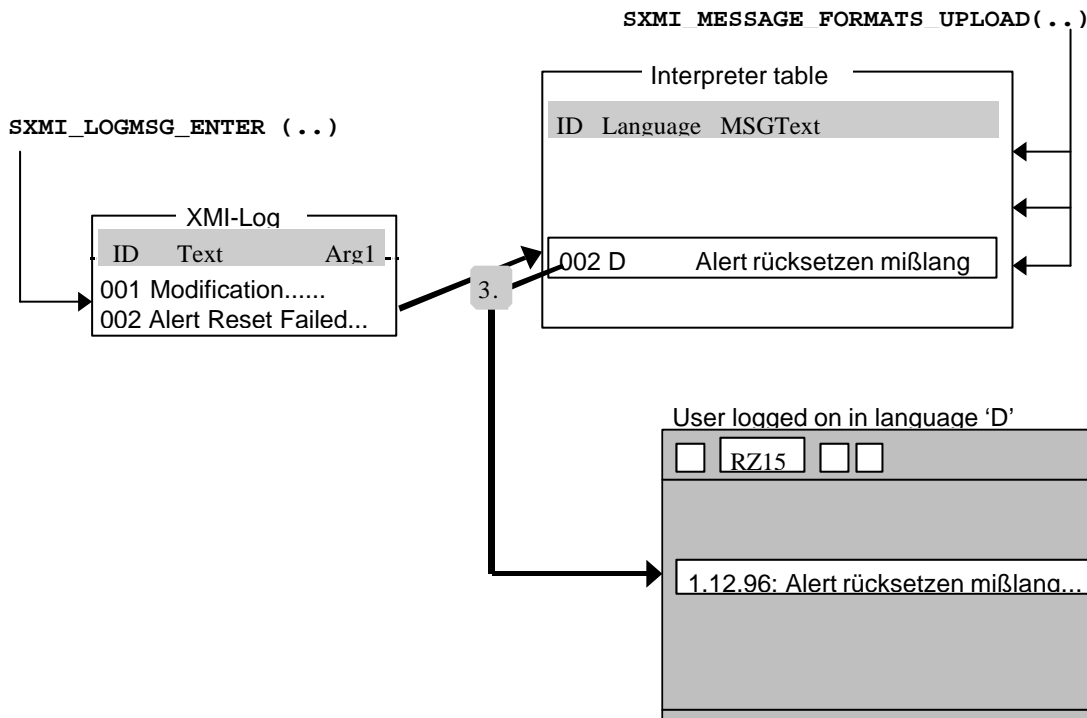


Fig 1.5: Display time. The XMI log is displayed in the logon language.

You can also use the internal language conversion functions within the R/3 System even if you intend to display the messages using external means. The message texts can be exported in a specified target language (if it exists in the system). The language to be installed or the display language is determined using the language key within the R/3 System.

As the messages need to be read over a long period of time, the message identifiers (i.e. their correlation to the meaning of the message) must be kept unchanged. The content of already defined message identifiers may not be changed, otherwise the message display will no longer make sense.

If a user tries to display the XMI log (internally with RZ15 or externally) before messages have been installed in further languages, only the fallback (English) text is displayed.

1.8.3 Language-independent Messages

Messages - with no MSGID specified - can be put into the XMI-Log by means of SXMI_LOGMSG_ENTER. It is not possible to translate these messages at any time. Messages of this kind are therefore language-independent by definition.

1.8.4 Message Arguments

At generation time of the message the argument type can be specified by one character. Message arguments can have the following types:

- 'C' Character (or String)
- 'I' Integer
- 'P' Packed
- 'F' Float
- 'U' UTC-Stamp
- 'D' Datepart of UTC
- 'T' Timepart of UTC

While the first four items correspond to ABAP/4 types and should be well understood the UTC date and time format will be explained in the following subsection.

1.8.5 Time Zone-Independent Messages in the XMI Log

Messages in the XMI log are stored with a UTC (Universal Time Coordinated) time stamp. This is the date and time GMT (Greenwich Mean Time) when the entry is made. This means that the messages are stored independently of local time and can therefore be better compared with other global time details.

The SAP UTC has the format: YYYYMMDDHHMMSS

Example: *12.18.1996 CET 14:06:35* would be *19961218130635* in this notation.

