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PRODUCT
GUIDE

Unify OpenScape Xpressions V7

SAP R/3 Gateway

Installation and Administration Manual
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History of Changes

Date	Changes	Reason
2012-06-01	MMCC integration deleted.	FRN 5712
2014-10-01	Installation of XML APL does not need the SAPGUI Client.	CQ00315638

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1 About this Manual

1.1 Who should read this Manual?

This installation and configuration manual addresses the technical staff who is responsible for implementing or operating an XPR - based Unified Messaging or CTI solution in connection with an SAP environment.

Within this scope, only XPR-SAP integrations via the SAP interfaces SAPconnect, SAPphone and ICI will be considered.

Though we comprehensively describe technically significant basics as well as installation and configuration steps in the following chapters, the reader should fulfill the following prerequisites:

- Excellent knowledge of how to operate Windows and Windows-analog computer interfaces.
- Practical knowledge of how to install and configure software in Windows systems.
- General information technology knowledge.
- Practical experience with installing and configuring the XPR server.

1.2 General Information on this Manual

1.2.1 Manual Structure

In the following you will find an overview of this manual's structure. For that we introduce here the contents of each chapter:

Chapter 1 – About this Manual

This chapter provides – as you can already see – a short overview of this manual's contents. In other words, the single chapters are shortly presented as regards structure and contents. Explanations of symbols and acronyms used are given here as well.

Chapter 2 – Introduction

The *Introduction* chapter describes the conceptual method of resolution of an XPR-SAP integration, which forms the basis for the realizations to follow.

Chapter 3 – Technological Concepts

In this chapter we introduce basic technology concepts. Such preparative descriptions serve to help you understand the XPR server and SAP system configuration explained at a later stage.

Chapter 4 – Installation

The *Installation* chapter describes all installation and configuration steps for the solution scenarios of the areas Unified Messaging and CTI.
Each of these scenarios is preceded by a short description of the respective interface communication and the general integration concept. The operational steps are complemented by figures showing the associated screen contents.

Chapter 5 – Function Reference

The *Function Reference* documents the possible configuration options on the XPR server side. Thus this chapter serves as reference book for users who want to perform configurations and acquaint themselves with setting alternatives in the SAPR3 and SAPPHONE APL.
Furthermore, a short description of the most important CTI functions is given for selected SAP clients.

Chapter 6 – Registry Values

The chapter *Registry Values* sums up all XPR server registry values. Documented are the respective names, associating keys, default entries, and the possible registry entries.

Chapter 7 – Important SAP Transaction Codes

In the *Important SAP Transaction Codes* chapter, all transaction codes required in the course of the installation under SAP R/3 are compiled.

Chapter 8 – Document Formats in SAP R/3

Describes the file formats used under SAP R/3.

Chapter 9 – Scope of Services of the SAPphone Interface

This chapter lists the features supported by the SAPphone interface in correlation to different SAP R/3 versions.

Chapter 10 – Troubleshooting

In this chapter we deal with possible errors in the installations performed. It contains various error descriptions, possible causes and a recommendation for the respective error recovery.
Understandably this chapter can only represent a mere basis for a first error search. If system failures occur in connection with an XPR-SAP integration that cannot be solved by the suggestions made in this chapter, we refer to additional system documentation (for example release notes etc.) and subsequently to your contractual partner if required.

Glossary

The glossary summarizes all technologically significant terms of an XPR-SAP integration and provides a short description of these.

1.2.2 Symbols Used

In the following paragraphs you will find a description of the symbols and their significance.

IMPORTANT:
In this way notes are indicated that signal **important** information. Please definitely heed such notes to avoid malfunctions, loss of data or damages to property.

NOTE:
This symbol indicates a note containing information worth knowing about the described matter.

With the registry description in Chapter 6, “Registry Values”, the parameters linked to a unit within the system are followed by this unit in square brackets [ ]. The indication of these units serves information purposes only and the units must not be considered on entering registry values.

Example:

SystemStartWaitTime [REG_DWORD]	
Default:	5000 [milliseconds]
Possible values:	<number> [milliseconds]

The numeric value stored in this registry value is within the system interpreted as specification in milliseconds.

1.2.3 Acronyms Used

The following list displays the acronyms used in this manual without any further description. Additional explanations of these terms are given in the Glossary.

Acronym	Significance
APL	Access Protocol Layer
AUM	Advanced Unified Messaging
CN	Calling Number
CIC	Customer Interaction Center
CPI-C	Common Programing Interface for Communication
CRM	Customer Relationship Management
CTI	Computer Telephony Integration

Table 1 Acronyms Used

Acronym	Significance
EX	Extension
GUI	Graphical User Interface
HKLM	HKEY_LOCAL_MACHINE
HTTP	Hypertext Transfer Protocol
IC	Interaction Center
ICI	Integrated Communication Interface
IP	Internet Protocol
IVR	Interactive Voice Response
SN	Short Name
LDAP	Lightweight Directory Access Protocol
PSTN	Public Switched Telephony Network
RFC	Remote Function Call
CN	Calling Number
SMS	Short Message Service
SMTP	Simple Message Transfer Protocol
TCP	Transmission Control Protocol
SMTP	Simple Mail Transfer Protocol
SOAP	Simple Object Access Protocol
UM	Unified Messaging
WWW	World Wide Web (Internet)
XML	Extensible Markup Language
XPR	OpenScape Xpressions

Table 1 Acronyms Used

1.2.4 Additional Information

Various sections of this manual deal with software components that do not directly refer to the configuration of the described XPR-SAP integration. Within the scope of this documentation we cannot go to such lengths as to describe the installation or advanced operation of such components. In fact, we assume that they have already been installed and that the reader generally knows how to operate them.

As far as these components need to be handled for the configuration of a solution present, the required steps are comprehensively explained and represented. For more information on operating or installing these components please refer to the corresponding documentation of the respective producer.

Realizing the XPR-SAP integration requires in particular the SAPGUI - the graphical user interface of an SAP system. Therefore, you find a description of its installation and configuration as detailed as required. This manual is not a general SAPGUI operating instruction though. Further information is in this special case found in the official SAP manuals.

As regards the reference documentation on the SAP components we also refer to the SAP producer documentation.

Supplementary information on the CTI APL of the XPR server is provided in the XPR manual *Server Administration*.

Additional SAP documentation

You will find additional producer information on SAP R/3 in the following sources:

- SAP Web Help Portal under `http:// help.sap.com`
  (as SAP partner or customer you can register there as Service Market Place user).
- SAPGUI Online Help CD
- SAP Interface and certification documentation
- SAPNotes.

1.3 Data Protection and Data Security

This system also processes and uses personal data for purposes such as billing, displays, and customer data acquisition.

In Germany, the processing and use of such personal data is subject to various regulations, including the regulations of the Federal Data Protection Law (Bundesdatenschutzgesetz = BDSG). For other countries, please follow the appropriate national laws.

The aim of data protection is to protect the rights of individuals being affected by use of their personal data.

In addition, the aim of data protection is to prevent the misuse of data when it is processed and to ensure that one's own interests and the interests of other parties which need to be protected are not affected.

The customer is responsible for ensuring that the system is installed, operated and maintained in accordance with all applicable labor laws and regulations and all laws and regulations relating to data protection, privacy and safe labor environment.

Employees of Unify Software and Solutions GmbH & Co. KG are bound to safeguard trad personal data under the terms of the company's work rules.

In order to ensure that the statutory requirements during service – whether during "on-site service" or during "remote service" – are consistently met, you should always observe the following rules. You will not only maintain the interests of your and our customers, you will also avoid personal consequences.

A conscientious and responsible approach helps protect data and ensure privacy:

- Ensure that only authorized persons have access to customer data.
- Take full advantage of password assignment options; do not allow unauthorized persons to gain access to passwords by writing them down on a piece of paper or via other means.
- Ensure that no unauthorized person is able to process (store, modify, transmit, disable, delete) or use customer data in any way.
- Prevent unauthorized persons from gaining access to data media such as tapes, CDs or DVDs. This applies to service calls as well as to storage and transport.
- Ensure that storage media which are no longer required are completely destroyed. Ensure that no sensitive documents are left unprotected.

Work closely with your customer contact; this promotes trust and reduces your workload.

2 Introduction

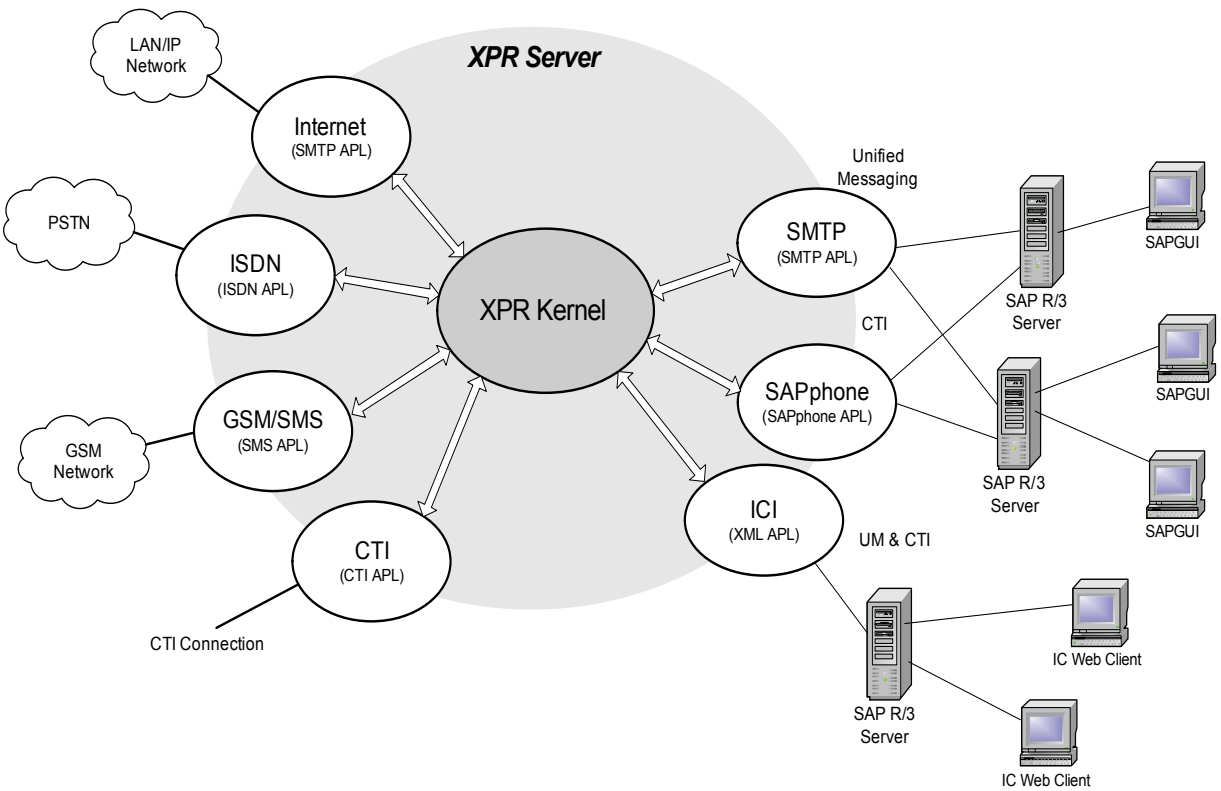
2.1 XPR and SAP R/3 – a well coordinated Team

SAP R/3 is an integrated collection of standardized company applications that map and support a broad range of company processes. The currently available applications reach from materials management and procurement via accounting solutions and staff administration to customer management, e-Commerce and web portal solutions.

SAP R/3 is a real-time system. All company-significant information is centrally consolidated in the SAP database and can thus be queried any time.

The XPR server provides different communication modules for an efficient connection of the XPR server to such an SAP environment. The SAPR3 APL supports the SAP interface SAPconnect and the SAPPHONE APL supports the SAPphone interface. Furthermore, connections to the ICI interface of SAP R/3 can be enabled with the XML APL.

The following figure provides an overview of the available XPR server interfaces and modules that matter in the environment of an XPR-SAP integration.



Integrating the XPR server and SAP system does not only provide the user with the actual SAP applications, but he/she can also utilize the wide range of the XPR server communication solutions in system-integrated form. The scope of these additional services depends on the realized type of SAP interface.

SAPcomm is the most simple interface and provides merely fax services. The SMTP interface already enables integrating Unified Messaging services. Beyond that, SAPphone realizes the integration of CTI functions in SAP R/3.

2.2 Unified Messaging and CTI – what is that?

Unified Messaging and CTI solutions help optimizing an increasingly communication-related business culture.

Unified Messaging (UM)

The term Unified Messaging describes the consolidation of various communication services on a common platform. Such services can be, for example, telephony, fax, e-mail or SMS, which are administered in a Unified Messaging solution on a universal communication platform and, in the ideal case, are interconvertible.

In practical terms this means that a user can reach all of his/her incoming messages via a central system access. As regards SAP integration this means that all communication services can be provided via one interface – namely the SAPGUI or the SAP WebClient.

Computer Telephony Integration (CTI)

CTI summarizes all functions that enable a logical link between data and telephone services. In the most simple case this can be, for example, starting a defined PC application when a call arrives at the telephone terminal device of the same workstation. This scenario can be extended at will by linking an incoming call to more complex, computer-based processes. Such processes can include, for example, the display of caller-specific information on the computer screen. The other way round, from computer to telephone, is possible as well. A good example of this is establishing a phone connection to a subscriber from within a computer application.

3 Technological Concepts

This chapter provides information on the following topics:

- SAP R/3 in General
- Unified Messaging via SAPconnect
- Notes for an Environment with several Clients.

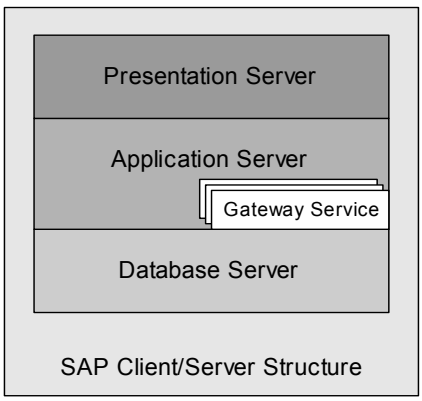
3.1 SAP R/3 in General

The information in this chapter is structured as follows:

- Logical Structure of an SAP R/3 System
- External SAP R/3 Interfaces
- RFC Protocol
- SAP Routing.

3.1.1 Logical Structure of an SAP R/3 System

While SAP R/2 used to work on a mainframe basis, SAP R/3 is realized in a hierarchical client/server architecture. Various logical servers provide different services for the next higher server layer in the network. The following figure shows the logical system components of this structure.



Database server

The database server acts as central administrator of all data stored in SAP R/3.

Application server

The application server provides the SAP users with all required SAP applications under SAP R/3. If an invoked application under SAP R/3 needs stored data, the application server communicates with the database server and retrieves all required information from there.

The SAP applications of a company can be distributed among various application servers and are thus highly scalable.

Gateway service

The gateway service is one of the SAP R/3 services typically installed on an application server. It provides external connections for the entire SAP server system. In this function it is responsible for processing outgoing Remote Function Calls (RFC) (cf. Section 3.1.3, “RFC Protocol”, on page 29).

An SAP server carrying a gateway service is also called SAP Gateway Host.

Presentation server

The presentation server is in charge of the user-compatible representation of all information on the SAP user system. It is part of the SAPGUI, the graphical PC user interface of an SAP user, or is addressed as X-Server by an X-Terminal. The information to be represented is retrieved by the representation server from the application server.

3.1.2 External SAP R/3 Interfaces

SAP R/3 provides various interfaces for communicating with external systems. For the time being, these are SAPcomm, SAPconnect, SAPphone and ICI.

3.1.2.1 *SAPcomm* Interface

The SAPcomm interface is the oldest communication interface for connecting external systems to an SAP system. It was introduced with SAP R/2 and is beyond that also used in SAP R/3 environments. Since it merely supports fax service, it has largely been replaced with the more recent SAPconnect interface, which provides a wider range of services.

Data interchange using the SAPcomm interface occurs via a file storing system. In this store, messages to be transmitted are filed by the sending side. The receiving side can then read out the information for forwarding.

SAPcomm will not be officially supported any more after SAP R/3 version 4.6.

IMPORTANT:
The XPR server does not support the Unicode format via the SAPcomm interface.

3.1.2.2 *SAPconnect* Interface

The SAPconnect interface was introduced with SAP R/3 version 3.1G and provides the services fax (with document attachment), e-mail and pager/SMS. SAPconnect communication is based on the SAP-own RFC interface. This interface works client/server-oriented and exchanges queries and information via the so-called Remote Function Calls (RFC) (cf. Section 3.1.3, “RFC Protocol”, on page 29).

Since the introduction of SAP Basis 7, SAPconnect has not been officially supported any more. Fax and SMS messages have eversince been exchanged with external systems via the SMTP interface of the SAP system (cf.Section 3.1.2.3, “SMTP Interface”, on page 26).

With the SAPR3 APL the XPR server provides a certified version of the SAPconnect interface.

IMPORTANT:
The SAPR3 APL does not support the Unicode format.

3.1.2.3 SMTP Interface

The SMTP interface with SAP Basis 7 replaces the SAPconnect interface. This enables the SAP system to exchange fax and SMS with external systems default-based via SMTP.

With the SMTP APL the XPR server provides a certified version of the BC-SMTP interface.

IMPORTANT:
The SMTP APL does not support the Unicode format.

3.1.2.4 SAPphone interface

The SAPphone interface was also introduced with SAP R/3 version 3.1G. It enables the use of CTI functions that optimize telephone communication in wide areas by integrating the PC workstation. Some simple examples of this are setting up telephone calls with a mouseclick or using a journal. Such a journal documents incoming calls in a manageable way, so that return calls can be easily initiated. An individual SAP workflow and telephone communication linkup or transporting data with a telephone call (CAD) is possible as well.

Just like SAPconnect, SAPphone is based on the subjacent SAP RFC communication (cf. Section 3.1.3, “RFC Protocol”, on page 29).

With the SAPPHONE APL the XPR server provides a certified version of the SAPphone interface.

IMPORTANT:
The SAPphone APL does not support the Unicode format.

3.1.2.5 ICI interface

By now the SAP R/3 systems provide a communication interface that does not use the SAP-proprietary RFC communication any more - the Integrated Communication Interface (ICI). This interface was implemented based on the specifications for XML/SOAP of the W3C consortium and works with a progressive, web-oriented technology.

ICI defines the possibility to support the Unified Messaging services fax, mail, SMS, pager and SAP work items. Furthermore, the installation of CTI solutions is enabled by external communication servers. Ample monitoring, reporting and collecting statistics are additional options of the ICI interface.

ICI has been supported since SAP CRM 4.0.

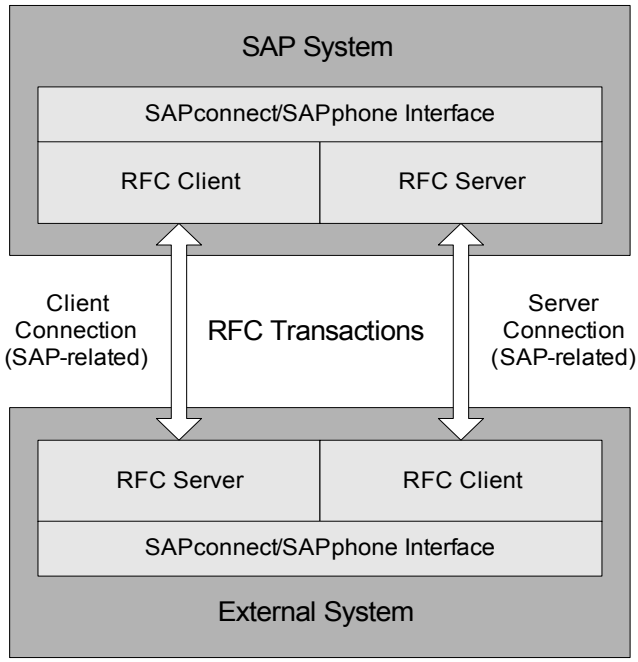
Based on the XML APL the XPR server supports an ICI interface certified by SAP. From the services listed above this interface currently supports 'ICI-Mail' and 'ICI-CTI'.

IMPORTANT:
The XML APL does not support the Unicode format.

IMPORTANT:
The XML APL does not support a Web Dispatcher on the SAP R/3 side.

3.1.3 RFC Protocol

The RFC protocol provides a platform-independent SAP interface. This interface is a TCP/IP-based client/server interface with a symmetric communication character.



The messages exchanged via RFC – the so-called Remote Function Calls (RFC) – realize the call of RFC application functions. While the RFC server provides the RFC application functions itself, the RFC client realizes their call-up. A function call thus always occurs from the client to the server.

Against the background of the client/server architecture, a terminal-system related difference is made between RFC client and RFC server connections. A client connection ends on the RFC client of the considered system and a server connection ends on the associating RFC server.

We name RFC client and RFC server connections always related to the XPR server.

For each connection of an SAP application server as well as for the communication of each SAP client, a logical communication link is required between the XPR server and SAP R/3 system. For each of these links a number of RFC client and RFC server connections is thereby established.

This link forms the communication basis between SAP system and XPR server with using the SAP interfaces SAPconnect or SAPphone.

NOTE:
On the XPR server the RFC interface is provided by the program library `LibRFC32.dll`. It is automatically installed on configuring the SAPGUI.

Let's now see how many RFC connections between the XPR server and the SAP system are established.

NOTE:
The `LibRFC32.dll` by SAP limits the number of parallel RFC connections. This limitation can be set via the environment variable `CPIC_MAX_CONV` of the Windows operating system and allows up to 100 parallel RFC connections by default. Consider this restriction particularly in CTI and contact center environments (Section 3.1.3.6, “Numerical Restriction of RFC Connections”, on page 35).

Number of RFC connections for the SAPGUI

For each SAPGUI connection that accesses a connected SAP system from the XPR server platform for configuration purposes, a client connection is established between the systems. This structure is independent from the communication interface used between the XPR server and the SAP system.