External tools must observe this format in all queries and calls whenever a time stamp is required or a date and time (resp.) is used as an argument.

1.9 XMI Reference Manual

This is the reference manual for the interface function modules. Please note that you will need to check in your system for the most up-to-date interface parameter types (transaction SE37, function module interface).

1.9.1 Structures for XMI

The following structures are required for communication between external programs and the XMI.

For function modules which output tables you will need to define an internal table (of the same type if at all possible) for it. This is because of the constraints given through the RFC.

The structures are given here as they would be required by an external developer. For this reason, the types are contained in the description. You should however check in your R/3 System to ensure that the structure type has not changed since this document was produced.

| Structure | SXMIVERS | | |
|-------------------|-----------------|----|--|
| Field name | Type | | Short description |
| INTERFACE | CHAR | 3 | Interface identification code (SMAPI short name) |
| VERSION | CHAR | 10 | The interface version required by the SMAPI |
| Notes | – | | – |
| Related to | – | | – |
| | – | | – |

| Structure | SXMIDESC | | |
|-------------------|-----------------|-----|--------------------------|
| Field name | Type | | Short description |
| TEXT | CHAR | 128 | Interface name long text |
| Notes | – | | – |
| Related to | – | | – |
| | – | | – |

| Structure | SXMIMSG | | |
|-------------------|----------------|-----|---------------------------------|
| Field name | Type | | Short description |
| MSGLANGU | LANG | 1 | Language key from SAP logon |
| MSGID | CHAR | 20 | Message ID for an XMI log entry |
| MSGTEXT | CHAR | 128 | The message text itself |
| Notes | – | | – |
| Related to | – | | – |
| | – | | – |

| Structure | SXMIMAJMIN | | |
|-------------------|-------------------|---|--------------------------|
| Field name | Type | | Short description |
| MAJOR | CHAR | 2 | MAJOR NUMBER |
| MINOR | CHAR | 2 | MINOR NUMBER of Release |
| PATCHLEVEL | CHAR | 4 | Free text |
| Notes | – | | – Only used internally |

| | | |
|-------------------|---|---|
| Related to | – | – |
| | – | – |

| Structure | SXMILOGADM | | |
|-------------------|-------------------|----|--|
| Field name | Type | | Short description |
| EXTCOMPANY | CHAR | 16 | XMI logging: Company name |
| EXTPRODUCT | CHAR | 16 | XMI logging: Program name |
| SAPUSER | CHAR | 12 | XMI logging: SAP user ID |
| EXTUSER | CHAR | 16 | XMI logging: User in ext. management tool |
| INTERFACE | CHAR | 3 | Interface identification code (e.g. XBP) |
| VERSION | CHAR | 10 | XMI interface version |
| SESSIONID | CHAR | 24 | Unique session ID |
| OBJECT | CHAR | 50 | Object (Job name, spool ID...) |
| SERVER | CHAR | 20 | Server on which the XMI action is carried out |
| AUDITLEVEL | NUMC | 1 | The higher the audit level, the more detailed the log. |
| Notes | – | | – Only used internally |
| Related to | – | | – TXMIMSGRAW, SXMILOGEXT |
| | – | | – |

| Structure | SXMIMSGRAW | | |
|-------------------|-------------------|-----|--|
| Field name | Type | | Short description |
| MSGCLASS | CHAR | 16 | XMI logging: Company name range |
| MSGID | CHAR | 20 | Message identification for XMI log entry |
| MSGARG1 | CHAR | 128 | Argument string for XMI log |
| ARGTYPE1 | CHAR | 1 | Argument type for an XMI log entry |
| MSGARG2 | CHAR | 128 | Argument string for an XMI log |
| ARGTYPE2 | CHAR | 1 | Argument type for an XMI log entry |
| MSGARG3 | CHAR | 128 | Argument string for an XMI log |
| ARGTYPE3 | CHAR | 1 | Argument type for an XMI log entry |
| MSGARG4 | CHAR | 128 | Argument string for an XMI log |
| ARGTYPE4 | CHAR | 1 | Argument type for an XMI log entry |
| MSGTEXT | CHAR | 128 | The message text itself |
| Notes | – | | – Only used internally |
| Related to | – | | – TXMIMSGRAW |
| | – | | – |

| Structure | SXMIMSGEXT | | |
|-------------------|-------------------|-----|-----------------------------------|
| Field name | Type | | Short description |
| MSG | CHAR | 255 | The expanded (translated) message |
| Notes | – | | – |
| Related to | – | | – SXMILOGEXT |
| | – | | – |

| Structure | SXMILOGEXT | | |
|-----------------------------|-------------------|----|---------------------------|
| Field name | Type | | Short description |
| LOGID | CHAR | 24 | ID for an XMI log message |
| <SXMILOGADM>:= | see structure | | see structure |
| EXTCOMPANY | | | |
| EXTPRODUCT | | | |
| SAPUSER | | | |
| EXTUSER | | | |
| INTERFACE | | | |

| | | |
|-------------------|---|---|
| VERSION | | |
| SESSIONID | | |
| OBJECT | | |
| SERVER | | |
| AUDITLEVEL | | |
| <SXMIMSGEXT>:= | | |
| INTERFACE | | |
| Notes | – | – |
| Related to | – | – |
| | – | – |

1.9.2 External XMI Interface

This section describes all XMI function modules relevant for software vendors.

| | |
|---|----------|
| SXMI_LOGON: external program onto an external interface | Logs on |
| SXMI_LOGOFF: external program off from the external interface | Logs off |
| SXMI_AUDITLEVEL_SET: global XMI audit level | Set the |
| SXMI_VERSIONS_GET: the current interface version | Queries |
| SXMI_LOG_SELECT: XMI log messages | Reads |
| SXMI_INTERFACE_DESCRIBE: SMAPI name for a SMAPI short name | Find the |
| SXMI_VERSION_CHECK: whether a particular version is supported | Check |
| SXMI_LOGMSG_ENTER: message in the XMI log | Enters a |
| SXMI_MESSAGE_FORMATS_UPLOAD: language-specific messages | Installs |

1.9.2.1 Logging onto the R/3 System with the External System Management Tool

| Function | SXMI_LOGON |
|---------------------|---|
| | Logging an agent onto an external interface |
| FM interface | <p><u>function SXMI_LOGON</u></p> <p><u>exporting</u></p> <p><u>EXTCOMPANY</u> like XMILOGRAW_EXTECOMPANY type RFC CHAR length 16</p> <p><u>EXTPRODUCT</u> like XMILOGRAW_EXTPRODUCT type RFC CHAR length 16</p> <p><u>INTERFACE</u> like TXMILOGRAWRAW_INTERFACE type RFC CHAR length 3</p> <p><u>VERSION</u> like TXMILOGRAW_VERSION type RFC CHAR length 10</p> <p><u>importing</u></p> <p><u>SESSIONID</u> like TXMILOGRAW_SESSIONID type RFC CHAR length 12</p> <p><u>tables</u></p> <p><u>exceptions</u></p> <p><u>ALREADY_LOGGED_ON</u></p> <p><u>CANT_LOG_ACTION</u></p> <p><u>INVALID_PARAMETERS</u></p> <p><u>LOGON_DENIED</u></p> <p><u>PROBLEM_DETECTED</u></p> <p><u>UNKNOWN_INTERFACE</u></p> <p><u>UNKNOWN_VERSION</u></p> <p>cannot yet be generated (changes)</p> |
| Parameters (Input) | <ul style="list-style-type: none"> - EXTECOMPANY Manufacturer of the external program - EXTPRODUCT Product name of the external program - INTERFACE (optional) Identification code of the interface to which the agent wishes to connect (e.g. 'XBP') If this is not specified, only XMI functions can be used - VERSION (optional) Version of R/3 expected by the external program |
| Parameters (Output) | <ul style="list-style-type: none"> - SESSIONID Unique identification for an XMI session |
| Exceptions | <ul style="list-style-type: none"> - LOGON_DENIED: The logon was refused because the R/3 user used by the external management system is not authorized to work with the external management system. - INVALID_PARAMETERS: EXTECOMPANY and EXTPRODUCT are different within the same session - UNKNOWN_INTERFACE: The interface expected by the external tool is not supported - UNKNOWN_VERSION: The version required by the external tool is not supported - ALREADY_LOGGED_ON: This INTERFACE is already logged on - PROBLEM_DETECTED: A problem not directly related to XMI functionality has occurred in an XMI function module. This is probably caused by another function module which has been called. Consult the syslog. |