Number of RFC connections via *SAPconnect*

If a SAPconnect interface is used between the XPR server and the SAP system, the number of established RFC connections results from this as follows:

The XPR server and the SAP system establish for each link that exists between the XPR server and the SAP system two client connections and one server connection.

Number of RFC connections via *SAPphone*

If a SAPphone interface is used between the XPR server and the SAP system, the number of established RFC connections results from this as follows:

- The XPR server and the SAP system establish for each link that exists between XPR server and SAP system always four server connections at first.
  Via these connections, RFC transactions are exchanged between the XPR server and SAP system with each unanswered transaction blocking the relevant connection.
- To enable the transmission of further transactions when such blockings occur, the XPR server tries to establish further server connections to the SAP system. Namely, altogether one server connection for each monitored telephone of a CTI environment. This procedure is to ensure that for calls from SAP R/3 an adequately large, not blocked connection pool is available. RFC connections once established are kept open for handling future RFC transactions.
  The maximum number of RFC server connections established in this way can be connection-specifically defined in the SAPphone APL configuration dialog via the **Max. Server Connections** option. The default value of this setting is 20 server connections.
- For each established server connection a client connection is set up also.

3.1.3.1 RFC Destination

So that the respective RFC client can address its RFCs precisely to the target system via the SAP interface, it must receive a target address for its communication. This information is handed over to the client in the form of the RFC destination. The RFC destination thus represents for the RFC client the logical dimension of the connection to an external system.

On the SAP system side the RFC destination is specified by direct configuration of the SAP application server with the SAPGUI. In the XPR server its configuration is indirectly performed via an entry in the `saprfc.ini`. On establishing the communication with the SAP system, the XPR server reads the relevant entry out of this configuration file.

NOTE:
Alternatively, the RFC information can be handed over to the XPR server via the corresponding entries in the XPR registry. This procedure has however only been maintained for reasons of compatibility to older implementations and is no longer recommended.

3.1.3.2 Program ID

In order to operate several parallel links via an SAPconnect or SAPphone interface, a logical ID is assigned to each connection – the program ID. This ID is configured on the XPR server as well as on the SAP application server and is transmitted along with the communication of these two systems for authentication.

3.1.3.3 `Saprfc.ini` – the RFC Configuration File

The `saprfc.ini` file is a configuration file for any RFC-based applications. It is used to configure the RFC parameters for the XPR server interfaces SAPconnect and SAPphone and its communication with an SAP application server.

IMPORTANT:
The `saprfc.ini` must be available on the XPR server in the *<XPR Install>*`\bin\` directory. As alternative to these defaulted paths you can define an individual directory under the Windows environment variable *RFC_INI* for storing the `saprfc.ini` file. If the storage location of the configuration file is specified in this way, all RFC applications must use the same `saprfc.ini` .

In the following you see an example of an extract from an `saprfc.ini` file. Here the parameters needed for an RFC connection are configured, which are later taken over by the XPR server if required:

```
[…]

[RFC-SERVER]
DEST=SRV
TYPE=R
PROGID=CE6_850_MMCC
GWHOST=/H/194.77.158.13/H/…/S/3297/H/cpce601
GWSERV=sapgw00
RFC_TRACE=0

[RFC-CLIENT]
DEST=CE6
TYPE=A
ASHOST=/H/194.77.158.13/H/…/S/3297/H/cpce601
SYSNR=00
RFC_TRACE=0
ABAP_DEBUG=0
USE_SAPGUI=0

[…]
```

The following table shows the denominators and the settings they represent:

Denominator	Description
ASHOST	Host name of the SAP application server
DEST	Referencing string for the XPR server
GWHOST	Host name of the SAP gateway server
GWSERV	Name of the SAP gateway service
PROGID	Program ID of the RFC connection
SYSNR	System number of the SAP gateway service

Table 2 Description for the Parameters of the `saprfc.ini` (Extract)

Please refer to the reference section under Section 5.5, “saprfc.ini”, on page 283 for explanations on the most important entries used.

3.1.3.4 CPIC User

For communication via RFC we recommend the definition of a virtual user of type CPI-C.

NOTE:
Depending on the SAP version, the CPI-C user type is also called system user (from SAP R/3 4.6C) or communication user (from SAP R/3 6.10 basis).

At least the SAP system privileges S_A.SCON must be assigned to this user via his/her profile.

NOTE:
You can also grant full SAP system privileges (SAP_ALL, SAP_NEW) to the virtual user. Since user type *CPI-C* is selected, you cannot log on to the SAP system via this user from outside. This prevents abuse of the assigned privileges.

Via this user the XPR server will later log on to the SAP application server to exchange RFC information with SAP R/3.

3.1.3.5 Restricted RFC Parameter Selection

Since some of the parameters described in this section have reference and authentication functions, the following restrictions must be respected on the otherwise free assignment of these parameters:

- Program-ID
  Denominators for the program ID must be **client-spanningly unique** on an SAP system. With their parallel definition on the XPR server and SAP system, respect case sensitivity.
- DEST in the `saprfc.ini`
  As referencing denominator this parameter must be **unique** within the `saprfc.ini`.

3.1.3.6 Numerical Restriction of RFC Connections

The `LibRFC32.dll`, which enables any RFC communication to the SAP system on the XPR server, limits the number of parallel RFC connections. This restriction can be set via the **Maximum Number of RFC Connections** item in the SAPphone APL and allows up to 100 parallel RFC connections by default, which result from the sum of client and server connections.

As already described in Section 3.1.3, “RFC Protocol”, on page 29, these connections comprise:

- All original client/server connections between the XPR server and the SAP system per client/application server and SAPGUI.
- All connections for the telephones of a CTI environment to be monitored (solely via the SAPphone interface).

On the one hand this restriction leads to a limitation of SAP systems to be connected. On the other hand, a loss of system performance may have to be taken into account with an extremely large number of telephone terminal devices to be monitored.

The system-related setting **Max Server Connections** in the SAPphone APL enables in this context a system optimization. This optimization allows a selective distribution of possible RFC server connections among various connected SAP systems.

NOTE:
In this context, it is necessary to differentiate clearly between *server* and *client* connection of the RFC protocol.
The **Maximum Number of RFC Connections** limits the possible *server and client* connections to altogether 100 connections by default. The **Max. Server Connections** setting restricts, in contrast, merely RFC *server* connections.
The sum of the **Max. Server Connections** of all SAP systems must therefore be smaller than the **Maximum Number of RFC Connections**. The resulting difference is required for possible SAPR3 APL connections and additional SAPphone APL *client* connections.

Optimization example:
Two SAP systems with 20 respectively 200 users are connected to an XPR server. Both systems are to provide Unified Messaging and CTI functionalities for their users via a SAPconnect or a SAPphone interface.

Let us contemplate this scenario with the default settings for **Max. Server Connections** – namely with 20 server connections for each of the SAP systems:

Though both R/3 systems clearly differ in the number of users, the XPR server provides them with an identical maximum number of RFC server connections. The result is a proportionately worse service quality by the ’big’ R/3 system. This particularly affects the CTI functionality the number of RFC server connections of which proportionately increases with the CTI users.

In such an environment we therefore recommend to reserve a bigger share of the maximum of 100 RFC connections for the R/3 system with 200 SAP users. Consequently, we optimize the XPR server settings by allowing a maximum of e.g. 60 RFC server connections for the ’big’ SAP system, and a maximum of 10 RFC server connections for the ’small’ system.

The remaining RFC connections can then be used, for example, for the additional Unified Messaging connection via SAPconnect, and for required RFC client connections.

3.1.4 SAP Routing

When connecting an XPR server to an SAP system, establishment of a communication relation between both systems must be ensured. This requires routing of the transmitted information from the source to the target.

If the SAP and XPR server are separated by a WAN connection, a ’source route’-based routing is used. The sending system is thereby informed about the exact route from the start to the target system. This is done by specifying the so-called ’router connect string’. It defines all SAP routers that need to be passed on the way to the target, and the target system itself. The thus described routing path through the network is added to the data to be transmitted, which, based on this information, can be routed to the desired target by the SAP routers.

A ’router connect string’ consists of several substrings that specify various information of the respective systems. Each substring has the format `/H/<Host>/S/<Service>/P/<Password>` with the denominators H, S and P describing which specification type follows.

The following applies:

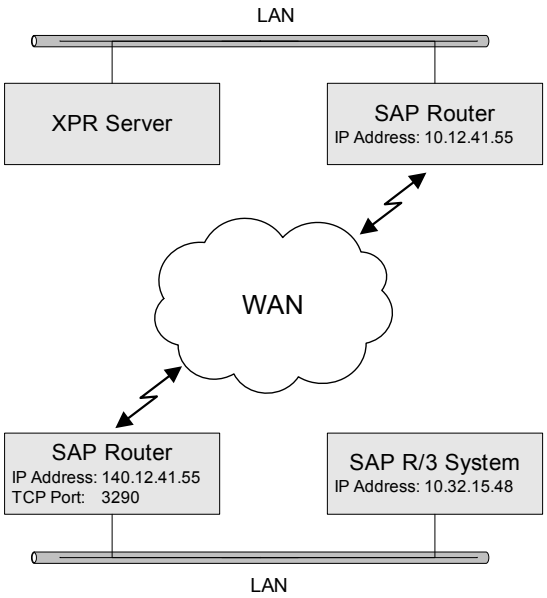
/H/ Specification of a host / SAP router (IP address or host name) follows

/S/ Specification of a TCP port to be used in this SAP router / host (optional denominator/parameter) follows

/P/ Specification of a password to be handed over to this SAP router / host for identification follows (optional denominator/parameter)

The following example illustrates how an XPR server can reach its SAP application server via a WAN connection with two SAP routers.

Example:



In this example the associated router connect string results in:

```
/H/10.12.41.55/H/140.12.41.56/S/3290/H/10.32.15.48
```

Indication of a router connect string is later required for e.g. logging on to an SAP application server.

3.2 Unified Messaging via *SAPconnect*

NOTE:
Since the introduction of SAP Basis 7, SAPconnect has not been officially supported any more. Fax and SMS messages have eversince been exchanged with external systems via the SMTP interface of the SAP system.

The information in this chapter is structured as follows:

- Address Formats and ANI Hits
- User Profile Replication.

3.2.1 Address Formats and ANI Hits

For sending messages between the XPR server and SAP R/3 system, you must comply with addressing conventions that depend on the service to be transmitted.

The following table shows the formats used in this context:

Direction	XPR Service	SAP Service	Format Example
from the SAP system to the XPR server	FAXG3	FAX	*DE 02404/901-100* or also *DE02404901100*
	SMTP	INT	*support.alsdorf@cycos.com*
	SMS	PAG*	*SMS:01725121314* or also *D2:01725121314*
	Fax G3 polling	FAX	*DE02404901100* with the send attribute 'Answer required'
	all services	INT	NVS:<service>/<address>@<XPR Server Domain> *e.g. NVS:voice/492404901200@cycos.com*
from the XPR server to the SAP system	SMTP**	INT	*SAPR3<SN***>/INT/support.alsdorf@cycos.com*
	FAXG3/FAXG4	FAX	*SAPR3<SN>/FAX/DE02404901100*
	SMS	PAG	*SAPR3<SN>/PAG/SMS:01725121314*

Table 3 Address Formats for XPR and SAP Services

* Available from SAP R/3 version 4.6
** The XPR server can rout all offline messages via SMTP
*** Short name, as configured with the SAPR3 APL configuration
(cf. Section 5.1, "SAPR3 APL", on page 266)

ANI hit under SAP R/3

Under SAP R/3 specific workflows can be controlled on the basis of the originator calling number of an incoming call. For this the calling number transmitted to SAP R/3 must be compared with the known calling numbers of the contact data saved under SAP R/3. Subsequent to a calling number match (inbound ANI Hit), a defined workflow can be started.

To achieve a calling number match in such a scenario at all, two preconditions must, among other things, be fulfilled:

- the phone numbers saved under SAP R/3 must be continuously available in a defined phone number format and
- the originator calling numbers passed on to SAP R/3 by the XPR server must have a format that corresponds to the storage format under SAP R/3.

In this context, the address formats used by the XPR server and SAP R/3 are of note. Depending on the R/3 version, SAP R/3 uses up to three different database fields, which are allocated with a specific calling number format each. Corresponding to their phone number format these three fields are called: *Edited Format*, *Compressed Canonical Format* and *Given Number Format*. These formats were implemented in SAP R/3 in the sequence mentioned, with already existing implementations being maintained. This means that an R/3 version supporting the Given Number calling number format automatically implements the two previous formats as well.

The following table describes the use of these fields and formats in the XPR server and under SAP R/3.

SAP Format (Field)	Use under SAP	Use in the XPR Server	Format Example
Edited Format	Database field that can be arbitrarily edited by SAP users.	–	*DE 02404 / 901-999*
Given Number Format	Is used with SAP R/3 version 4.0 and 4.5. After the first manual search for the associated database entry, the calling number transmitted by the remote server is saved in the transmitted format. With this, remote server specific SAP R/3 notations can be 'learned'.	Was used by the SAPPhone APL in earlier XPR versions.	*+49 (2404) 901-999* *02404901999*
Compressed Canonical Format	Has been used with patches since SAP R/3 version 4.6B. This database field is automatically filled in with the associated, normalized format when the 'Edited Format' field has been newly allocated or changed. This field is used for the inbound ANI Hit.	Is used by the SAPPhone APL in the present XPR version.	*+492404901999*

Table 4 SAP Phone Number Formats

3.2.2 User Profile Replication

No user information can be replicated between the XPR server and SAP R/3 via the SAPconnect interface. Since SAP users must also be maintained in the XPR server up to a certain degree for enabling an XPR-SAP integration, there is the question of how to transfer information between both systems.

There are currently four options for realizing a user profile synchronization:

- Manual user maintenance in the XPR server and in SAP R/3
- Use of a centralized user administration
- Use of a default user in the XPR server via who all SAP users can send messages
- Activating the ’AutoLearn’ mode

In the following sections we will take a closer look at these alternatives.

3.2.2.1 Manual User Maintenance

The parallel, manual maintenance of user profiles in the XPR server and in SAP R/3 is the most time consuming way of synchronizing all necessary user settings between XPR server and SAP R/3. It may be useful in a small test environment but this method is otherwise considered inadequate, especially for productive systems.

3.2.2.2 Centralized User Maintenance

Centralized solutions for system-spanning user administration is often used in complex system environments. In such a realization there is a central user database the contents of which can be retrieved by all authorized systems. This information exchange is based on a directory protocol such as LDAP.

The XPR server as well as SAP R/3 support such an LDAP connection in the form of an LDAP client.

3.2.2.3 XPR Server Default Users

In the *DefaultUser [REG_SZ]* registry value of the XPR server a user name can be entered via which all messages of SAP users unknown in the XPR user database are sent. Trouble-free operation of this method requires of course that the default user has previously been created in the XPR server with the corresponding privileges.

Such a realization represents an interesting solution for sending messages from SAP R/3. However, this scenario can cause problems when the XPR server receives a reply to a message sent in this way.

With reply reception, two different cases can occur here:

- The incoming message has been sent to the address of the original SAP user.
- The incoming message has been sent to the address of the default user.

Let's take a closer look at these two cases.

Personal address of the original SAP user

Since the respective SAP user is unknown in the XPR database, the XPR server cannot route the incoming message to the actual recipient. In this case you can use the SAP inbound routing rules of the XPR server MTA to define the logical line of the XPR server where undeliverable messages are to be routed to[1]. With this solution we assume that at least the following system can identify the addressed recipient.

You find continuative information about the MTA routing rules in the *OpenScape Xpressions Server Administration* manual.

Address of the default user

If a message is directly sent to the address of the default user, a selective mail delivery is possible neither in the XPR server nor in the SAP R/3 system. A message addressed in this way can merely be routed to the postmaster of the XPR server or of the SAP R/3 system. In the latter case the routing rules in the MTA must be employed here as well[1].

You find continuative information about the MTA routing rules in the OpenScape Xpressions *Server Administration* manual.

1. Note that you need to adapt the SAP inbound routing rules for the selection of the correct logical XPR line before you can use them.

3.2.2.4 XPR Server ’AutoLearn’Mode

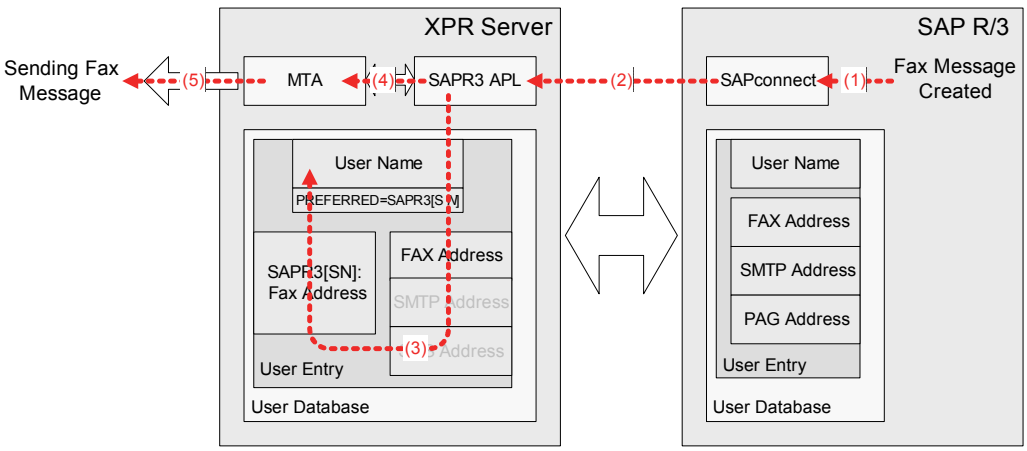
An improved 'AutoLearn' mode has meanwhile been implemented in the SAPR3 APL. This mode makes sure that for an SAP user, of whom the XPR server receives a message for transmission, a user profile is automatically defined and possibly supplemented in the XPR user database.

Prerequisite for this is that the corresponding formats in the SAP node settings are correctly transferred to the XPR server. Furthermore, the originator data of the respective SAP user must be correctly filed in the SAP system for the individual services.

The following three illustrations explain the ’Autolearn’ function.

Outgoing messages of a previously unknown user

Within the cycle of an outgoing message, ’Autolearn’ can define new users still unknown in the XPR server, who can thus not receive any incoming messages yet. The following figure shows which stages are passed through in this case.



1. A user, still unknown to the XPR server, creates, for example, a new fax message under SAP. As soon as he/she sends it, the message is forwarded to the SAPconnect interface and routed to the XPR server.

2. The SAPconnect interface of the SAP R/3 system sends the message to the XPR server along with the SAP user name and the originator's fax address.

IMPORTANT:
The SAP user ID of the originator sending from SAP R/3 is never passed on to the XPR server with the object sent. As replacement, the associated XPR user name is composed in the 'AutoLearn' mode of the first and second name configured in SAP.
In compliance with the interface description, both values in the sent object are merely optional but should, according to SAP, always be set, since at least the second name is a 'necessary value' with defining an SAP user.
Consequently, no more independent user profiles are defined in the 'AutoLearn' mode in the XPR user database for each message service used. Note that if two users with the same first and second name existed in SAP R/3, only one user would be defined in the XPR user database. Therefore make sure that the corresponding information in SAP R/3 is unique.
From the user name thus generated in the XPR server, the XPR user ID (CLASS denominator) is automatically created for the new user profile.

---

3. Based on the transmitted SAP user name the SAPR3 APL searches the XPR user database. It does not find an entry though, since the SAP user is still unknown to the XPR server. 'Autolearn' now becomes active and generates a new user in the XPR user database. It stores the user name and the originator fax address in the associated database fields and assigns optionally specified default values to the new profile (cf. Section 3.2.2.4, "Default Values for new User Profiles", on page 50).
Furthermore, 'Autolearn' sets the PREFERRED field of the new user to SAPR3[*SN*[1]] and enters the originator fax address in the SAPR3[*SN*] database field in the format FAX/+[normalized R/3 originator fax number].
4. Subsequently, the SAPR3 APL passes the fax message on to the MTA in charge of routing the message.
5. The MTA executes the switching operations configured in the XPR server and transfers the fax message via the XPR server APL in charge.

The described 'Autolearn' mechanism does not only work with sending fax messages but also with other message types in the same way. For example, with an SMTP message, 'Autolearn' uses an SMTP address for generating a user profile instead of a fax address.

1. *Short name* , as configured with the SAPR3 APL configuration.

Outgoing messages of a user already known

If an SAP user with a profile in the XPR user database sends a new message, 'Autolearn' is no longer required to define a new user profile. In this case its task is to supplement the already existing profile with new user information if available.

Supposing the user in the above example sends a short message after the fax document, 'Autolearn' will be able to recognize the SMS originator address appearing for the first time and to assign it to the previously created profile. This assignment is possible as the SMS originator address occurs in combination with the user name.

IMPORTANT:
Since the user described here has a profile in the XPR database already, the new address is merely copied to the respective database field. The *PREFERRED* field remains unchanged.
Consider this when users already known are to be adapted to message reception under SAP R/3. Such a case requires the manual adjustment to the logical line to the SAP system.

After sending this second (short) message, the user profile in our example contains a fax as well as an SMS address.

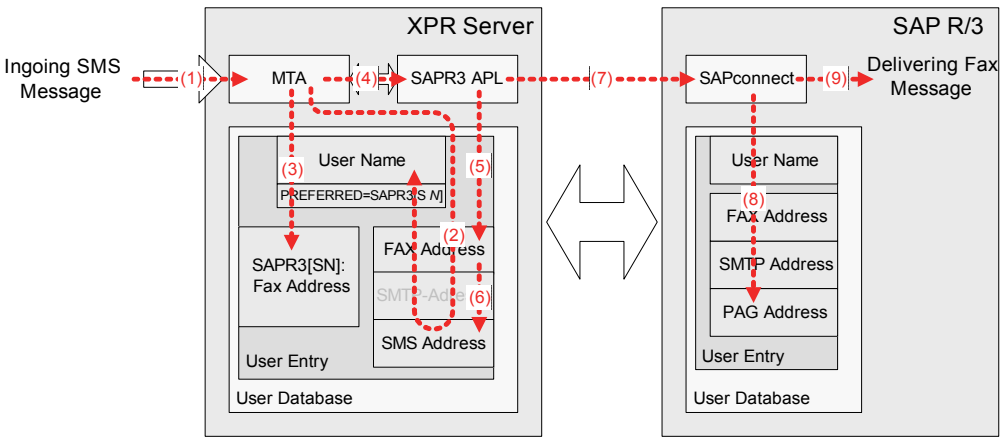
This mechanism applies to each message type used for the first time by the individual SAP user. Thus the more addresses are used by the individual SAP user, the more will be copied to his/her XPR user profile.

IMPORTANT:
By default, the XPR server does not override address information already entered in the XPR database. If this behavior is desired, the *OverwriteUserData [REG_DWORD]* registry value must be set. This value can be set globally for all SAP R/3 systems as well as individually for each system.

Now that 'AutoLearn' has the previously unknown SAP user defined in the XPR server and assigned him/her a fax and an SMS address, incoming fax and short messages can be routed to him/her. This is dealt with in the following section.

Incoming messages

How are messages routed to an SAP user in the XPR server? Let's take a look at the following figure to follow the routing process of an incoming SMS message. We assume that for the addressed user the fax and SMS address have been learned via 'Autolearn'.



1. Via an XPR server APL the incoming short message is routed to the MTA. This agent performs first routing operations.
2. In the next step the MTA looks for a user with the addressed SMS address in the XPR server user database. The agent finds him/her and comes in the associating profile upon an SAPR3[*SN*] entry in the PREFERRED field whereupon it will forward the short message to the SAPR3 APL (step 4).
3. First, however, it follows the PREFERRED entry and finds the entered fax address of the SAP user in the associated SAPR3[*SN*] database field. We remember: This field was filled in with the first originator address of the first message sent. Since this was a fax message we find a fax address here. If the SAP user had sent an SMS message first, 'AutoLearn' would have come upon the user's SMS address at this point.
4. With this information it forwards the short message to the logical line SAPR3[*SN*] of the SAPR3 APL.
5. Before the SAPR3 APL can rout the short message to the correct user, it must find the user associated to the fax address handed over by the MTA. For this purpose, the SAPR3 APL searches the XPR user database for an entry with just this fax address.
6. The SAPR3 APL finds the corresponding user profile and reads out the previously learned address of the required message type - in our example the associated SMS address.
7. With this SMS address the SAPR3 APL transmits the short message to the SAPconnect interface after having converted the target address in a valid SAP R/3 format.

8. After the SAPconnect interface of the SAP system has received the new message, the associated user is determined in the SAP system on the basis of the transmitted SMS address.

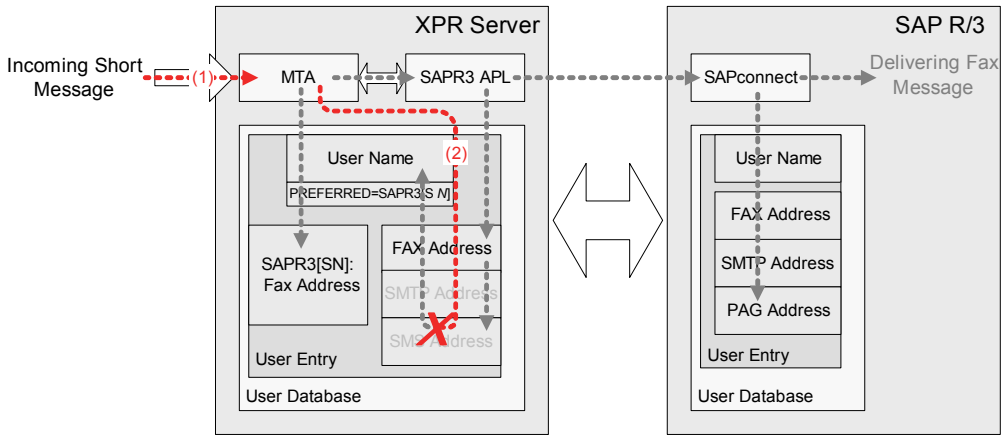
9. Subsequently, the short message is sent to the SMS inbox of the addressed SAP user.

Limits of the 'AutoLearn' mode

'Autolearn' cannot completely make up for the missing user database replication.

Suppose the user who has just received the short message had not previously sent a short message from within SAP R/3.

Let's take a look at the following figure:



Since ’Autolearn’ has not assigned an SMS address to our user as he/she did not previously send a short message, the MTA search for this address fails in step 2. Consequently, the incoming message cannot be routed and the routing rules configured in the XPR server for this case take effect. In most cases, messages that cannot be delivered to the addressed person in the XPR server are routed to the XPR server postmaster.

NOTE:
The way undeliverable messages are handled in the XPR server can be individually determined by routing rule configuration in the XPR monitor. These rules are defined under the MTA settings.
At this stage the use of the SAP inbound routing rules in the XPR server MTA can be useful. They determine that undeliverable messages are automatically forwarded to the SAPR3 APL. Note that you need to adapt the SAP inbound routing rules for the selection of the correct logical XPR line before you can use them.

This shows:

Before an incoming message of a specific type can be delivered from the XPR server to an SAP system,

- the SAP user to be addressed must either have previously sent a message of the same type or
- the field of the respective service in the XPR server user database must have already been set in another way.

Since the XPR server enables replication with the central user databases, user identification under the application of ’AutoLearn’ and with sending from R/3 will work in the cases in which the SAP originator addresses match, for example, those in Active Directory. Message transmission via the XPR server is thus ensured.

Default Values for new User Profiles

As already described, 'Autolearn' is able to define new user profiles in the XPR server user database. Specific database fields can be default set via the corresponding entries in the XPR registry. These entries are made in the registry value *AutoLearnEntries [RegMultiSZ]* under the key `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\PP-COM\MRS\SapR3Apl\System[x]`.

NOTE:
If you perform settings in the *AutoLearnEntries [RegMultiSZ]* registry value for the first time, you first need to define this value in the registry if necessary.

The format of each entry is <*Identifier*>=<*Value*>, with <*Identifier*> defining the respective database field and <*Value*> the desired default value for this field.

Creating users newly learned by 'Autolearn' as actual users and not only as contact requires at least the definition of the following database fields and their default values in the registry:

- GROUP=USER
- PASSWORD=xxxxxxxx[1].

Further database fields for which defining a default value can be useful are:

- FAXSTATIONARY
- COSTINFO
- FAXG3-HEADLINE
- FAXG3-HEADLINE.

1. The password must be entered in the registry in encoded form. Copy it by 'Infotool' from an account with known password and paste it in the registry editor.

The following table lists all fields of the XPR user database automatically maintained by 'AutoLearn' upon transmission of the corresponding message from within SAP R/3.

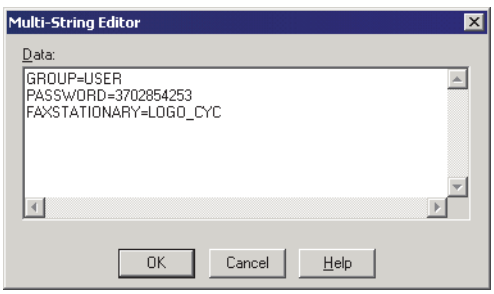
Fax Message	E-Mail	SMS /Pager Message
FAXG3	—	—
FAXG3-HEADLINE	—	—
FAXG3-ID	—	—
FAXG4	—	—
FAXG4-ID	—	—
PREFERRED	PREFERRED	PREFERRED
SAPR3[*SN**]	SAPR3[*SN*]	SAPR3[*SN*]
—	—	SMS
—	SMTP	—
NAME** (corresponds to user name)	NAME (corresponds to user name)	NAME (corresponds to user name)

Table 5 AutoLearn-maintained XPR Database Fields

* *Short name*, as configured with the SAPR3 APL configuration (cf. Function Reference in Section 5.1, "SAPR3 APL", on page 266)

** The XPR user name consists of the first and second user name configured in SAP. From the user name thus generated in the XPR server, the XPR user ID (CLASS denominator) is automatically created for the new user profile.

The following figure shows an example of a configuration of the *AutoLearnEntries [RegMultiSZ]* registry value:



For more information on registry keys see Chapter 6, "Registry Values".

3.3 Notes for an Environment with several Clients

In an XPR-SAP integration with several clients the following applies for the definition of RFC destinations, CPIC users etc. in SAP R/3:

- RFC destinations depend on clients
  In an environment with several clients an individual RFC destination must therefore be defined in each client that communicates via RFC. For the various RFC destinations, different program IDs must be used.
- CPIC users depend on clients
  In an environment with several clients an individual CPIC user must therefore be defined in each client that communicates via RFC. Name and password of the different CPIC users may be identical.
- SAPconnect nodes depend on clients
  In an environment with several clients an individual SAPconnect node must therefore be defined in each client that communicates via the SAPconnect interface. Apart from the RFC destination, the attributes of the different nodes may be identical.
- SAPconnect jobs depend on clients
  In an environment with several clients an individual SAPconnect job must therefore be defined for handling the send processes in each client that communicates via the SAPconnect interface.

In an XPR-SAP integration with several clients the following applies for the configuration in the XPR server:

- For each client an outgoing RFC destination of type R must be defined. Such RFC destinations are configured in the `saprfc.ini` under `[RFC-SERVER]`.
- For all clients of an SAP R/3 system a common, incoming RFC destination of type A can be used. This RFC destination is configured in the `saprfc.ini` under `[RFC-CLIENT]`.
  If the clients are distributed among different SAP R/3 systems, a corresponding RFC destination must be defined for each SAP R/3 system.

4 Installation

This section provides information on the following setup topics:

- Installation and Configuration Requirements
- Installing the SAPGUI
- Configuring a Connection to an SAP Application Server
- Installing SAP APLs on the XPR Server
- Configuring Unified Messaging via SAPconnect
- Configuring Unified Messaging via SMTP Interface
- Configuring CTI via SAPphone

4.1 Installation and Configuration Requirements

4.1.1 SAP Component Requirements

To install the SAP system you need the following information:

- The SAP system ID
  (corresponds to the three letters of the system name)
- The application server's IP address or the host name, verifiable by the DNS
- The SAP client number
- The SAP system number
  (specifies among other things the last two ciphers of the TCP port for which the corresponding gateway service of the SAP application service has been configured. Is in most cases value *00*)
- The Router Connect String for reaching the application server.

Furthermore you need:

- An SAP user account with sufficient system privileges
  (for the SAP configuration we recommend using a user account with full administrative privileges – thus *SAP_ALL* or *SAP_NEW*).

We assume at this point a running TCP/IP connection between the XPR server and the desired SAP application server, so that a connection to the SAP application server can later be established. This includes the proper configuration of available firewalls and SAP routers.

4.1.2 XPR Server Requirements

For the XPR server configuration the following requirements apply:

- For using the SAPR/3 APL, *SAPTENANT* licenses must have been implemented in the XPR server. The XPR server must have at least as many of these licenses as clients access the XPR server via the SAPR/3 APL.

Furthermore you need:

- An XPR user account with full administrative privileges.

4.2 Installing the SAPGUI

This section describes the installation of the SAPGUI – the graphical SAP user interface. All required installation steps will be dealt with in detail.

The integration of XPR services in SAP R/3 requires the installation of the SAPGUI on the XPR server for three reasons:

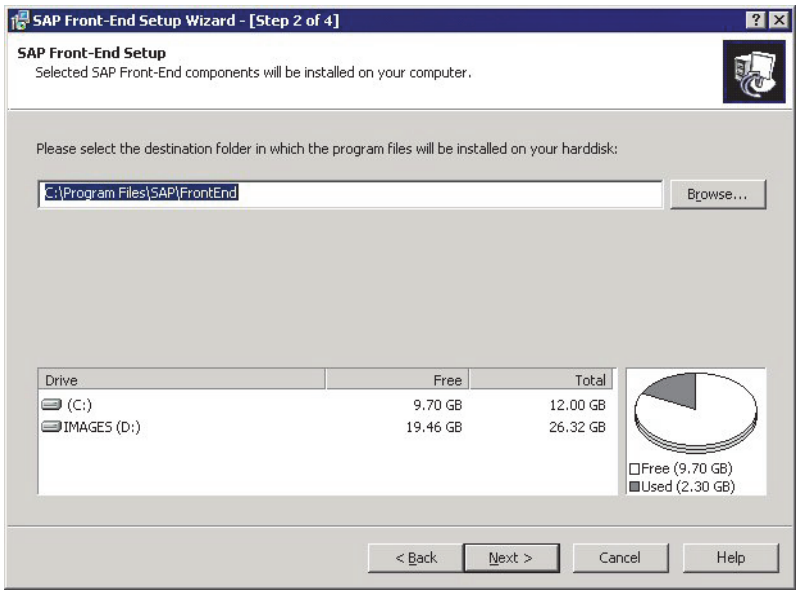
- The SAPR3 and/or SAPPHONE APL installation on the XPR server requires the routine library `LibRFC32.dll`. If this library is not present, the option for installing the SAP APLs in the XPR setup is not available.
- Along with the SAPGUI installation the TCP ports significant for SAP are reserved in the Windows system file `Services` of the XPR server system.
- The SAPGUI is required for the SAP application server configuration.

NOTE:
For SAPGUI access to an SAP system applies:
A new SAPGUI client version may access an older SAP R/3 version if the corresponding option has been set; an old SAPGUI client version, however, may not access a new SAP R/3 version.

How to install the SAPGUI:

1. Start the SAPGUI installation file `setup.exe` on the XPR server.
2. Confirm the welcome dialog of the setup wizard with **Next**.

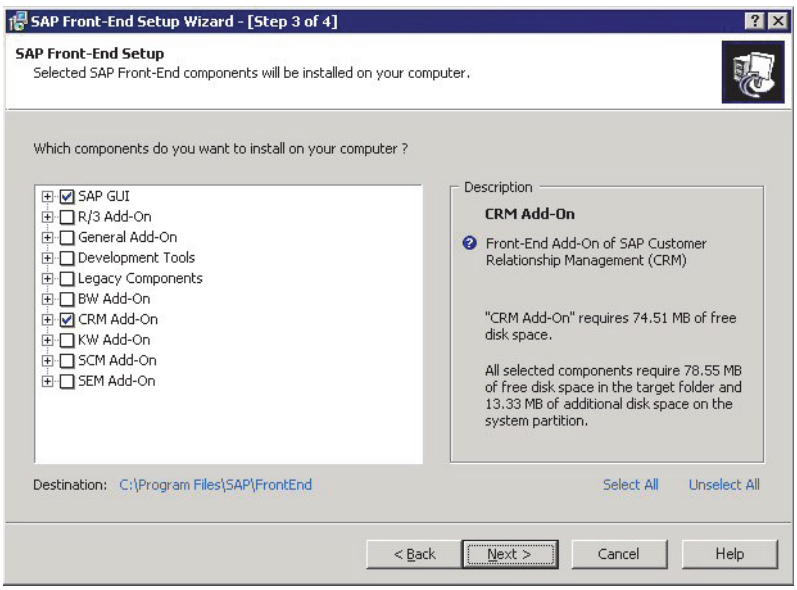
3. In the following dialog determine the target folder to which the SAPGUI files are to be copied and confirm your selection with **Next**.



4. Select the components to be installed. Select here at least the following components and continue the setup with **Next**.

   - SAPGUI (as main component) and
   - CRM Add-On (for later testing of CTI functions in the *IC*).

IMPORTANT:
Also select the R/3-Add-On option, if the SAPGUI is available in a more recent version than the SAP R/3 environment.



5. Answer the installation prompt with **Install**.
6. Confirm the dialog for completing the installation with **Finish**.

The SAPGUI is now installed on the XPR server.

4.3 Configuring a Connection to an SAP Application Server

So that the SAP application server can be configured, access to the desired SAP server system must first be established. This requires:

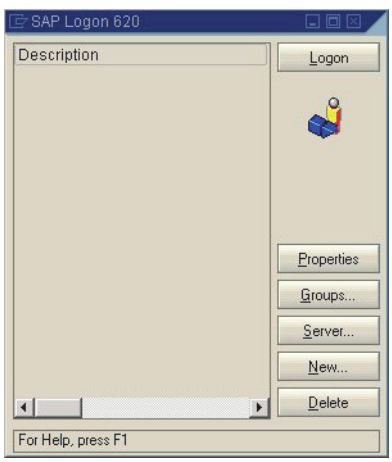
- The SAP system ID
- The application server's IP address or the host name, verifiable by the DNS
- The SAP client number
- The SAP system number
- The Router Connect String for reaching the application server
- An SAP user account with sufficient system privileges

If you do not know some of the specifications required here, please consult the SAP system administrator in charge.

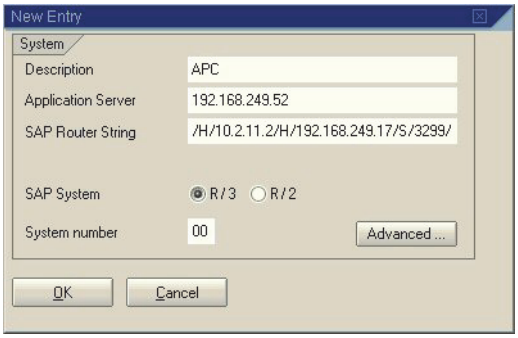
Establishing the SAPGUI connection to the SAP application server

Now that all required items of information are present, the connection to the desired SAP server can be established. Proceed as follows:

1. Start the already installed SAPGUI under **Start > Programs > SAP FrondEnd > SAPlogon**.
2. Select the **New** button to define a new system.



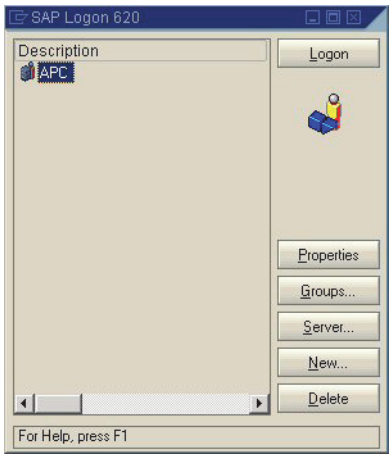
3. In the **Description** field enter the system name for the new SAP system.

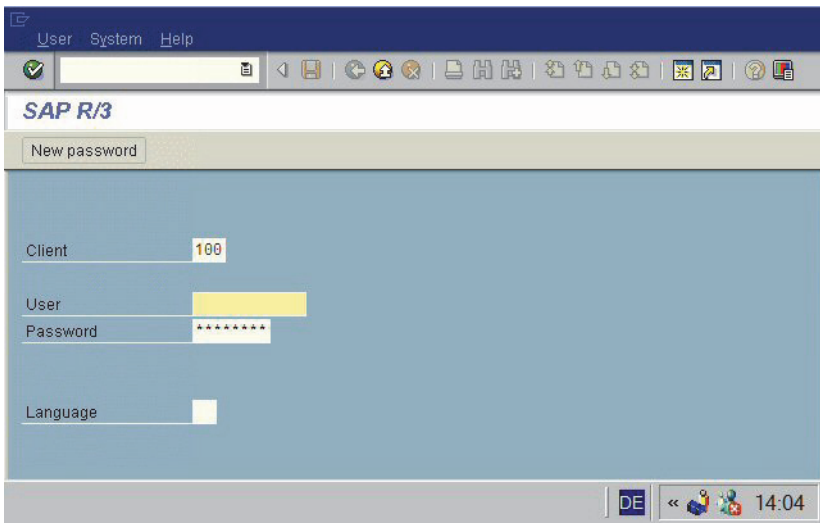


NOTE:
For clarity we recommend specifying the SAP system ID here.

4. In the **Application Server** field enter the new SAP application server's IP address or the host name, verifiable by the DNS.
5. In the **SAP Router String** field enter the Router Connect String of the new SAP application server.
6. Under **SAP System** select the SAP version applicable for the new system.
7. In the **System number** field enter the system number of the new SAP application server.
8. Confirm your specifications with **OK**.

9. In the log-on dialog select the SAP application server you want to connect to and push **Logon**.





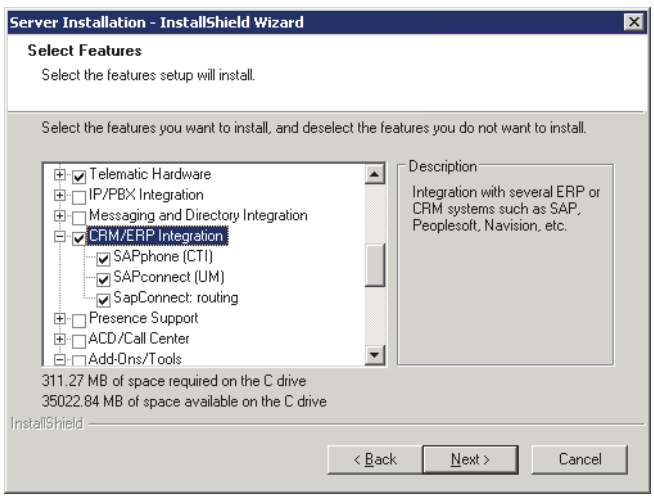
Now you have successfully configured the connection to the SAP application server required for the following configurations.