| | |
|--------------|--|
| | <ul style="list-style-type: none"> - CANT_LOG_ACTION: The action was terminated because the R/3 XMI logging mechanism returned an error |
| Notes | <ul style="list-style-type: none"> - SESSIONID is the first message ID which is assigned for the function pool - If you log on without specifying an INTERFACE, you may only carry out XMI functions (read from or write to the XMI log). |
| Related to | <ul style="list-style-type: none"> - see SXMI_LOGOFF |
| Requirements | <p>Before a SMAPI function module is called for the first time,</p> <ol style="list-style-type: none"> 1. the external management system must log onto the R/3 System with an R/3 user name and password (C function RfcOpen). 2. the user name of the external management system is recorded in the CCMS external interface management system using function module SXMI_LOGON. <p>The R/3 user will only be able to log on successfully if you have assigned it authorizations for the R/3 authorization object S_XMI_PROD (see below).</p> |

1.9.2.2 Logging off from the R/3 System with the External Management Tool

| Function | SXMI_LOGOFF |
|---------------------|--|
| | Logging an external program off from the external interface |
| FM Interface | <u>function SXMI_LOGOFF</u> <u>exporting</u> <u>INTERFACE like TXMILOGRAW_INTERFACE</u> <u>default '*' type RFC CHAR length 3</u> <u>importing</u> <u>tables</u> <u>exceptions</u> <u>CANT_LOG_ACTION</u> <u>NOT_LOGGED_ON</u> <u>PROBLEM_DETECTED</u> |
| Parameters (Input) | INTERFACE (optional, if no interface is specified, the tool logs off from everything. **: logs off from specific interfaces) Identification code of the interface with which the tool was working (e.g. XMB) |
| Parameters (Output) | none |
| Exceptions | <ul style="list-style-type: none"> - NOT_LOGGED_ON: There is no logon to the R/3 System. - PROBLEM_DETECTED: A problem not directly related to XMI functionality has occurred in an XMI function module. This is probably caused by another function module which has been called. Consult the syslog - CANT_LOG_ACTION: The action was terminated because the R/3 XMI logging mechanism returned an error |
| Notes | You must call the SXMI_LOGOFF function module to enable the external management system to end its R/3 session. Afterwards, you need to close the RFC connection using the C-RFC call RfcClose A word about specifying the interface, there are three possibilities: <ol style="list-style-type: none"> 1. concrete interface (e.g. XMB): The agent is logged off from the interface. If it is no longer logged onto any concrete interfaces, the XMI functions are still available 2. "*" all SMAPIs are logged off. As in 1), the XMI functions are still available. 3. Parameter not set: everything is logged off. No further XMI calls are then possible. This variant is used to end the connection completely. Any subsequent SXMI_LOGON is done with an new SESSIONID. |
| Related to | - see SXMI_LOGON |

1.9.2.3 Setting the Audit Level

| Function | SXMI_AUDITLEVEL_SET |
|---------------------|--|
| | The global XMI audit level is set for a session |
| FM Interface | <pre>function SXMI_AUDITLEVEL_SET exporting AUDITLEVEL like TXMILOGRAW_AUDITLEVEL type RFC_NUM length 1 importing tables exceptions CANT_LOG_ACTION NOT_LOGGED_ON PROBLEM_DETECTED</pre> |
| Parameters (Input) | AUDITLEVEL (optional, default value 0 if value not otherwise specified) |
| Parameters (Output) | none |
| Exceptions | <ul style="list-style-type: none"> - NOT_LOGGED_ON: There is no logon to the R/3 System. - PROBLEM_DETECTED: A problem not directly related to XMI functionality has occurred in an XMI function module. This is probably caused by another function module which has been called. Consult the syslog - CANT_LOG_ACTION: The action was terminated because the R/3 XMI logging mechanism returned an error. |
| Notes | <ul style="list-style-type: none"> - Audit levels. <ul style="list-style-type: none"> - 0 Messages output with level 0 are always logged in the XMI log. This level is used for functions which change data (write functions). - 1 Messages with level 1 are compared with the internal audit level. This level is used for errors during reading operations. - 2 Comparison takes place. Used in reading - 3 Comparison takes place. Used when entering/leaving functions - This can only be used when the agent is logged on. |

1.9.2.4 Querying the Interface Version(s)

| Function | SXMI_VERSIONS_GET |
|---------------------|---|
| | Query the currently supported version numbers of a single interface or all SMAPIs |
| FM Interface | <pre>function SXMI_VERSIONS_GET exporting INTERFACE like TXMILOGRAW_INTERFACE default '*' type RFC_CHAR length 3 importing tables VERSIONS structure SXMIVERS length 13 number of fields 2 exceptions CANT_LOG_ACTION PROBLEM_DETECTED UNKNOWN_INTERFACE</pre> |
| Parameters (Input) | <p>INTERFACE (optional: no value means all interfaces, * means all specific interfaces Identification code of the relevant interface (e.g. XMB)</p> |
| Parameters (Output) | <p>– VERSIONS = Structure SXMIVERS (INTERFACE VERSION)</p> |
| Exceptions | <ul style="list-style-type: none"> – UNKNOWN_INTERFACE: The specified interface could not be found – PROBLEM_DETECTED: A problem not directly related to XMI functionality has occurred in an XMI function module. This is probably caused by another function module which has been called. Consult the syslog – CANT_LOG_ACTION: The action was terminated because the R/3 XMI logging mechanism returned an error |
| Notes | <ul style="list-style-type: none"> – This function can also be used without the agent being logged on – uses SXMI_<SMAPI>_VERSIONS_GET_INT |

1.9.2.5 Reading an Extract of the XMI Log

| Function | SXMI_LOG_SELECT |
|---------------------|---|
| | The XMI log can be read by external programs. You use this function module to get an extract from it. |
| FM Interface | <pre> function SXMI_LOG_SELECT exporting EXTUSER like SXMISELECT_EXTUSER default '*' type RFC_CHAR length 16 FROMTIMSTMP like SXMISELECT_FROMTMSTMP type RFC_NUM length 14 INTERFACE like SXMISELECT_INTERFACE default '*' type RFC_CHAR length 3 OBJECT like SXMISELECT_OBJECT default '*' type RFC_CHAR length 50 SESSIONID like SXMISELECT_SESSIONID default '*' type RFC_CHAR length 24 TOTIMSTMP like SXMISELECT_TOTMSTMP type RFC_NUM length 14 importing NUMBER like SYST_DBCNT type RFC_INT length 4 TRANSLATED like SXMIBOOL_REP type RFC_CHAR length 1 TRUNCATED like SXMIBOOL_REP type RFC_CHAR length 1 tables LOG structure SXMILOGEXT length 461 number of fields 13 exceptions CANT_LOG_ACTION CANT_SELECT INVALID_RANGE NOT_LOGGED_ON PROBLEM_DETECTED UNKNOWN_INTERFACE </pre> |
| Parameters (Input) | <ul style="list-style-type: none"> - FROMTIMSTMP Time stamp for the beginning of the period you wish to read - TOTMSTMP Time stamp for the end of the period you wish to read - EXTUSER A user ID which is assigned in the external program - INTERFACE (optional, not set or '*': all interfaces) Identification code of the interface the agent is to work with (e.g. XMB) - SESSIONID Unique identification for an XMI session - OBJECT Object affected by the logged action |
| Parameters (Output) | <ul style="list-style-type: none"> - NUMBER Number of XMI log entries found - TRANSLATED (True='X', False=' ') Messages translated before reading |

| | |
|------------|--|
| | <ul style="list-style-type: none"> - TRUNCATED (True= 'X', False= ' ') Messages had to be truncated when used - LOG Structure SXMILOGEXT(i.e. <ul style="list-style-type: none"> - LOGID - LOGTIMSTMP - EXTCOMPANY - EXTPRODUCT - SAPUSER - EXTUSER - INTERFACE - VERSION - SESSIONID - OBJECT - SERVER - AUDITLEVEL - MSG) |
| Exceptions | <ul style="list-style-type: none"> - NOT_LOGGED_ON: There is no logon to the R/3 System. - INVALID_RANGE - UNKNOWN_INTERFACE: The interface required by the external tool is not supported - CANT_SELECT: Period does not exist. Error in selection criteria - PROBLEM_DETECTED: A problem not directly related to XMI functionality has occurred in an XMI function module. This is probably caused by another function module which has been called. Consult the syslog - CANT_LOG_ACTION: The action was terminated because the R/3 XMI logging mechanism returned an error |
| Notes | <ul style="list-style-type: none"> - This function module can only be used if the agent is logged on |