4.4 Installing SAP APLs on the XPR Server

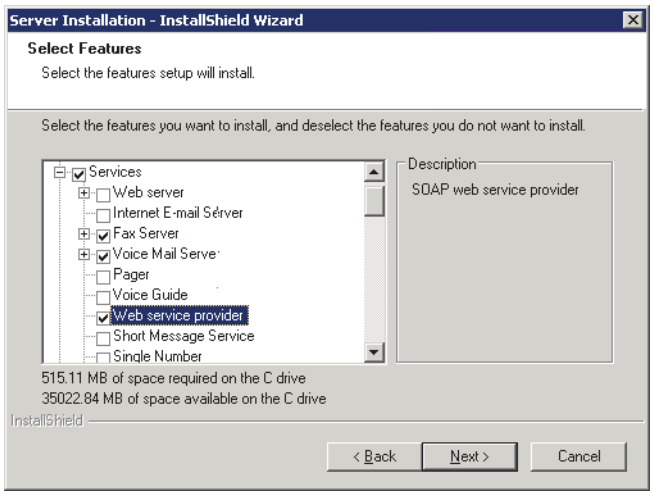
IMPORTANT:
For the following installation and later configuration of the SAPR3, SAPphone and SAProute APL, an SAP client must first be installed on the XPR server system. Perform the installation steps from Section 4.2, “Installing the SAPGUI”, on page 56 for this purpose.

To install the SAP APLs on the XPR server, either perform a complete XPR server reinstallation or a server update.

1. Start in both cases the `setup.exe` from the `XpressionsInstall` directory of the setup medium. Follow the general installation instructions in the *Server Installation* manual.
2. In the **Select Features** setup dialog select the **CRM/ERP Integration** option in addition to the otherwise required components. This is used to install the SAPR3 and SAPphone APL for the SAP R/3 interfaces SAPconnect and SAPphone.



3. Furthermore, select the **Web service provider** option under **Services** to install the XML APL (ICI interface).



4. Continue the setup as described in the general XPR server installation instructions.

Configuration of the SAP APLs is not part of the XPR server installation and is therefore described in the corresponding sections of the installation chapters to follow.

4.5 Configuring Unified Messaging via *SAPconnect*

This section describes the concept of an XPR-SAP integration via the SAPconnect interface and its configuration in the XPR server and SAP system.

The below user interfaces of the various SAP R/3 versions are very different from each other. Therefore, we cannot document a version-spanning user guide for the configuration steps at this point. The SAP system configuration section in this manual consists of three parts:

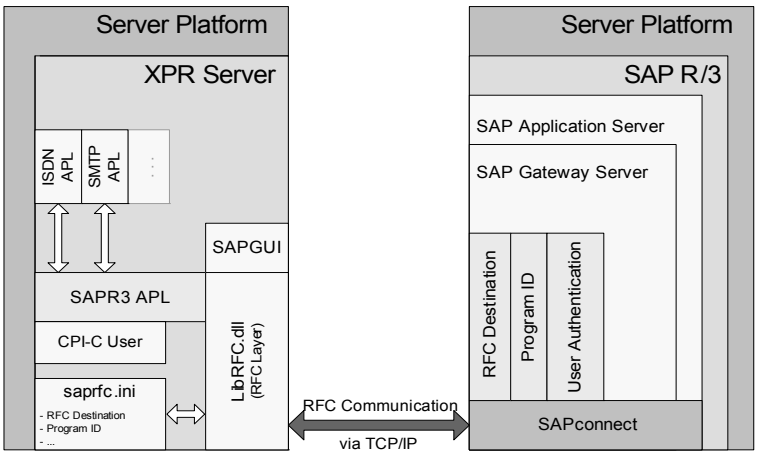
- Configuration under CRM Version 3.1 (Basis 6.20)
- Configuration under SAP R/3 Version 4.6C
- Configuration under SAP R/3 Version 3.1i.

For the following configuration we assume a running SAP system and an XPR server with installed SAPR3 APL. Furthermore, the XPR client application *Communications* must be installed on the XPR server. This application is later used for user profile maintenance in the XPR server.

First, however, some information on the conception of an SAPconnect connection will be given.

4.5.1 Communication Structure of *SAPconnect*

The following figure provides an overview of the communication structure via the SAPconnect interface:



With the SAPGUI the Windows program library `LibRFC32.dll` is installed on the XPR server. It provides the RFC communication interface, required for message exchange between the XPR server and the SAP system. This transport layer obtains its configuration parameters on the XPR side from the `saprfc.ini`, which contains all information for communication with the SAP system.

The SAPR3 APL communicates with the SAP gateway server of the SAP application server via the RFC transport layer, using the CPI-C user. On this, the SAPR3 APL uses a logical connection on the SAPconnect interface, specified by the program ID on both sides.

The XPR server access to the SAP system is authenticated via the user privileges of the CPIC user in SAP R/3.

4.5.2 General Integration Concept

An XPR-SAP integration via SAPconnect is used, as already mentioned, in Unified Messaging environments. In the following we will describe and configure a corresponding solution for the integration of fax messages in SAP R/3.

Scenario

Many companies would like to simplify fax message traffic. Since fax devices are still often used, the desire for simplification can be well understood.

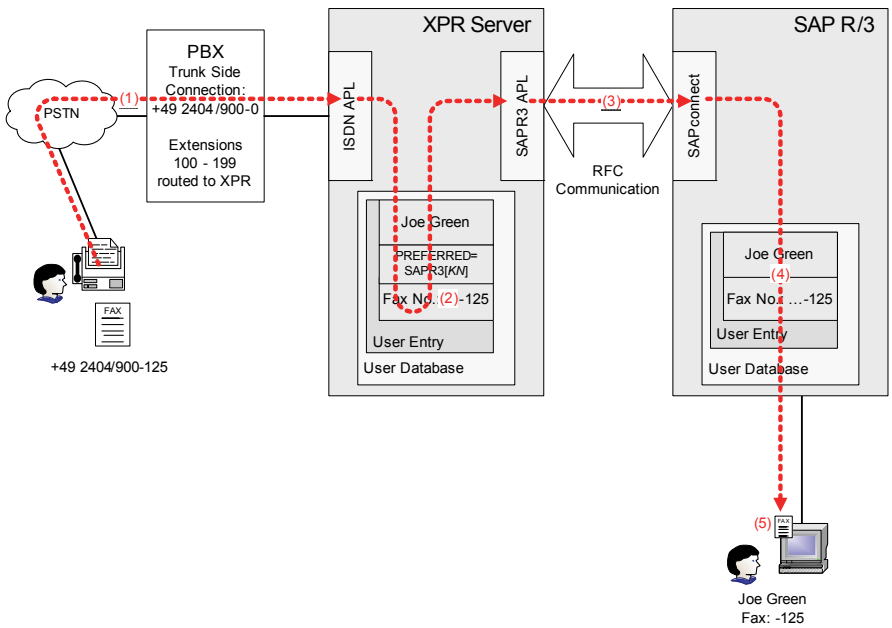
The following scenario is the solution. For, in and outgoing fax messages can be directly handled by any SAP user at his/her SAP workstation. This is enabled by the integration of the Unified Messaging services of the XPR server into the SAP user interface. Since information usually only needs to be printed out for classic fax transmission via a fax device, sending fax messages directly from a PC saves time and money.

In many cases, only sending faxes from SAP R/3 is desired. The fax messages received in this case are then processed by another e-mail system, which may also be connected to the XPR server. Common company platforms such as MS Exchange or Lotus Notes are supported.

How the Unified Messaging solution works

Our system consists of two main components. One component is the XPR server, which provides the connection to the public telephone network via a PBX. The other component is the SAP system, with which the XPR server communicates via an SAPconnect interface, and to which the SAP user is logged in via the SAPGUI of their PC work centers.

The following figure provides a simplified overview of the way our Unified Messaging example scenario works. You will find a more detailed description of message routing via the SAPconnect interface in Section 3.2.2.4, “XPR Server ’AutoLearn’Mode”, on page 44.



Let's see how a fax message is routed to the SAP user Joe Green:

1. An external subscriber sends a fax message to our SAP user. The fax transmission is accepted by the PBX, which has been configured for the extension range -100 to -199 with forwarding to the XPR server.

2. If the XPR server receives the fax message from the connected PBX via its ISDN APL, it looks for the corresponding recipient based on the fax number -*125* in the XPR user database.
   The addressed user is in our case an SAP user who is to receive his/her fax messages under SAP R/3. Therefore, a logical connection via the SAPR3 APL (PREFERRED=SAPR3[*KN*]) has been entered in his/her XPR user profile as preferred address.

3. The incoming fax message is consequently transmitted by the XPR server to the SAP system as copy.

4. SAP R/3 now looks for an SAP user with the requested fax number and finds Reiner Wagner. The SAP system then accepts the message.

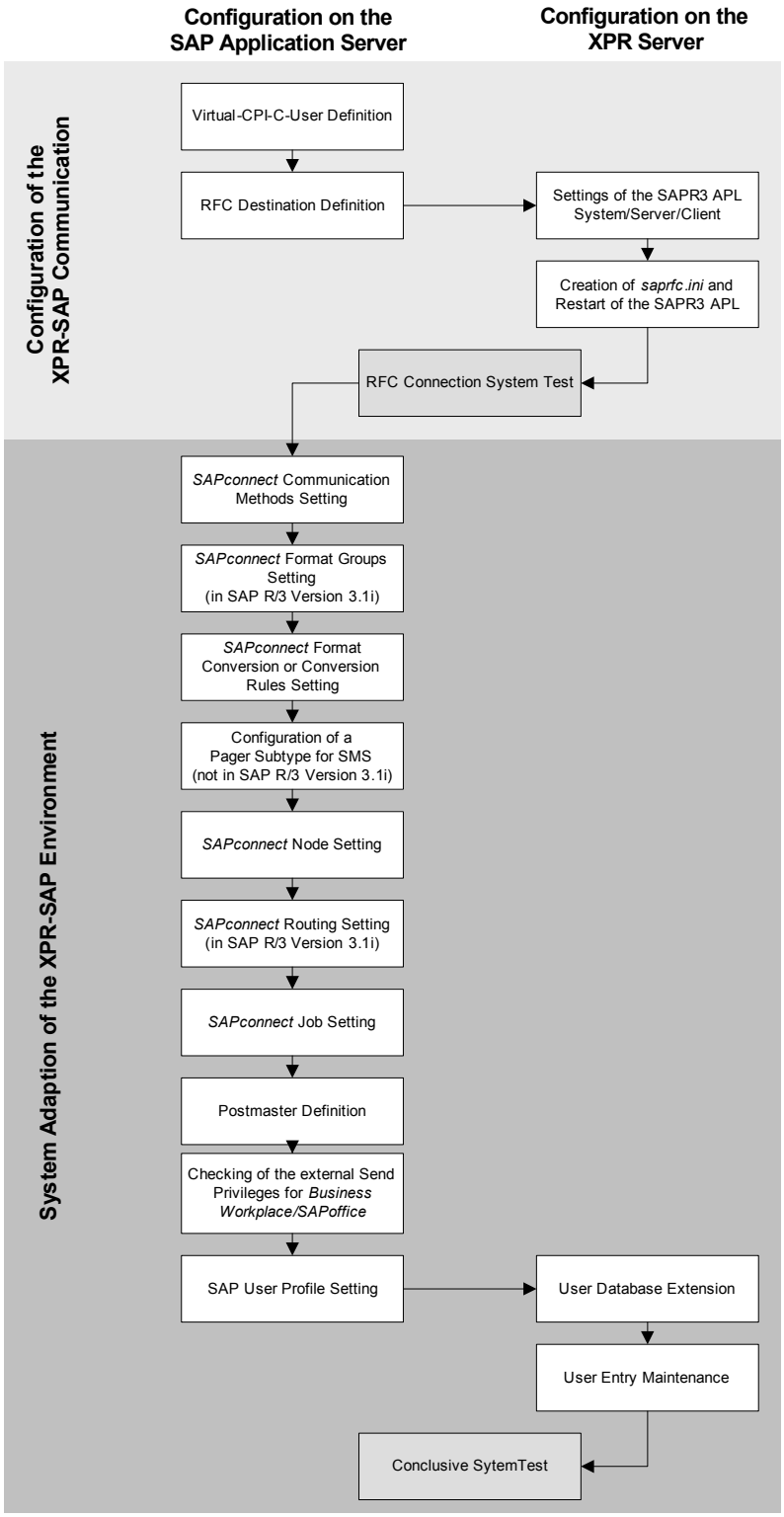
5. Finally, the SAP user Reiner Wagner is informed about the arrival of a new message and he can now access the message via his SAP inbox.

The message, still available on the XPR server, is automatically deleted after expiration of a storage period configured in the XPR server. In the SAP system the message is present until the SAP user deletes it.

If an SAP user sends a fax message from within the SAP system, the new message is passed on to the XPR server by the SAP system in one of the system's cyclic transmissions. The server sends the message via the PBX and the public telephone network to the recipient. Subsequently, the XPR server returns a send confirmation or an error message to the SAP system, which is then delivered to the SAP user who has sent the message.

In the course of the next sections we will configure this scenario with the SAPconnect interface. The following flow chart provides a first overview of the steps required and described in detail on the pages to follow.

The following configuration steps are based on the basic configuration of the above XPR-SAP integration, which does not consider any system redundancies etc.



After this first overview we start configuring the communication between the XPR server and the SAP system.

4.5.3 Configuring the XPR-SAP Communication

In this section we will perform all XPR server and SAP system configurations required for the RFC communication between the two systems.

This part is divided into the following sections:

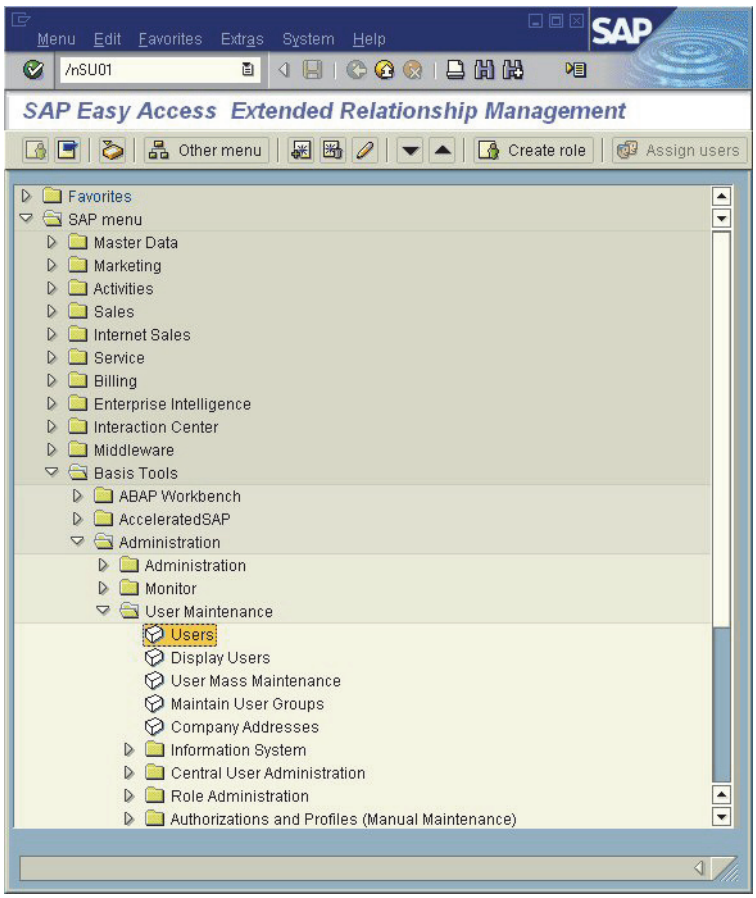
- Configuration under CRM Version 3.1 (Basis 6.20)
- Configuration under SAP R/3 Version 4.6C
- Configuration under SAP R/3 Version 3.1i
- Configuring the SAPR3 APL.

4.5.3.1 Configuration under CRM Version 3.1 (Basis 6.20)

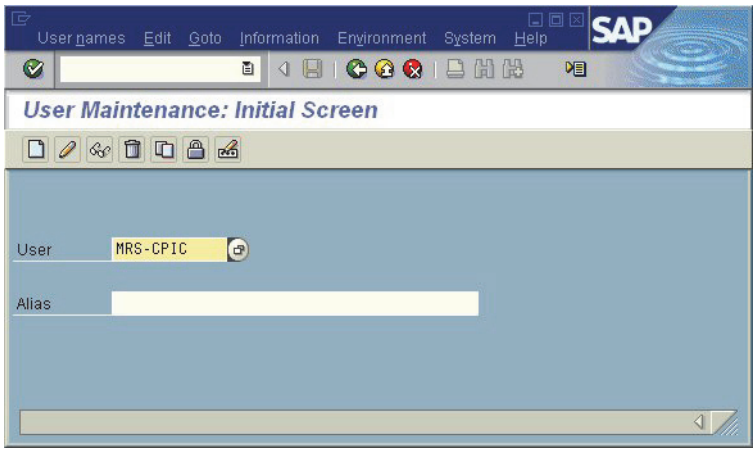
In the following the configuration steps under the SAP version CRM 3.1 are documented.

Creating a virtual CPI-C user in SAP R/3

1. Log on to the previously configured SAP application server via the SAPGUI.
2. Enter the transaction code **/nSU01** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Administration > User Maintenance > Users** with a doubleclick.

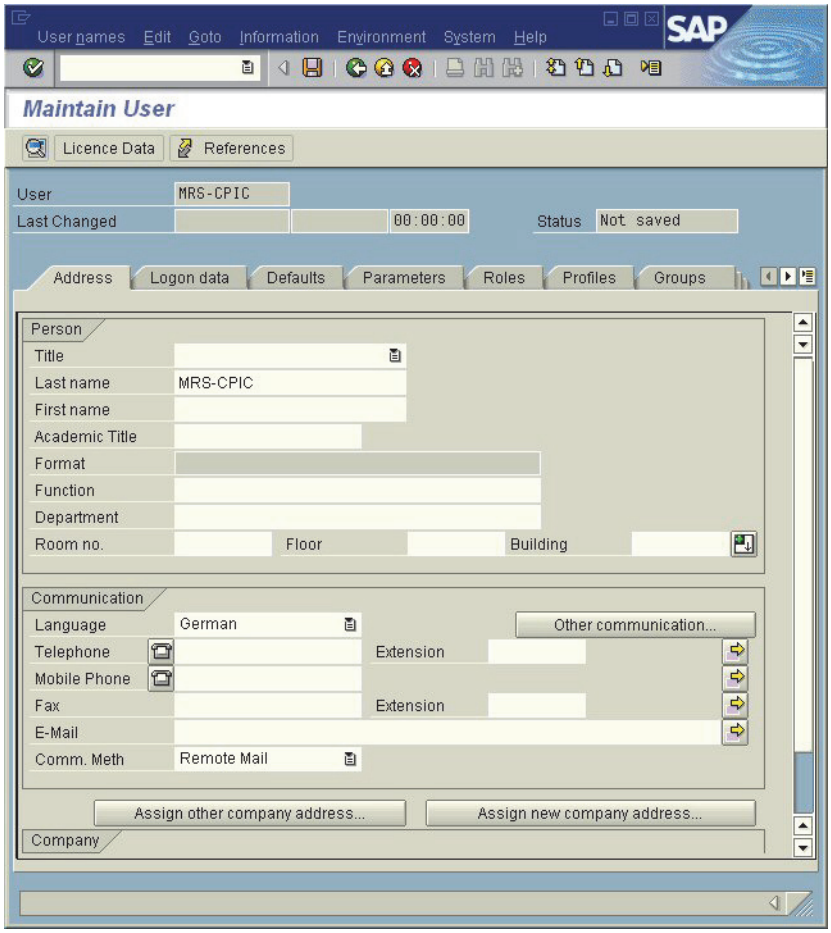


3. In the **User** field enter a user name for the virtual CPI-C user and push the **Create** icon in the toolbar.



NOTE:
We recommend to select a 'speaking' name – for example *MRS-CON* or *MRS-CPIC*.

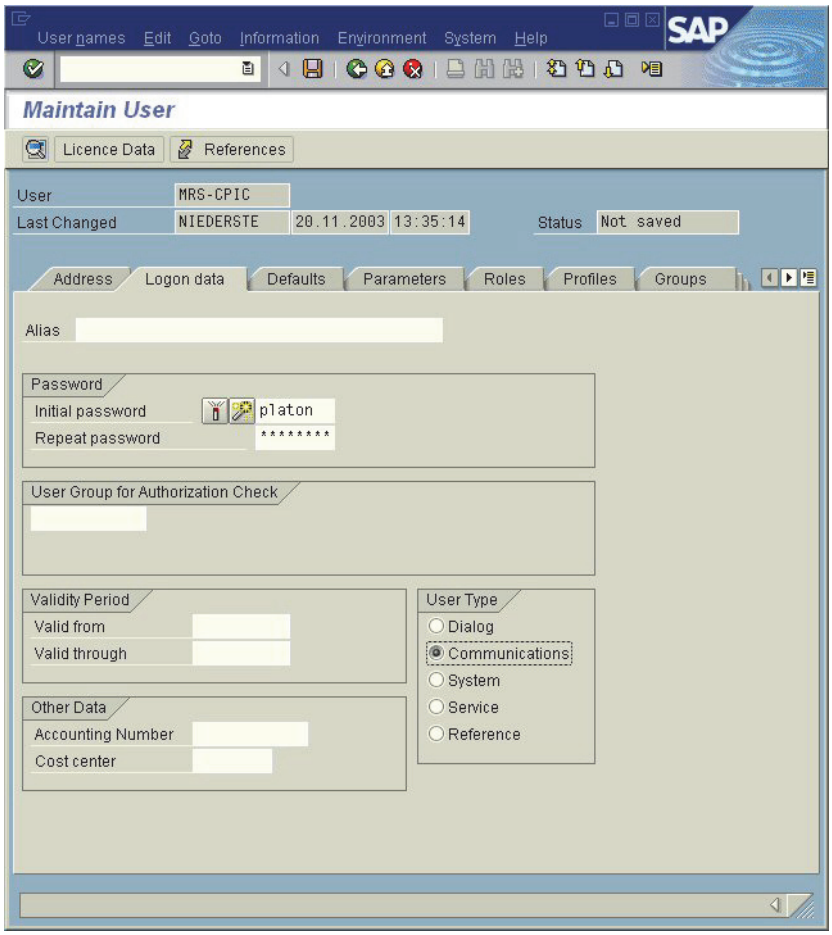
4. In the ***Last name*** field of the ***Address*** tab enter a name for the user.



NOTE:
We recommend copying the user name at this point.

5. In the **Language** field select the desired language option. This specification will influence log outputs on RFC level at a later date.
6. Switch to the *Logon data* tab.

7. Assign a **Password** to the user and select the **Communications** option as **User Type**.

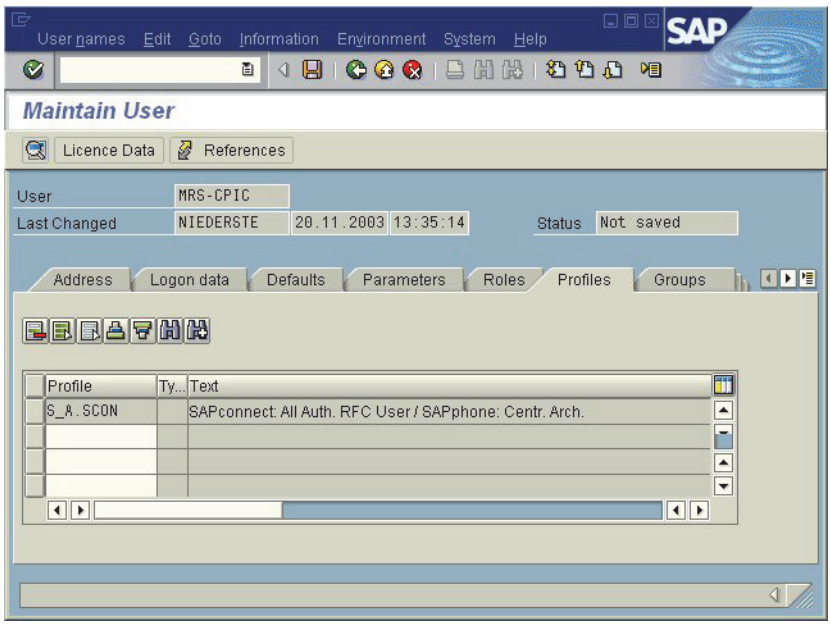


IMPORTANT:
Note that SAP R/3 differentiates upper and lower case with password entries.

NOTE:
Depending on the SAP version the CPI-C user type is also called CPIC user (through SAP R/3 4.6C) or system user (after SAP R/3 4.6C).

8. Switch to the *Profiles* tab.

9. In the table under **Profile** enter the user profile **S_A.SCON** and confirm the entry with the enter key of your keyboard.



NOTE:
You can also grant full SAP system privileges (SAP_ALL, SAP_NEW) to the virtual user. Since the user type CPI-C is selected, there is no way you can log in to the SAP system from outside via this user profile. In this way abuse of the granted privileges is prevented.

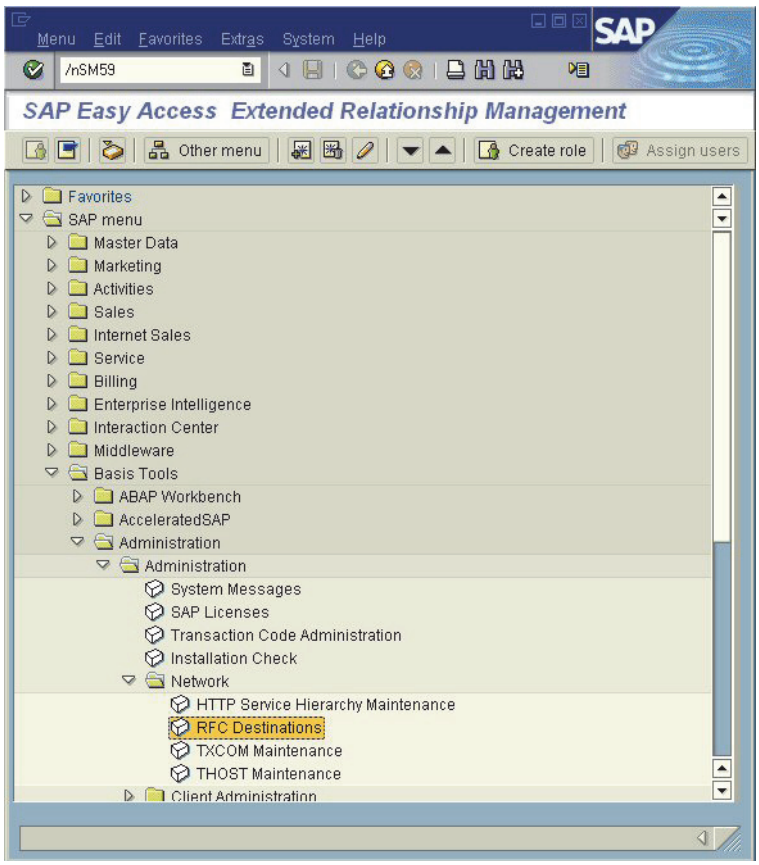
10. Save the settings for the virtual user with the **Save** icon in the toolbar.

Now you have created the virtual user *MRS-CPIC* who will later be used for communication between the XPR server and the SAP application server.

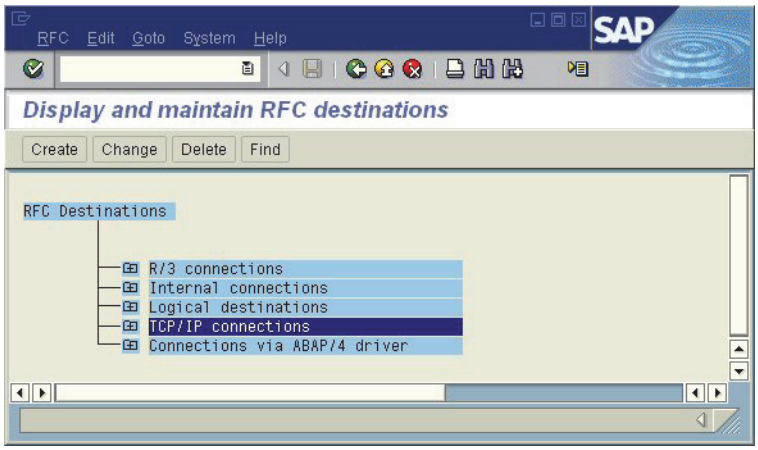
We will now continue with configuring the RFC destination.

Defining an RFC destination in SAP R/3

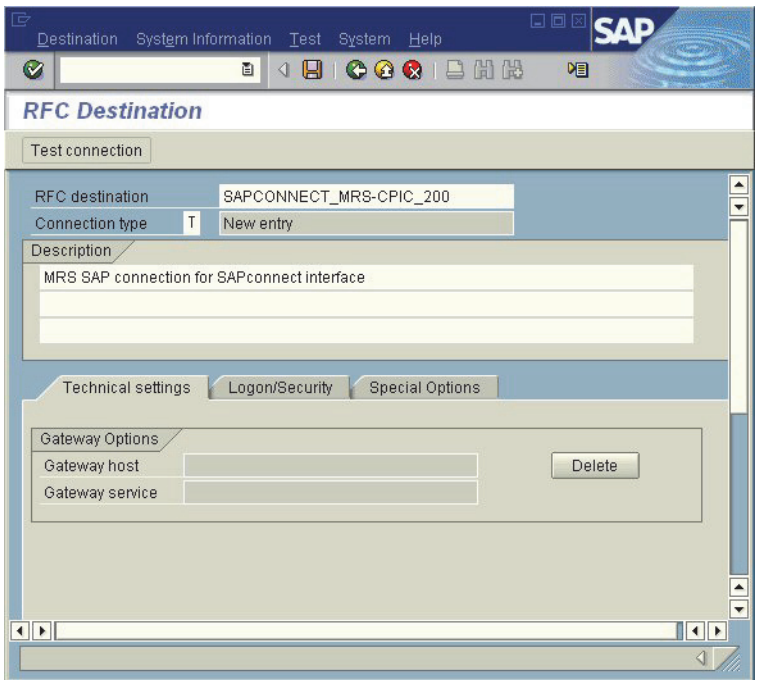
1. Push the **F3** function key to return to the *SAP Easy Access Extended Relationship Management*.
2. Enter the transaction code **/nSM59** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Administration > Administration > Network > RFC Destinations** with a doubleclick.



3. Select **TCP/IP connections** and push the **Create** button.



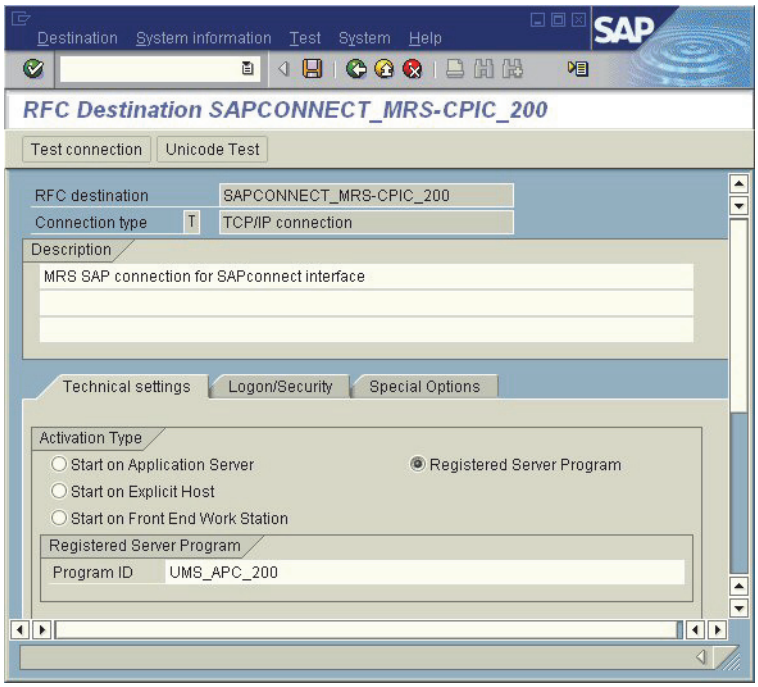
4. Assign a name to the RFC destination in the **RFC destination** field.



NOTE:
We recommend choosing a name of the structure *SAPCONNECT_<CPIC-user>_<client number>* to enhance clarity. In our example it is *SAPCONNECT_MRS-CPIC_200*.

5. Enter letter ***T*** in the ***Connection type*** field to configure a TCP/IP connection.
6. Enter a short description for the RFC destination in the **Description** field.
7. Save the RFC destination settings with the **Save** icon in the toolbar.

8. In the *Technical settings* tab select the **Registered Server Program** option.



NOTE:
This setting informs the SAP application server that an external RFC service will register with it with the program ID to be configured in the next step. This configuration is directly associated with the **TYPE=R** parameter from the `saprfc.ini` of the XPR server (cf. Section 4.5.3.4, “Creating entries in the saprfc.ini”, on page 102).

9. In the **Program ID** field assign a string for this logical link between the XPR server and the SAP application server.

   IMPORTANT:
   The program ID serves later for identifying the logical link. Therefore the string must be **unique**. Respect the use of upper and lower case when you enter it.

   NOTE:
   We recommend selecting a string of the structure *UMS_<SAP system ID>_<client number>* to enhance clarity. Accordingly, we select the program ID *UMS_APC_200*.

10. Save the settings with the **Save** icon in the toolbar.
11. Leave this SAPGUI entry form opened. We will use it again straight after configuring the SAPR3 APL of the XPR server for a first function test.

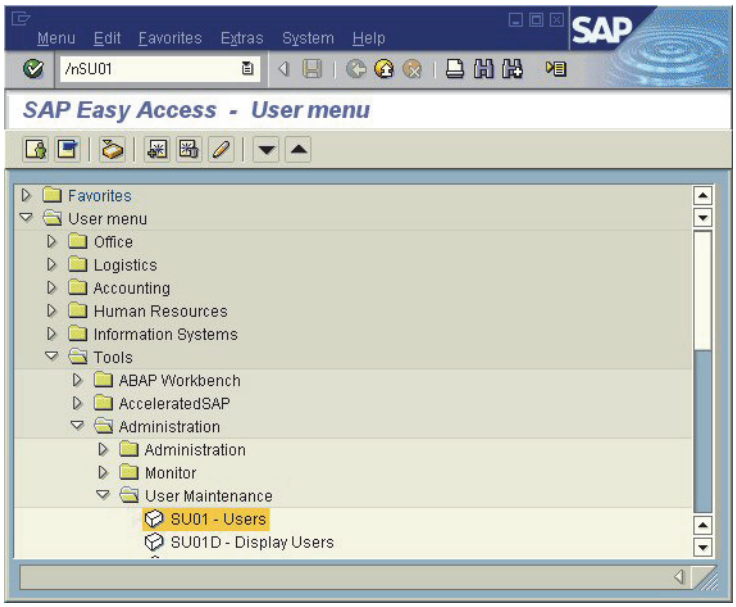
Continue with Section 4.5.3.4, “Configuring the SAPR3 APL”, on page 98.

4.5.3.2 Configuration under SAP R/3 Version 4.6C

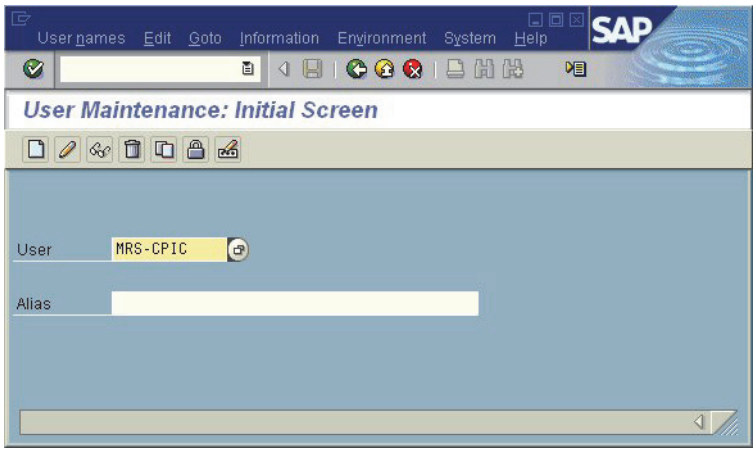
In the following paragraphs we will describe the configuration steps under SAP R/3 version 4.6C.

Creating a virtual CPI-C user in SAP R/3

1. Log on to the previously configured SAP application server via the SAPGUI.
2. Enter the transaction code **/nSU01** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Administration > User Maintenance > SU01–Users** with a doubleclick.

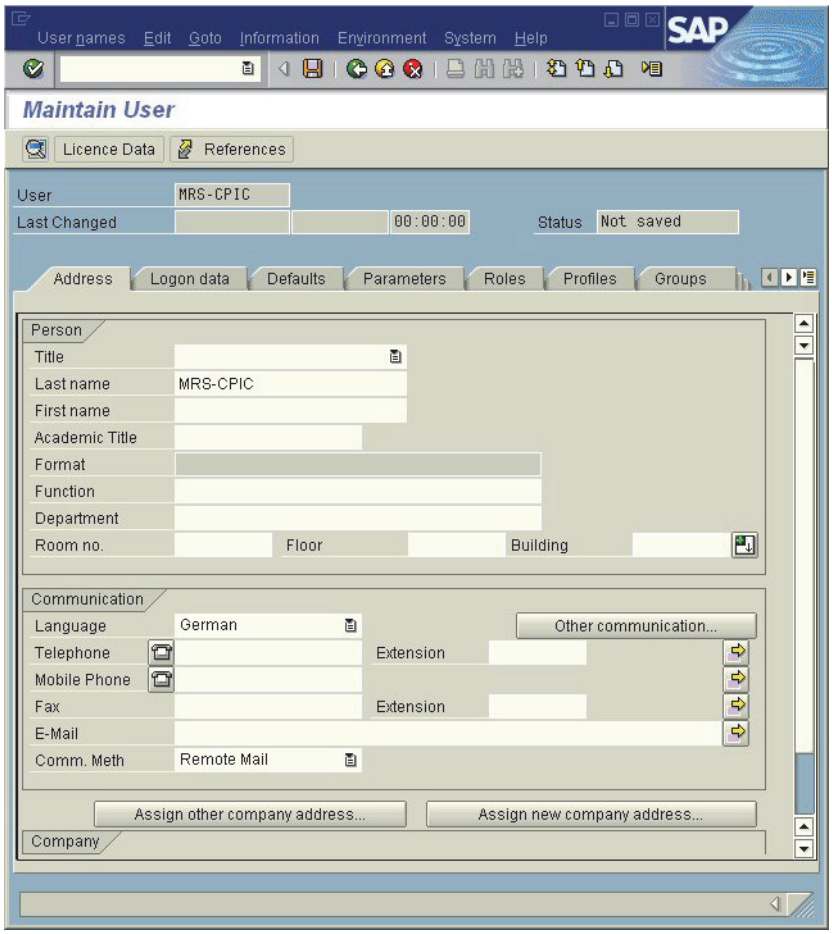


3. In the **User** field enter a user name for the virtual CPI-C user and push the **Create** icon in the toolbar.



NOTE:
We recommend to select a 'speaking' name – for example *MRS-CON* or *MRS-CPIC*.

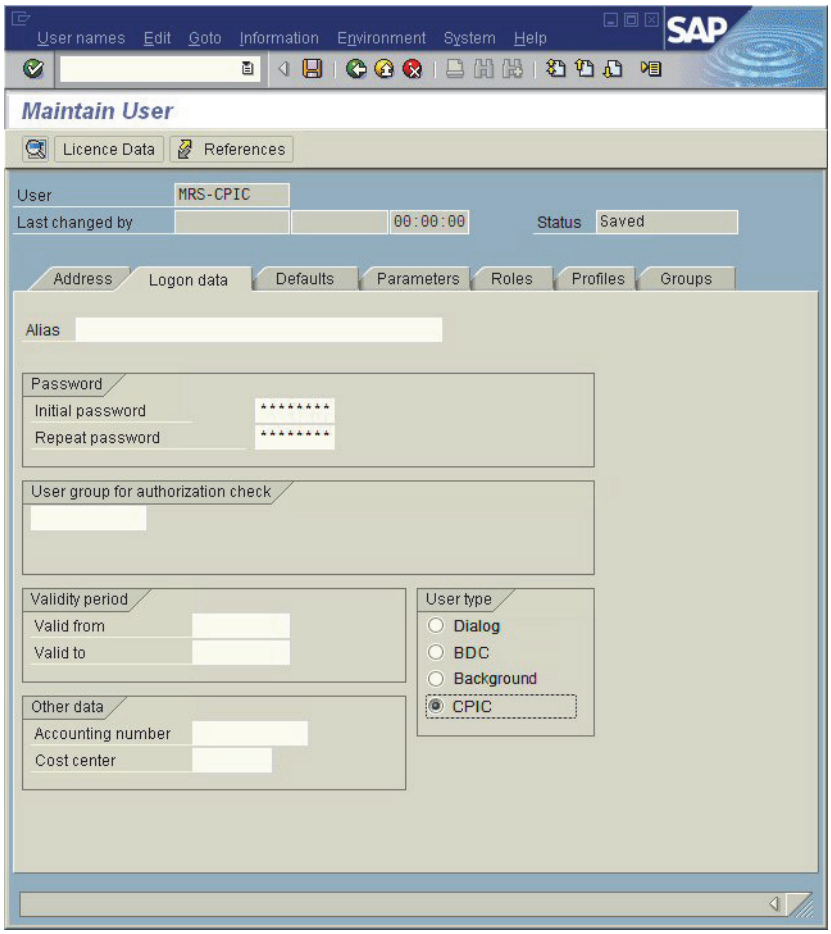
4. In the ***Last name*** field of the ***Address*** tab enter a name for the user.



NOTE:
We recommend copying the user name at this point.

5. In the **Language** field select the desired language option. This specification will influence log outputs on RFC level at a later date.
6. Switch to the *Logon data* tab.

7. Assign a **Password** to the user and select the **CPIC** option as **User Type**.

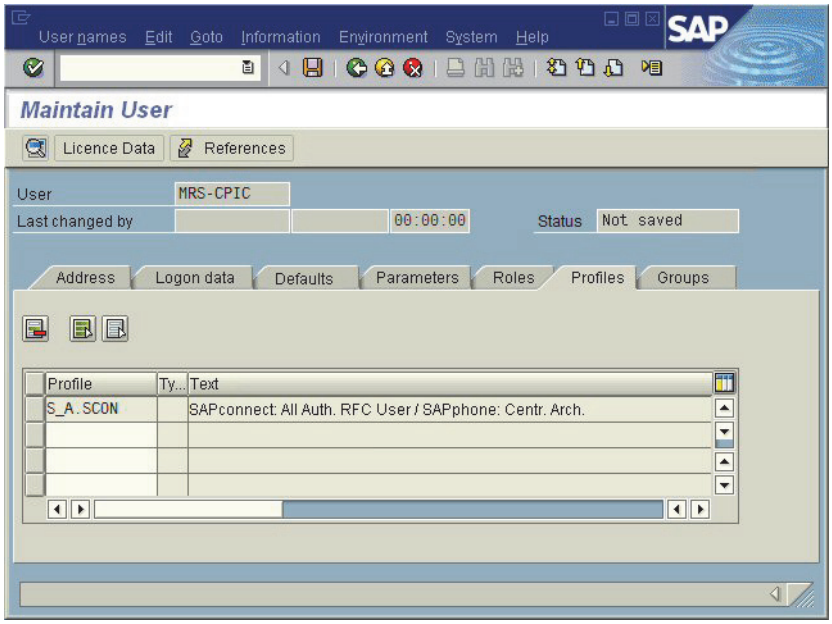


IMPORTANT:
Note that SAP R/3 differentiates upper and lower case with password entries.

NOTE:
Depending on the SAP version the CPI-C user type is also called *system user* (after SAP R/3 4.6C) or *communication user* (from SAP R/3 6.10 Basis).

8. Switch to the *Profiles* tab.

9. In the table under **Profile** enter the user profile **S_A.SCON** and confirm the entry with the enter key of your keyboard.