1.9.2.6 Querying the Interface Long Text

| Function | SXMI_INTERFACE_DESCRIBE |
|---------------------|---|
| | Given the identification code of a concrete interface, the system returns the full official name. |
| FM Interface | trivial |
| Parameters (Input) | <ul style="list-style-type: none"> - INTERFACE Identification code of the interface whose long text you require (e.g. XMB) |
| Parameters (Output) | <ul style="list-style-type: none"> - DESCRIPTION Long text of the interface specified in INTERFACE (e.g. XMB) |
| Exceptions | <ul style="list-style-type: none"> - UNKNOWN_INTERFACE: The specified interface could not be found - PROBLEM_DETECTED: A problem not directly related to XMI functionality has occurred in an XMI function module. This is probably caused by another function module which has been called. Consult the syslog - CANT_LOG_ACTION: The action was terminated because the R/3 XMI logging mechanism returned an error |
| Notes | <ul style="list-style-type: none"> - This function module can also be used if agent is not logged on via XMI - uses SMXI_<SMAPI>_INTRFACE_DESCRIBE_INT |

1.9.2.7 Checking an Interface Version

| Function | SXMI_VERSION_CHECK |
|---------------------|---|
| | You can use this function module to check whether a particular version of a concrete interface is supported by the system. |
| FM interface | trivial |
| Parameters (Input) | <ul style="list-style-type: none"> - INTERFACE Identification code of the interface concerned (e.g.: XMB) - VERSION Interface version used by the external program |
| Parameters (Output) | <ul style="list-style-type: none"> - VERSION_VALID (True = 'X', False = ' ') Is the version supported by R/3? |
| Exceptions | <ul style="list-style-type: none"> - UNKNOWN_INTERFACE: The specified interface could not be found - PROBLEM_DETECTED: A problem not directly related to XMI functionality has occurred in an XMI function module. This is probably caused by another function module which has been called. Consult the syslog - CANT_LOG_ACTION: The action was terminated because the R/3 XMI logging mechanism returned an error |
| Notes | <ul style="list-style-type: none"> - uses SXMI_<SMAPI>_VERSION_CHECK |

1.9.2.8 Writing a Message in the R/3 System XMI Log with the External Tool

| Function | SXMI_LOGMSG_ENTER |
|---------------------|--|
| | A message is inserted in the system destined for the XMI log. It's identification ensures that it is unique. |
| FM Interface | <pre> function SXMI_LOGMSG_ENTER exporting ARGTYPE1 like TXMILOGRAW_ARGTYPE1 default 'C' type RFC_CHAR length 1 EXTUSER like TXMILOGRAW_EXTUSER type RFC_CHAR length 16 INTERFACE like TXMILOGRAW_INTERFACE type RFC_CHAR length 3 MSGARG1 like TXMILOGRAW_MSGARG1 type RFC_CHAR length 128 MSGID like TXMILOGRAW_MSGID type RFC_CHAR length 30 MSGTEXT like TXMILOGRAW_MSGTEXT type RFC_CHAR length 128 OBJECT like TXMILOGRAW_OBJECT type RFC_CHAR length 50 importing tables exceptions CANT_LOG INVALID_PARAMETERS NOT_LOGGED_ON PROBLEM_DETECTED </pre> |
| Parameters (Input) | <ul style="list-style-type: none"> - EXTUSER A user ID assigned in the external program - INTERFACE (optional) Identification code of the interface the agent wishes to work with (e.g. XMB) - OBJECT (optional) Object affected (e.g. job name/ job count) - MSGID (optional) Message ID - MSGTEXT Message text in English - MSGARG1 (opt), ARGTYPE1 (default: 'C') Argument which can be included in the message text - MSGARG2 (opt), ARGTYPE2 (default: 'C') - MSGARG3 (opt), ARGTYPE3 (default: 'C') - MSGARG4 (opt), ARGTYPE4 (default: 'C') |
| Parameters (Output) | none |
| Exceptions | <ul style="list-style-type: none"> - NOT_LOGGED_ON: There is no logon to the R/3 System. - CANT_LOG: The action was terminated because the R/3 XMI logging mechanism returned an error. |