NOTE:
You can also grant full SAP system privileges (*SAP_ALL*, *SAP_NEW*) to the virtual user. Since user type *CPI-C* is selected, you cannot log in at the SAP system via this user profile from outside. In this way abuse of the granted privileges is prevented.

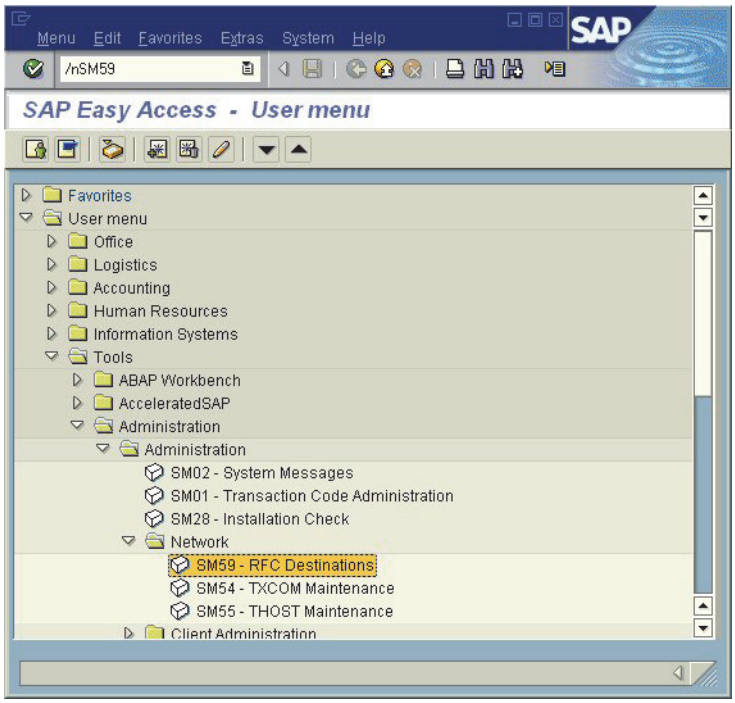
10. Save the settings for the virtual user with the **Save** icon in the toolbar.

Now you have created the virtual user *MRS-CPIC* who will later be used for communication between the XPR server and the SAP application server.

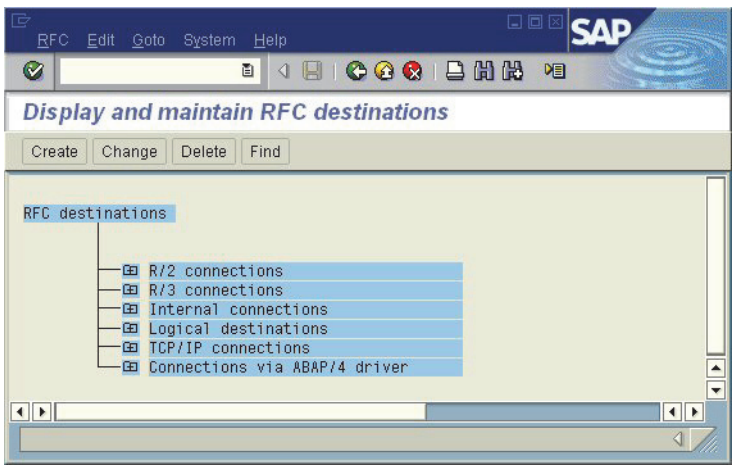
We will now continue with configuring the RFC destination.

Defining an RFC destination in SAP R/3

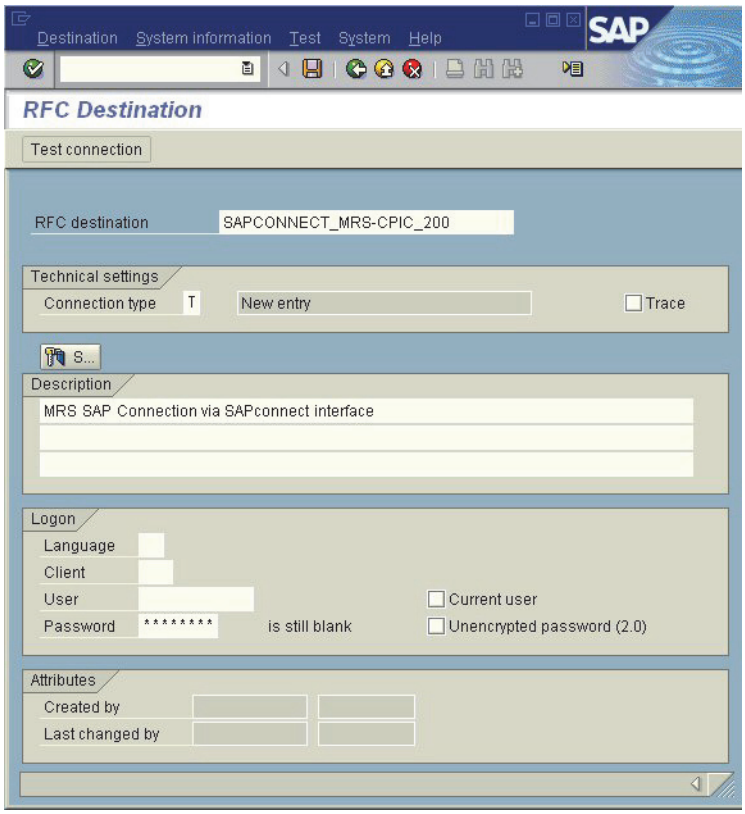
1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.
2. Enter the transaction code **/nSM59** in the SAPGUI command line and confirm the entry, or select from the directory tree the menu option **User menu > Tools > Administration > Administration > Network > SM59–RFC Destinations** with a doubleclick.



3. Select **TCP/IP connections** and push the **Create** button.



4. Assign a name to the RFC destination in the **RFC destination** field.



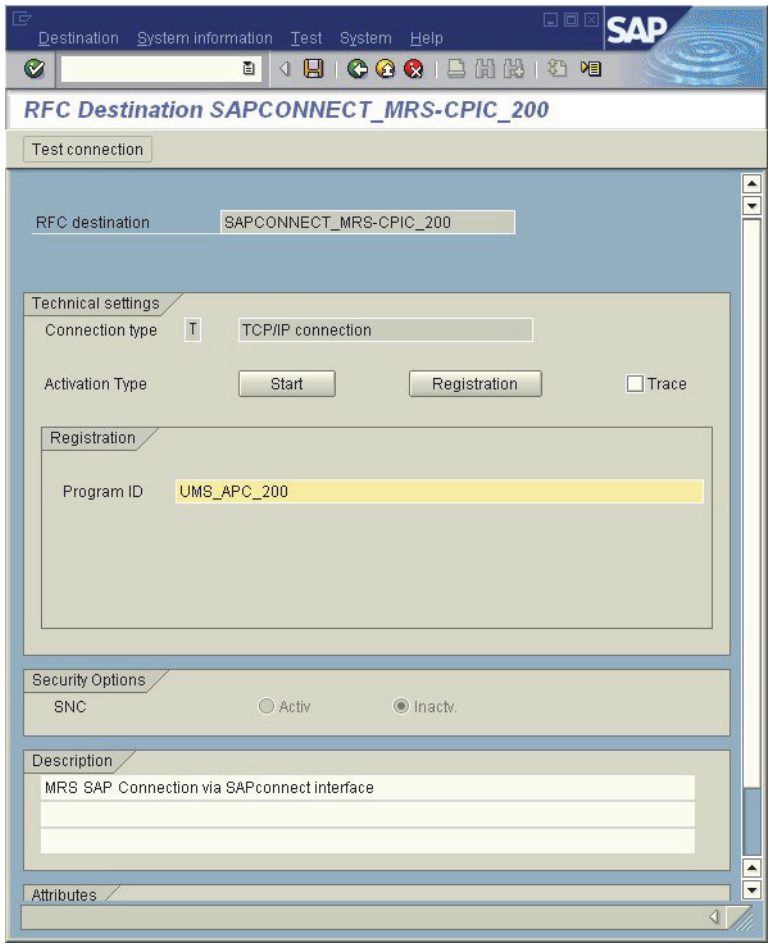
NOTE:
We recommend choosing a name of the structure *SAPCONNECT_<CPIC-user>_<client number>* to enhance clarity. In our example it is *SAPCONNECT_MRS-CPIC_200*.

5. Enter letter ***T*** in the ***Connection type*** field to configure a TCP/IP connection.
6. Enter a short description for the RFC destination in the **Description** field.
7. Save the RFC destination settings with the **Save** icon in the toolbar.

8. Push the **Registration** button.

NOTE:
This setting informs the SAP application server that an external RFC service will register with it with the program ID to be configured in the next step. This configuration is directly associated with the **TYPE=R** parameter from the `saprfc.ini` of the XPR server (cf. Section 4.5.3.4, “Creating entries in the saprfc.ini”, on page 102).

9. In the **Program ID** field assign a string for this logical link between the XPR server and the SAP application server.



IMPORTANT:
The program ID serves later for identifying the logical link. Therefore the string must be **unique**. Respect the use of upper and lower case when you enter it.

NOTE:
We recommend selecting a string of the structure *UMS_<SAP system ID>_<client number>* to enhance clarity. Accordingly, we select the program ID *UMS_APC_200*.

10. Save the settings with the **Save** icon in the toolbar.
11. Leave this SAPGUI entry form opened. We will use it again straight after configuring the SAPR3 APL of the XPR server for a first function test.

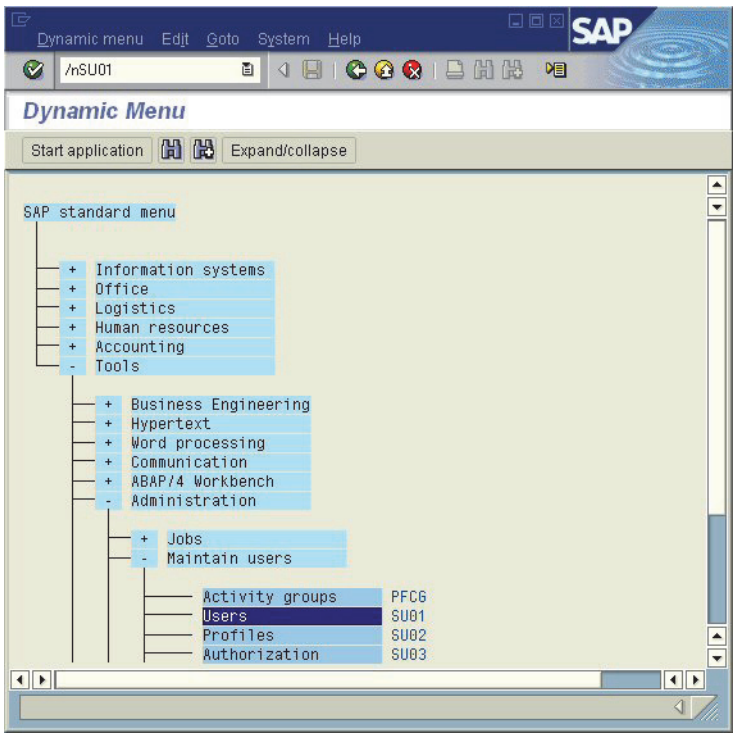
Continue with Section 4.5.3.4, “Configuring the SAPR3 APL”, on page 98.

4.5.3.3 Configuration under SAP R/3 Version 3.1i

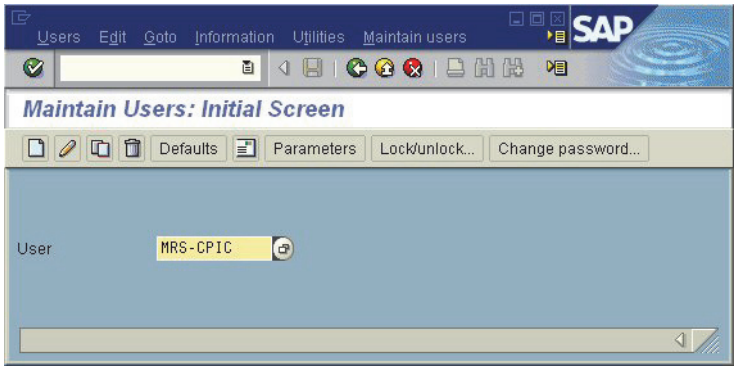
In the following we will describe the configuration steps under SAP R/3 version 3.1i.

Creating a virtual CPI-C user in SAP R/3

1. Log on to the previously configured SAP application server via the SAPGUI.
2. Push the **Dynamic menu** button.
3. Enter the transaction code **/nSU01** in the SAPGUI command line and confirm the entry, or select from the directory tree the menu option **SAP standard menu > Tools > Administration > Maintain users > Users** with a doubleclick.



4. In the **User** field enter a user name for the virtual CPI-C user and push the **Create** icon in the toolbar.



NOTE:
We recommend to select a 'speaking' name – for example *MRS-CON* or *MRS-CPIC*.

5. In the **Initial password** field enter a password and its confirmation.
6. Select the **CPIC** option as **User type**.

IMPORTANT:
Note that SAP R/3 differentiates upper and lower case with password entries.

NOTE:
Depending on the SAP version the CPI-C user type is also called *system user* (after SAP R/3 4.6C) or *communication user* (from SAP R/3 6.10 Basis).

7. In the table under **Authorization profiles** enter the user profile **S_A.SCON** and confirm the entry with the enter key of your keyboard.

NOTE:
You can also grant full SAP system privileges (SAP_ALL, SAP_NEW) to the virtual user. Since user type *CPI-C* is selected, you cannot log in at the SAP system via this user profile from outside. In this way abuse of the granted privileges is prevented.

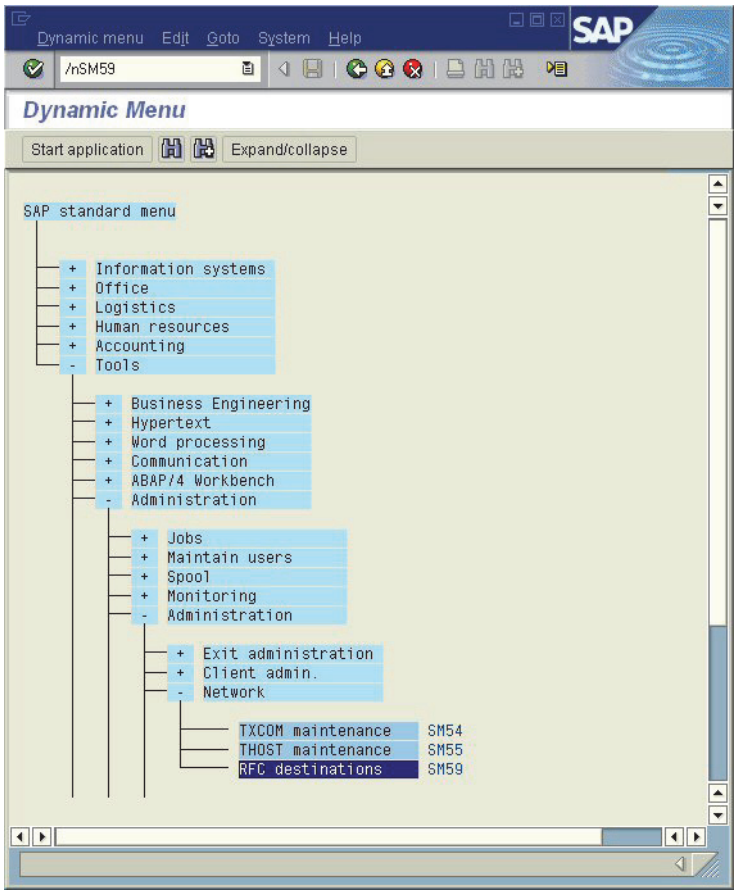
8. Save the settings for the virtual user with the **Save** icon in the toolbar.

Now you have created the virtual user *MRS-CPIC* who will later be used for communication between the XPR server and the SAP application server.

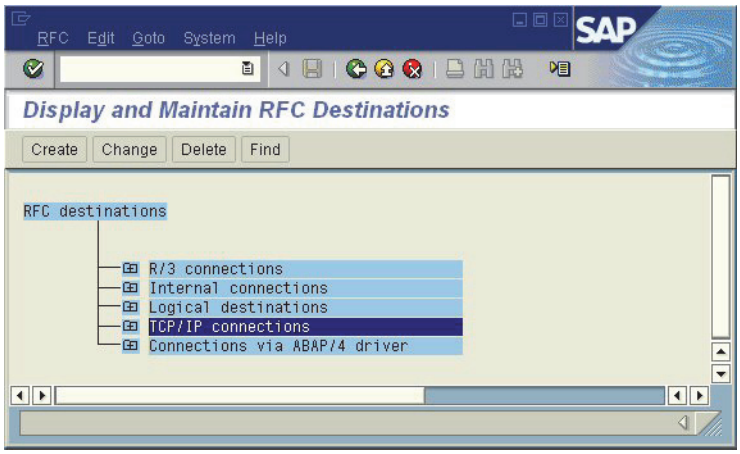
We will now continue with configuring the RFC destination.

Defining an RFC destination in SAP R/3

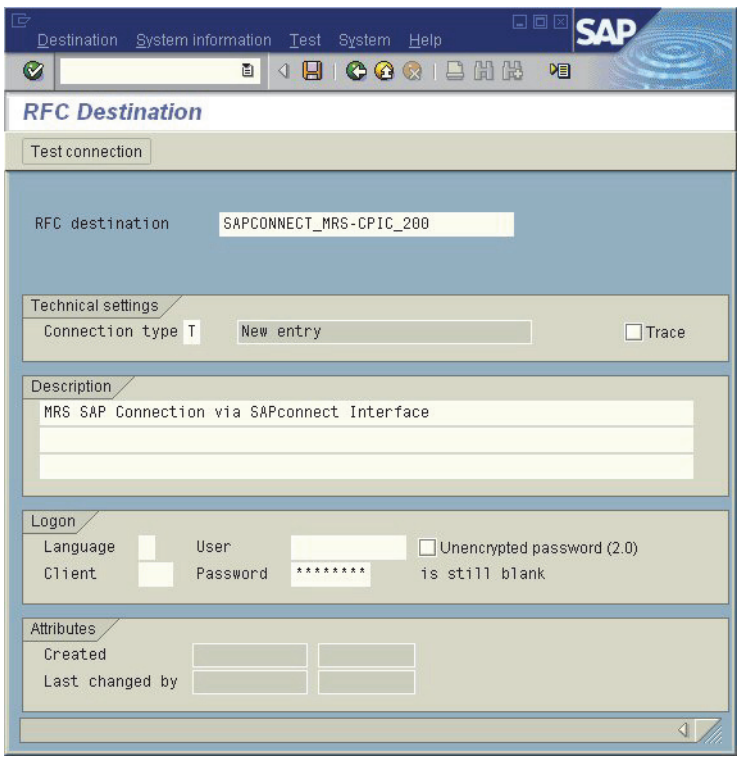
1. Push the **F3** function key to return to the *SAP standard menu*.
2. Enter the transaction code **/nSM59** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Administration > Administration > Network > SM95–RFC Destinations** with a doubleclick.



3. Select **TCP/IP connections** and push the **Create** button.



4. Assign a name to the RFC destination in the **RFC destination** field.



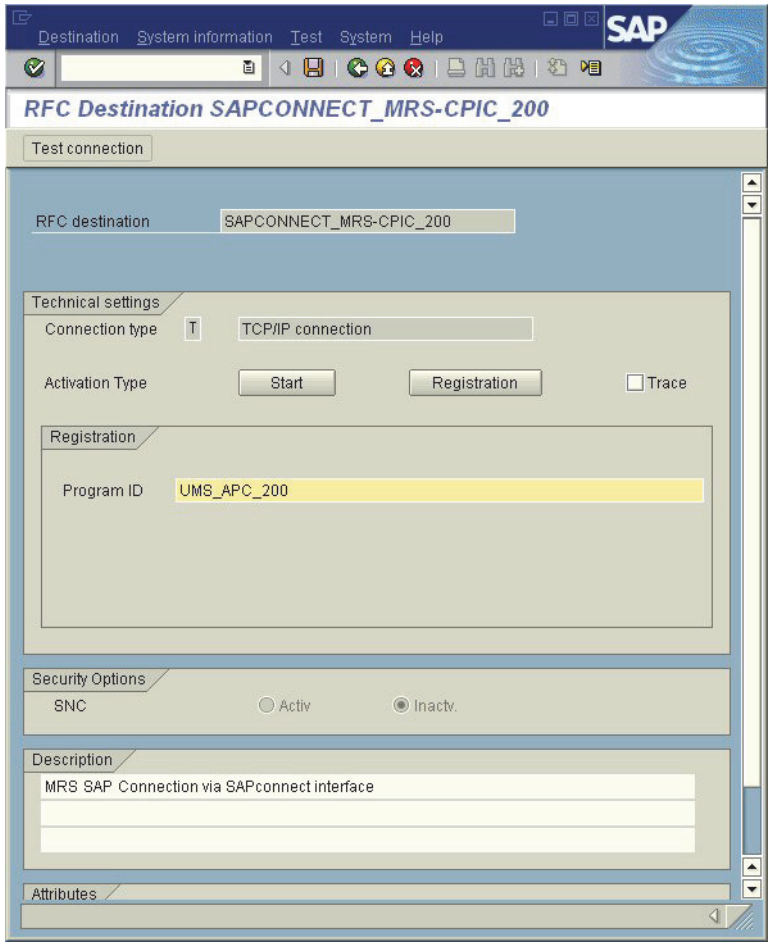
NOTE:
We recommend choosing a name of the structure *SAPCONNECT_<CPIC-user>_<client number>* to enhance clarity. In our example it is *SAPCONNECT_MRS-CPIC_200*.

5. Enter letter ***T*** in the ***Connection type*** field to configure a TCP/IP connection.
6. Enter a short description for the RFC destination in the **Description** field.
7. Save the RFC destination settings with the **Save** icon in the toolbar.
8. Push the **Registration** button.

NOTE: This setting informs the SAP application server that an external RFC service will register with it with the program ID to be configured in the next step.

---

9. In the **Program ID** field assign a string for this logical link between the XPR server and the SAP application server.



IMPORTANT:
The program ID serves later for identifying the logical link. Therefore the string must be **unique**. Respect the use of upper and lower case when you enter it.

NOTE:
We recommend selecting a string of the structure *UMS_<SAP system ID>_<client number>* to enhance clarity. Accordingly, we select the program ID *UMS_APC_200*.

10. Save the settings with the **Save** icon in the toolbar.
11. Leave this SAPGUI entry form opened. We will use it again straight after configuring the SAPR3 APL of the XPR server for a first function test.

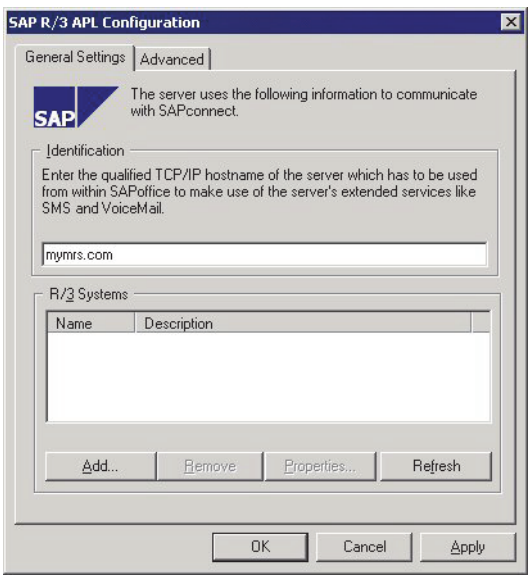
Continue with configuring the XPR server SAPR3 APL in the next section.

4.5.3.4 Configuring the SAPR3 APL

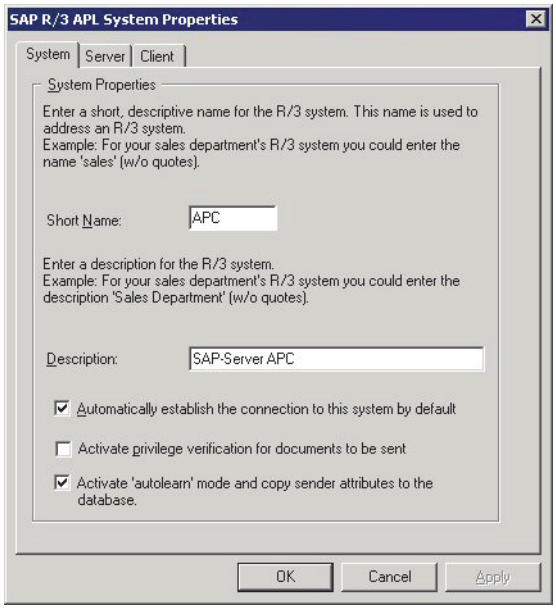
If the XPR server and the XPR monitor have not been started yet, start them and proceed as follows:

SAPR3 APL settings

1. In the modules window of the XPR monitor select the menu option **Settings > SAPR3 APL > Set Options** with a doubleclick.
2. In the dialog then open access the *General Settings* tab.
3. Push the **Add** button.



4. In the ***Short Name*** field of the ***System*** tab specify a short name that will later serve message routing via the SAPR3 APL.

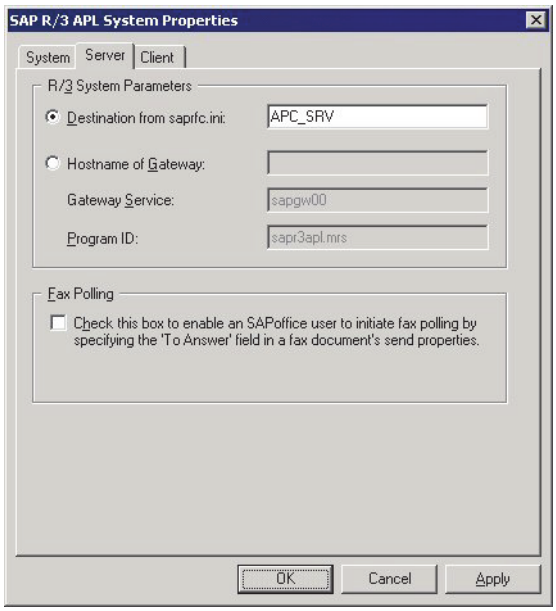


IMPORTANT:
The XPR server composes of *SAPR3* and attaching this short name a logical line of the format *SAPR3<short name>*, via which messages can be routed between the XPR server and the SAP system. Therefore make sure that the short name is **unique**. The SAPR3 APL does **not** check for possible correlations in this context.

NOTE:
We recommend using the SAP system ID.

5. In the **Description** field enter a short description of the SAP system that can be reached via this logical line.
6. Select the option **Automatically establish the connection to this system by default**, since the configured RFC connection is otherwise not established in the first place.

7. Select the **Activate 'autolearn' mode and…** option.
8. Switch to the *Server* tab.
9. Select the **Destination from saprfc.ini** option to copy the XPR configuration data for the RFC connection from the `saprfc.ini`.



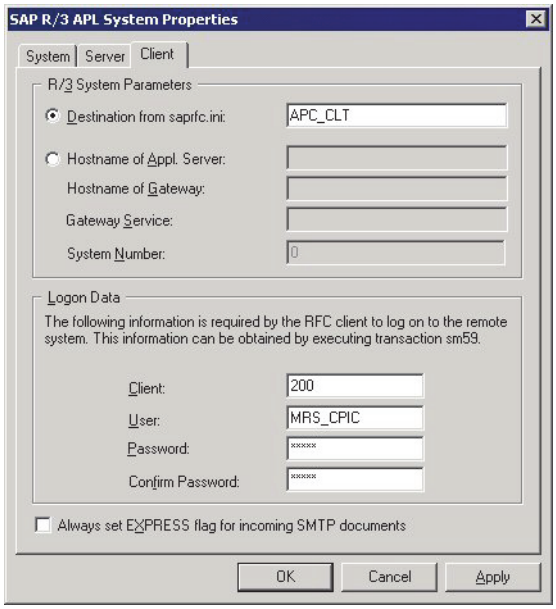
10. Enter a name in the associated field that refers to the desired configuration data in the `saprfc.ini` configuration file.

IMPORTANT:
Owing to its referencing character make sure that this identifier **clearly** references to the `saprfc.ini`.

---

11. Switch to the *Client* tab.

12. Select the **Destination from saprfc.ini** option to copy the XPR configuration data for the RFC connection from the `saprfc.ini`.



13. Enter a name in the associated field that refers to the desired configuration data in the `saprfc.ini` configuration file.

IMPORTANT:
Owing to its referencing character make sure that this identifier **clearly** references to the `saprfc.ini`.

---

14. In the **Client** field enter the client number to be used.
15. Copy the name of the virtual user previously created under SAP R/3 to the **User** field.
16. In the **Password** field enter the virtual user's password configured under SAP R/3 and repeat the entry in the **Confirm Password** field.

IMPORTANT:
Please respect upper and lower case when entering the password.

---

17. Confirm your settings with **Apply** and push **OK**.

The direct SAPR3 APL settings are thus accomplished. Now we need to adjust the `saprfc.ini` configuration file.

Creating entries in the *saprfc.ini*

IMPORTANT:
The configuration file `saprfc.ini` must be stored in the <*XPR Install*>`\bin\` directory by default.

Depending on whether you install an XPR-SAP integration for the first time or whether you extend an existing system, begin as follows:

First installation:

1. Start the Windows editor and open a new document.
2. Save the new document in the <*XPR Install*>`\bin\` directory on the XPR server and choose `saprfc.ini` as file name.
3. Continue with step 6 under *Extension*.

Extension:

4. Open the already existing `saprfc.ini` file.
5. Verify that the names you have previously assigned to **Destination from saprfc.ini** (Server tab) and **Destination from saprfc.ini** (Client tab) are not yet used in the `saprfc.ini`.
6. Now perform, for example, for our scenario configured so far the following supplementations in the configuration file:

```
[RFC-SERVER]
DEST=APC-SRV
TYPE=R
PROGID=UMS_APC_200
GWHOST=/H/10.2.11.2/H/192.168.249.17/S/3299/H/192.168.249.52
GWSERV=sapgw00
RFC_TRACE=0

[RFC-CLIENT]
DEST=APC-CLT
TYPE=A
ASHOST=/H/10.2.11.2/H/192.168.249.17/S/3299/H/192.168.249.52
SYSNR=00
RFC_TRACE=0
ABAP_DEBUG=0
USE_SAPGUI=0
```

7. Stop the XPR *SAPR3 APL* service on the *XPR* server system and reboot it. This enables the SAPR3 APL to copy the new information from the `saprfc.ini`.

The SAPR3 APL configuration is thus accomplished. We will now test the configured RFC connection between the XPR server and the SAP system. This should be established successfully with the settings performed up to now.

RFC connection test

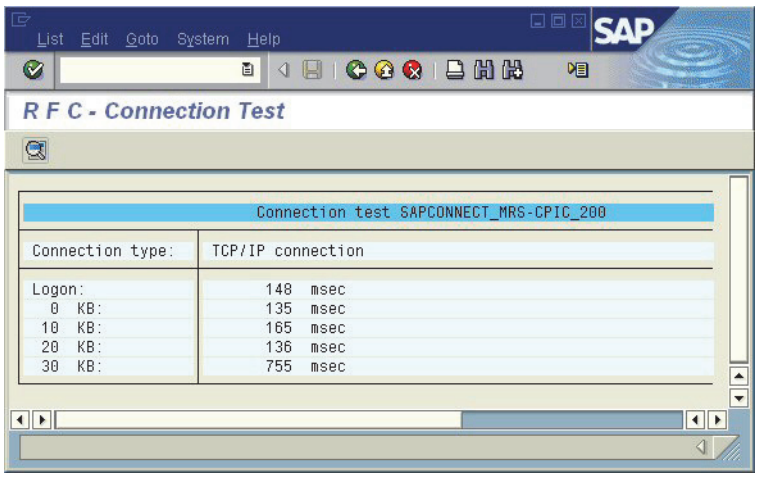
1. Return to the last SAPGUI entry form and thus to the display of the RFC connection we have configured.

NOTE:
If you have inadvertently closed the SAPGUI, you can reach the RFC connection dialog via the **/nSM59** transaction dialog. In there select your previously configured connection from the TCP/IP connections.

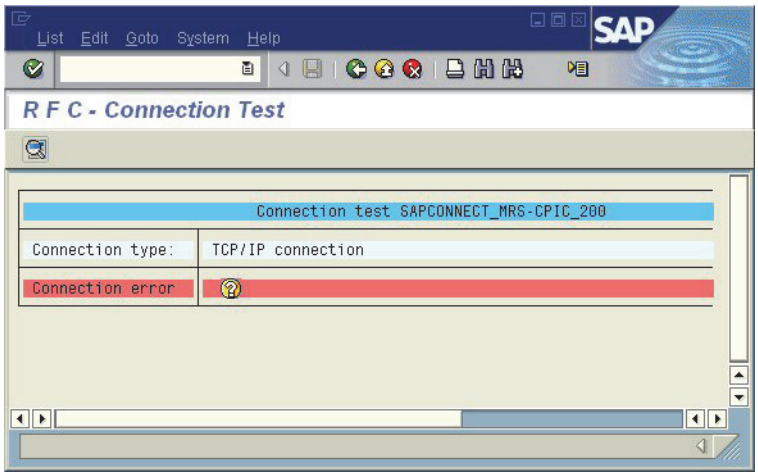
---

2. Push the **Test connection** button.

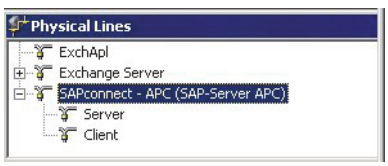
   SAP R/3 displays the measured parameters for our RFC connection between the XPR server and the SAP application server. Communication from the SAP system towards the XPR server has obviously been established successfully.



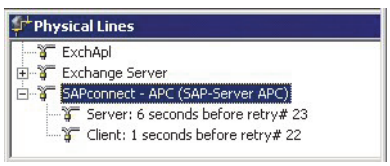
In case of an error the SAP system reports the termination of the connection test with the following message:



3. With a successful communication establishment the **Physical Lines** window of the XPR monitor also displays a constant link for the SAPR3 APL. Please check this.



If no trouble-free RFC communication from the XPR server to the SAP system can be set up, the **Physical Lines** window of the XPR monitor displays lines that attempt to build up in 10-second intervals.



Communication from the XPR server towards the SAP system has thus also been successfully established.

We can now continue with the further system adjustment.

4.5.4 System Adjustment of the XPR-SAP Environment

After successfully testing the basis configuration with the RFC connection, we continue with adapting the SAP system. These adjustments are required for message exchange between the XPR server and the SAP system.

This part is divided into the following sections:

- Adjustments under CRM Version 3.1 (Basis 6.20)
- Adjustments under SAP R/3 Version 4.6C
- Adjustments under SAP R/3 Version 3.1i
- XPR Server System Adjustments.

4.5.4.1 Adjustments under CRM Version 3.1 (Basis 6.20)

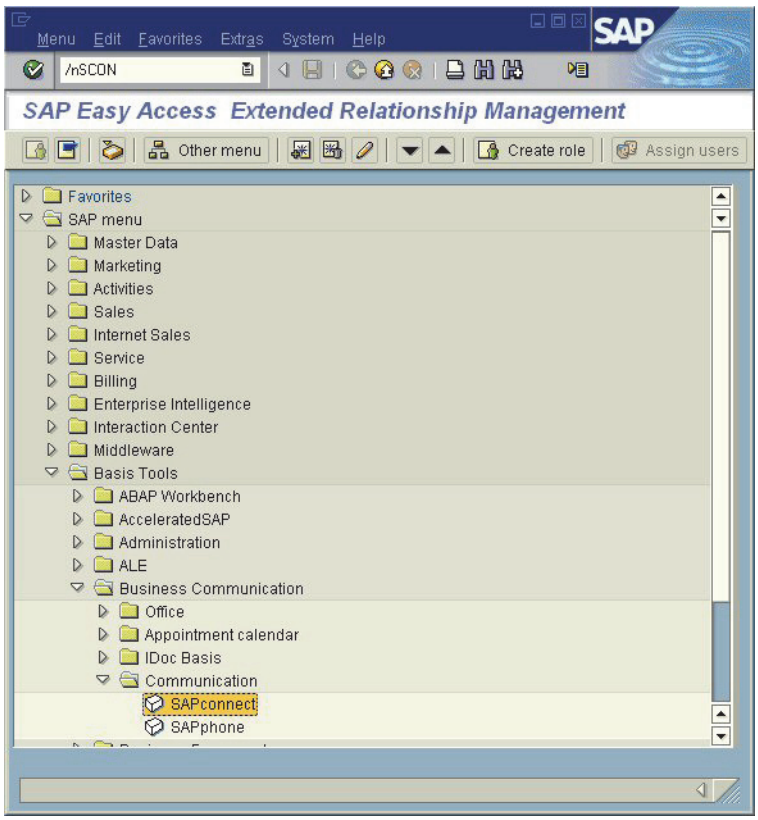
In the following we will describe the configuration steps for the system adjustments under CRM version 3.1.

Setting the communication methods

First we perform settings for the various communication methods. In doing so we define which message types are sent by SAP R/3 via the SAPconnect interface.

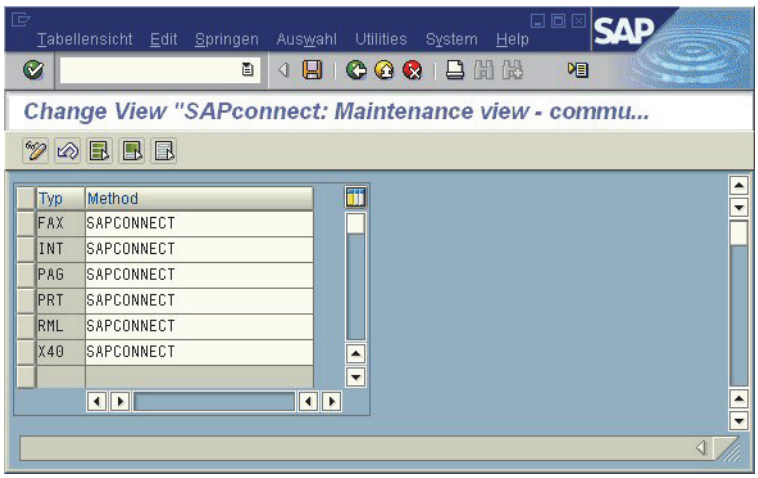
1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.

2. Enter the transaction code **/nSCON** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Business Communication > Communication > SAPconnect** with a doubleclick.



3. In the **Settings** menu of the dialog now open select the **communication methods** option.

4. Make sure that for each media type to be exchanged between the XPR server and SAP system the **SAPconnect** method is specified.
   You can make alterations by selecting the respective field and subsequently choosing the associating selector icon.



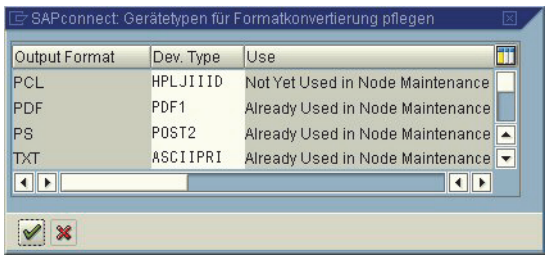
5. Save the new settings with the **Save** icon in the toolbar.

IMPORTANT:
To modify these node-spanning settings a customizing job must exist or be newly created.

You have now configured the communication method. We will now continue with the format conversion settings.

Format conversion settings

1. Push the **F3** function key to return to the *SAP Easy Access Extended Relationship Management*.
2. Enter the transaction code **/nSCON** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Business Communication > Communication > SAPconnect** with a doubleclick.
3. In the **Settings** menu of the dialog now open select the **Device Types for Format Conversion** option.
4. If required perform special settings here.



   Check the parameters configured here if you do not exclusively work with postscript or text output.

   We recommend:

   - for **PCL:** HPLJ4 or HPLJIIID as HP PCL 5 driver
   - for **PS:** POST2 (in older R/3 versions, POST is available only)

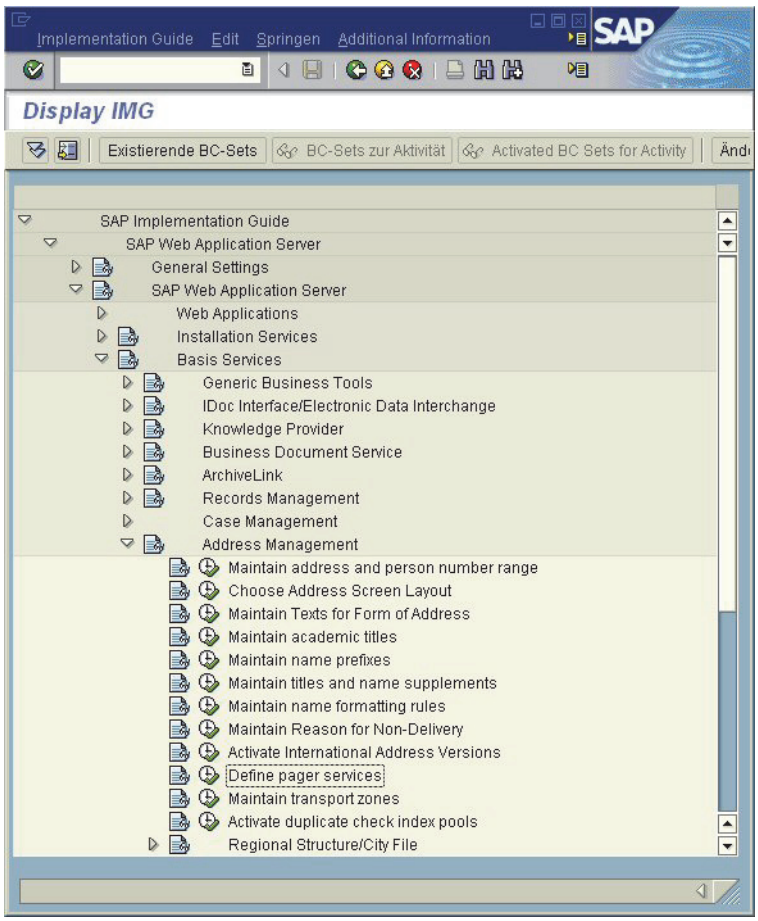
5. Confirm your modifications with the **OK** icon in the dialog.

After configuring the format conversions we will now define a pager subtype for the SMS.

Configuration of a pager subtype for SMS

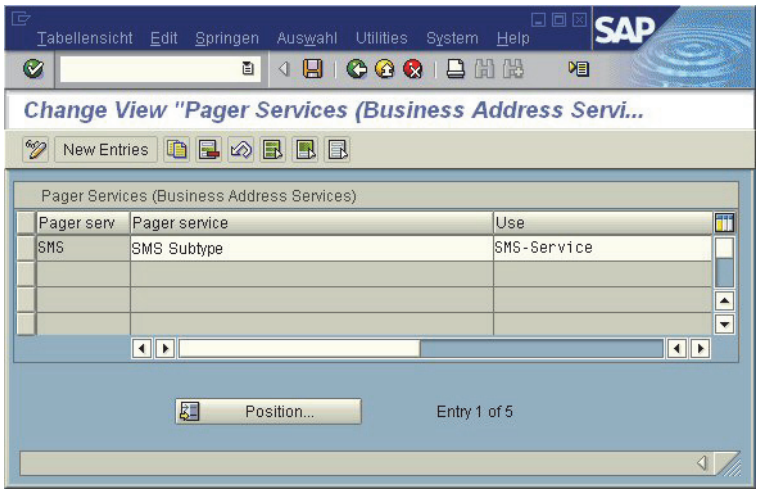
The XPR server transmits inbound short/pager messages with a destination phone number of the format *NVS:SMS/<phone number>* to the SAP destination system. The *SMS* subtype must be defined there so that this message type can be correctly recognized in SAP R/3.