| | |
|-------|---|
| | <ul style="list-style-type: none"> - INVALID_PARAMETERS e.g. Time does not conform to UTC, type not from type pool - PROBLEM_DETECTED: A problem not directly related to XMI functionality has occurred in an XMI function module. This is probably caused by another function module which has been called. Consult the syslog |
| Notes | <ul style="list-style-type: none"> - This function module records fallback messages in RAW format - A COMMIT WORK is executed within the FM - The function module can only be used if an agent is logged on. If an INTERFACE is specified, the external tool must also be logged onto that. - The following argument types will be supported: <ul style="list-style-type: none"> - 'C' Character - 'I' Integer - 'P' Packed - 'F' Float - 'U' UTC-Stamp - 'D' Datepart of UTC - 'T' Timepart of UTC - The MSGID is optional. If it is not specified, the message cannot be translated at any time. - Internally each company implementing an external tool has its own name space. The prefix is taken from the EXTCOMPANY field during the log-in. In general this not visible to the external tool. But it is good to know in case of collisions. - IMPORTANT: The MSGTEXT is not supposed to be an empty string nor a purely blank padded string (which means empty in the ABAP sense). |

1.9.2.9 Installing a Language-Specific Message Text List

| Function | SXMI_MESSAGE_FORMATS_UPLOAD |
|--------------------|---|
| | You can make the system language-specific by installing message texts in a particular language |
| FM Interface | <pre>function SXMI_MESSAGE_FORMATS_UPLOAD exporting importing tables FORMATS structure SXMIMSG length 160 number of fields 3 exceptions CANT_LOG_ACTION CANT_UPLOAD INVALID_PARAMETERS NOT_LOGGED_ON PROBLEM_DETECTED</pre> |
| Parameters (Input) | <ul style="list-style-type: none"> - MSGLANGU Language key as per R/3 - MSGID Message ID - MSGTEXT Message MSGID in language MSGLANGU |

| | |
|------------------------|---|
| Parameters (Output) | none |
| Exceptions | <ul style="list-style-type: none"> - NOT_LOGGED_ON: There is no logon to the R/3 System. - INVALID_PARAMETERS: Check language and textformat. - CANT_UPLOAD: - PROBLEM_DETECTED: A problem not directly related to XMI functionality has occurred in an XMI function module. This is probably caused by another function module which has been called. Consult the syslog - CANT_LOG_ACTION: The action was terminated because the R/3 XMI logging mechanism returned an error. |
| Notes | <p>Various language-specific message lists can be installed in an R/3 System. If no lists are installed, the message text displayed is the fallback text in English. You do not therefore need to install a list. This function module is only necessary if you intend to support multiple languages.</p> <ul style="list-style-type: none"> - MSGLANGU is the normal R/3 language key (e.g. E for English). Please note in advance that this will be due to change in R/3 4.0. The language will then consist of two characters (i.e. EN for English) - This function module can be used if you are logged onto XMI (not necessarily onto a SMAPI) - IMPORTANT: The MSGTEXT is not supposed to be an empty string nor a purely blank padded string (which means empty in the ABAP sense). |

1.9.3 Authorizations in XMI

The following two processes require an authorization check:

- The system must check whether an external tool - specified according to manufacturer and product name - should be allowed to use a particular interface (SXMI_LOGON)
- You also need to assign the authorization to users who may clean up (reorg) the XMI log. In other words you can specify and decide who may delete old entries, i.e. execute functions SXMI_LOG_REORG_INT.

XMI uses authorization objects **S_XMI_PROD** and **S_XMI_LOG** for this purpose

| Authorization object | S_XMI_PROD |
|----------------------|---|
| Description | Authorization for external management interfaces (XMI) |
| Class | BC_A (Basis Administration) |
| Fields | EXTCOMPANY XMI logging: Manufacturer of external management tool EXTPRODUCT XMI logging: Program name of external management tool INTERFACE Identification code for the interface (e.g. XBP) |

You can maintain authorization **S_XMI_ADMIN** to allow external tools access to the R/3 System.

| Authorization object | S_XMI_LOG |
|----------------------|---|
| Description | Authorization to reorganize the XMI Log |
| Class | BC_A (Basis Administration) |
| Fields | XMILOGACC Access methods for XMI log |

You can maintain authorization **S_XMILOG_ADM** to allow users access to the XMI log. Field values SELECT and REORG are checked in transaction RZ15.