1. In the SAPGUI switch to project processing with the **/nSPRO** transaction code.
2. Select the **SAP Reference IMG** button.
3. Select the menu option **SAP Implementation Guide > SAP Web Application Server > SAP Web Application Server > Basis Services > Address Management > Define pager services**.



4. In the table perform the following settings from left to right:

Pag. Service	SMS
Pager service:	*<Short description of this entry>*
Use:	SMS-Service



5. Save the settings with the **Save** icon in the toolbar.

IMPORTANT:
To modify these node-spanning settings a customizing job must exist or be newly created.

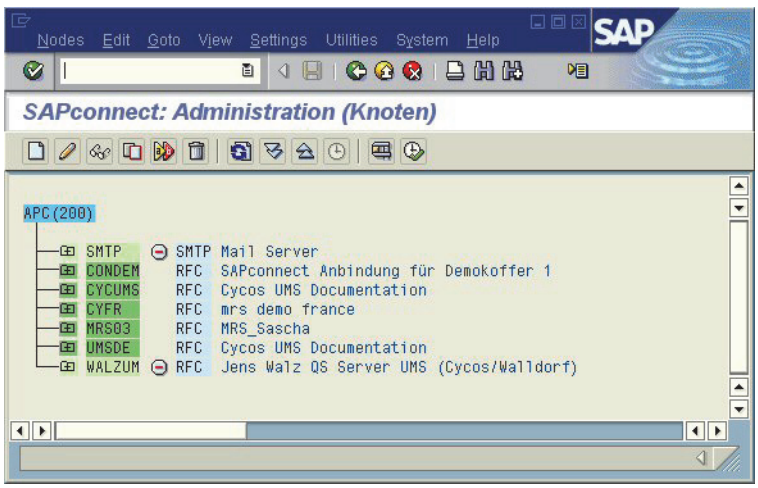
The SMS subtype, required for the configuration of the node under SAP R/3, is thus defined.

Setting the node

SAP R/3 administers externally activated systems in logical format as so-called *nodes*. With configuring such a node, specifications are made as regards e.g. for which address area the active system is in charge, or which data formats are supported by it.

How to configure the XPR server as SAP node:

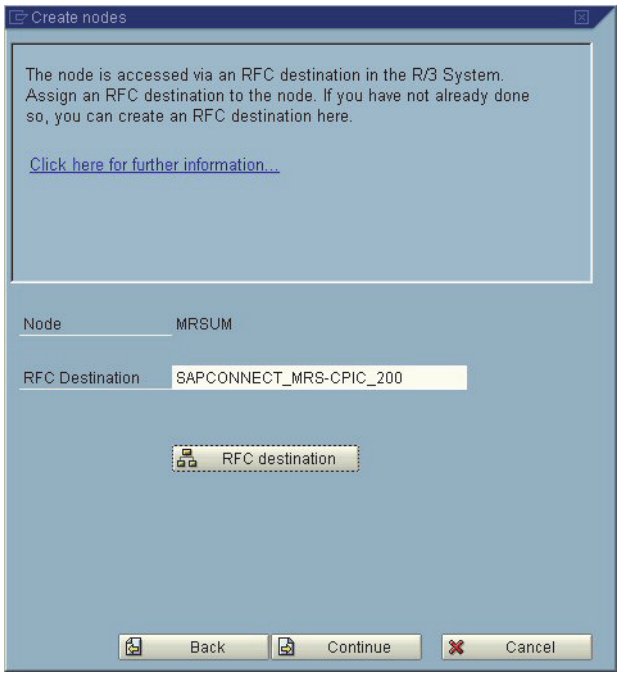
1. Push the **F3** function key to return to the *SAP Easy Access Extended Relationship Management*.
2. Enter the transaction code **/nSCON** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Business Communication > Communication > SAPconnect** with a doubleclick.
3. In the **View** menu of the dialog now open select the **Node option**.
4. Push the **Create** icon in the toolbar to define a new node.



5. Enter a name for the new node in the **Node** field. The name must not exceed 6 characters.

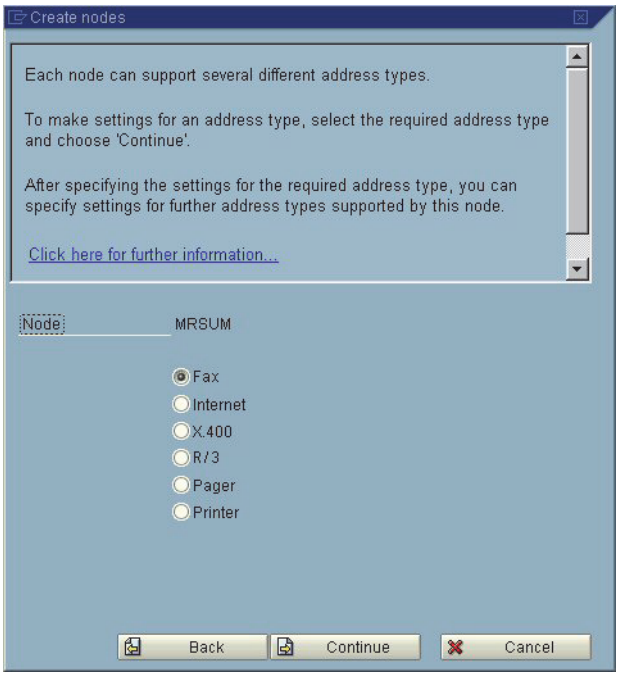
6. In the **Description** field enter a short description for the node respectively the active system.
7. Push **Continue**.
8. In the following dialog select the **RFC Node** option.
9. Push **Continue**.

10. In the **RFC Destination** field enter the previously configured RFC destination, or open a selection list with a click on the selector icon at the end of the activated text field.



11. Push **Continue**.

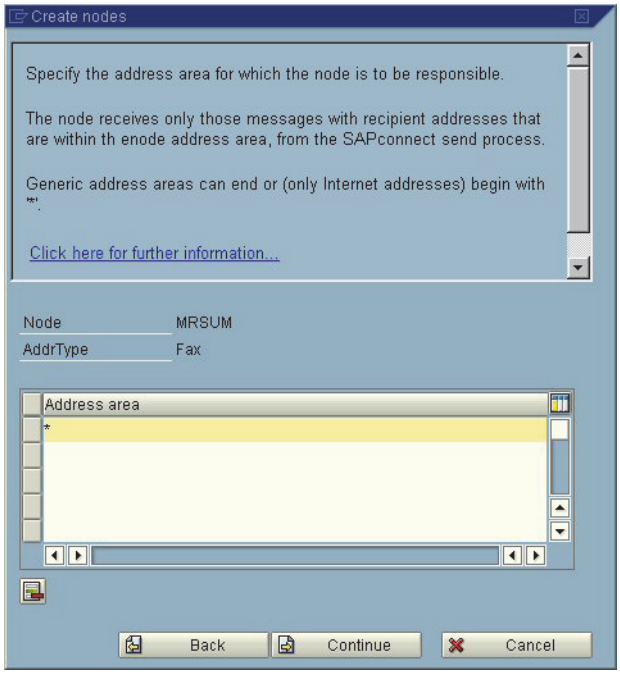
12. Select **Fax** as address type for the new node.



NOTE:
You can select only one address type (message service). After defining this type you can however configure further address types for this node in succession.
In the following we will describe the configuration of the address types *Fax*, *Internet (SMTP)* and *PAGER (SMS)*. In the course of your system configuration only select the address types that you want to use in your XPR-SAP environment.

13. Confirm your selection with **Continue**.

14. Define the address area (calling number range) for which this node is to take on the routing.



The structure of the filter entries for the address area of type *Fax* is: <*country code*><*optional number string*><*optional wildcard character '*'*> A filter hit always occurs after the longest precise match.

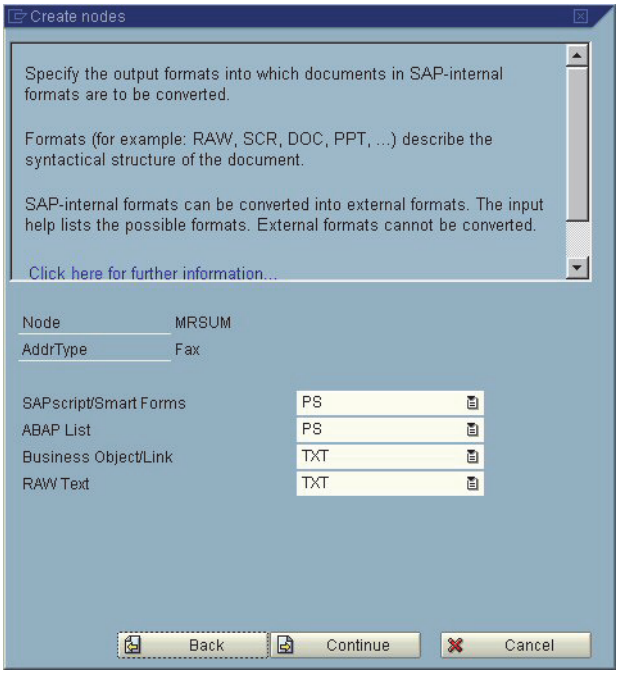
Example: Address area=DE02402*
All fax messages beginning with the number string *492402* are handed over to this node by the SAP system.

In our environment we want the fax messages of all calling numbers be passed on to the XPR server. Therefore we enter '*' as address area.

For the addressing schemes of the various addressing types compare Section 3.2.1, “Address Formats and ANI Hits”, on page 39.

15. Push **Continue**.

16. Define the standard formats into which SAP R/3 converts internal document formats before they are passed on to the node.

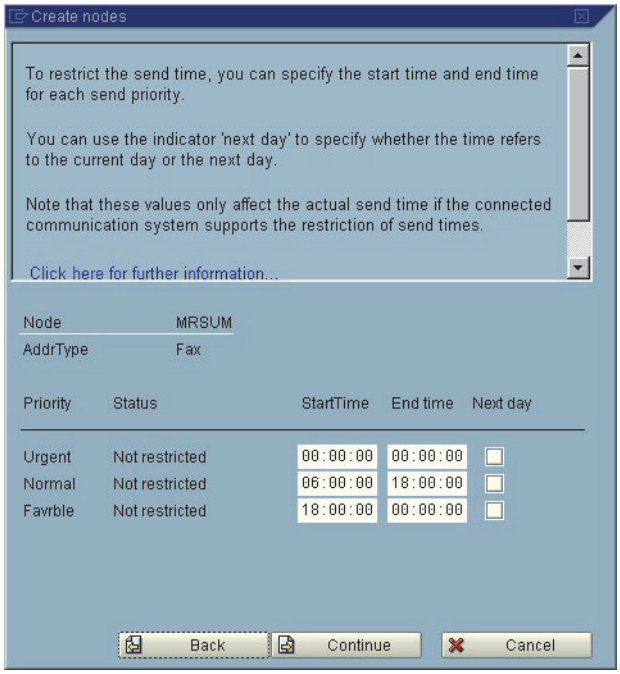


IMPORTANT:
The conversion settings made here only concern some of the SAP - individual formats – namely SAPScript (SCR) and ABAP Listen (ALI). Further options are later accessible with the node maintenance.
Message attachments of all other formats are passed on to the node transparently in the format present.

---

17. Push **Continue**.
18. In the next dialog select the **Restrict send time** option.

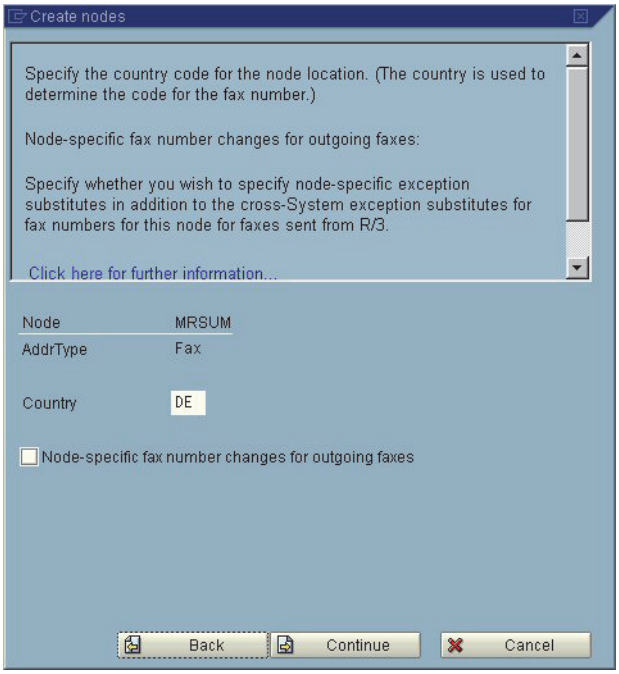
19. Depending on three priority statuses specify send time restrictions for messages of this address type.



IMPORTANT:
The XPR server does not explicitly evaluate the start and end times specified here, but merely the priority status passed on with a message. The dedicated start times for sending messages of the individual priorities must be configured in the XPR server if needed.
Settings of any kind must be performed in this dialog so that the SAP system transmits the required status information with the message to the XPR server.

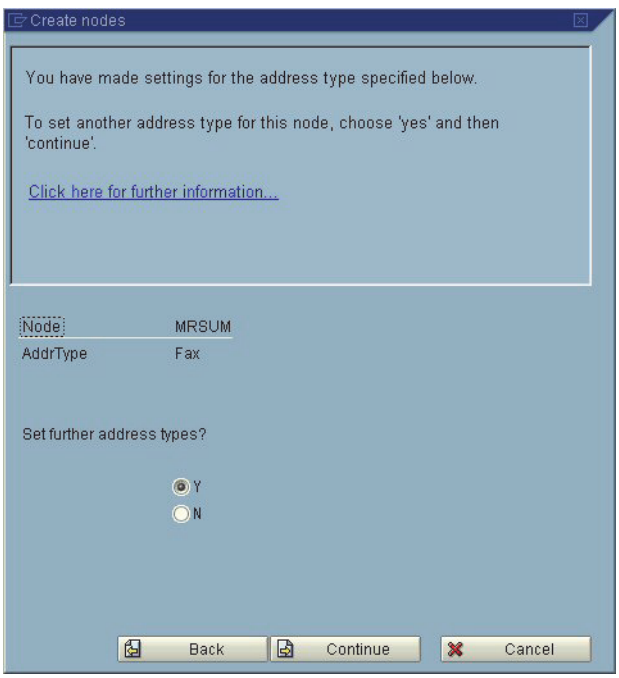
20. Push **Continue**.

21. In the **Country** field specify the country code for the node location. This entry is required to determine the code for calling numbers.



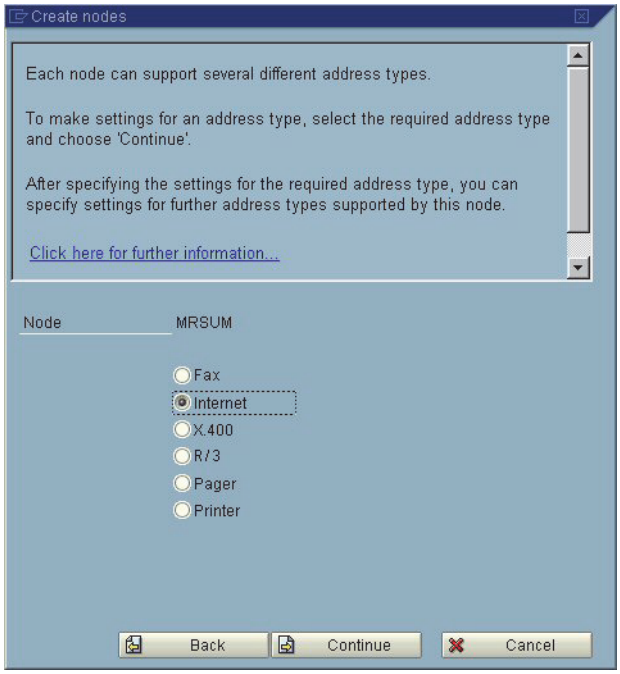
22. Push **Continue**.

23. Answer the question whether to set further address types with **Yes**.



24. Push **Continue**.

25. Next we configure the **Internet** address type. Select the **Internet** option in the following dialog.



26. Push **Continue**.

27. Just like under the *Fax* address type, enter the address areas in the table for which SAP R/3 is to send e-mails to the XPR server for routing.

NOTE:
At this point you can use filter formats to configure an intelligent message routing via the XPR server.
With our configuration you can, for example, send an e-mail with the target address *<cellphone number>@sms.mydomain.com* to the XPR server, which transmits the information contained in the e-mail as short message into the public network.
By defining the corresponding routing rules/address conversions in the XPR server, the individual address structures are adapted to the common address formats.
You find continuative information on generating such routing rules in the *OpenScape Xpressions Server Administration* manual.

28. Push **Continue**.

29. Define the standard formats into which SAP R/3 converts internal document formats before they are passed on to the node. Push **Continue**.

IMPORTANT:
The conversion settings made here only concern some of the SAP - individual formats – namely SAPScript (SCR) and ABAP lists (ALI). Further options are later accessible with the node maintenance.
Message attachments of all other formats are passed on to the node transparently in the format present.

---

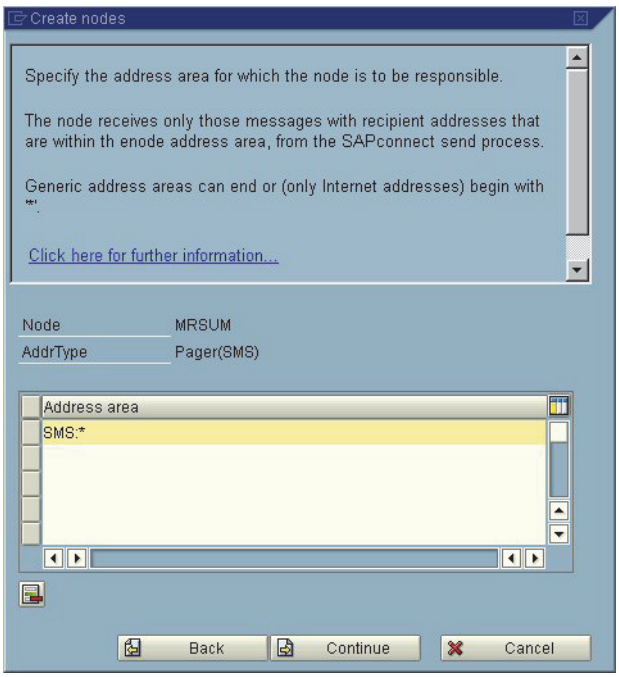
30. In the next dialog select the **Restrict send time** option.

IMPORTANT:
The XPR server does not explicitly evaluate the start and end times specified here, but merely the priority status passed on with a message. The dedicated start times for sending messages of the individual priorities must be configured in the XPR server if needed.
Settings of any kind must be performed in this dialog so that the SAP system transmits the required status information with the message to the XPR server.

---

31. Depending on three priority statuses specify send time restrictions for messages of the **Internet** address type. Push **Continue**.
32. Answer the question whether to set further address types with **Yes**. Push **Continue**.
33. Next we configure the *Pager (SMS)* address type. In the following dialog select the **Pager (SMS)** option and push **Continue**.

34. Just like under the *Fax* address type, enter the address areas in the table for which SAP R/3 is to send e-mails to the XPR server for routing.



35. Push **Continue**.

36. Define the standard formats into which SAP R/3 converts internal document formats before they are passed on to the node. Push **Continue**.

IMPORTANT:
The conversion settings made here only concern some of the SAP - individual formats – namely SAPScript (SCR) and ABAP lists (ALI). Further options are later accessible with the node maintenance.
Message attachments of all other formats are passed on to the node transparently in the format present.

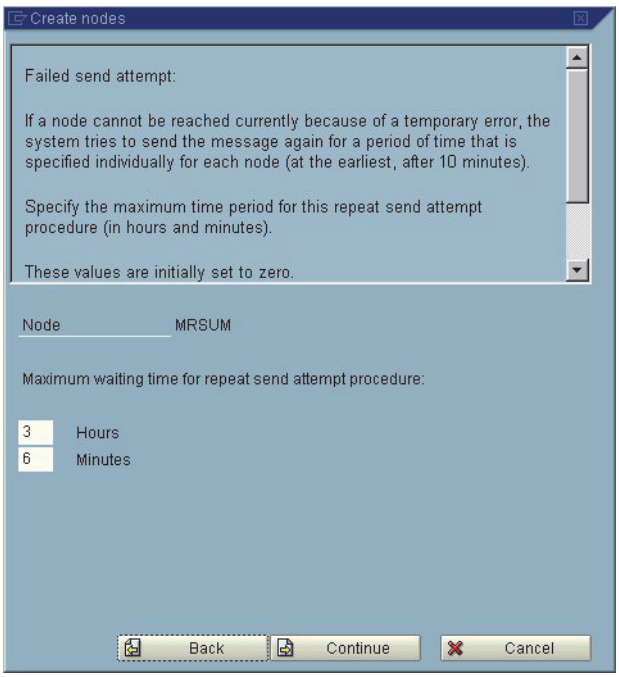
---

37. In the next dialog select the **Restrict send time** option.

IMPORTANT:
The XPR server does not explicitly evaluate the start and end times specified here, but merely the priority status passed on with a message. The dedicated start times for sending messages of the individual priorities must be configured in the XPR server if needed.
Settings of any kind must be performed in this dialog so that the SAP system transmits the required status information with the message to the XPR server.

38. Depending on three priority statuses specify send time restrictions for messages of the **Pager (SMS)** address type.
39. Push **Continue**.
40. In the following dialog answer the question whether to set further address types with **No**.
41. Push **Continue**.

42. Make an entry in the **Hours** and **Minutes** field to define how long SAP R/3 is to repeat the transmission of a message to this node. If the time set is exceeded, the originator is informed by a note that the message could not be delivered.

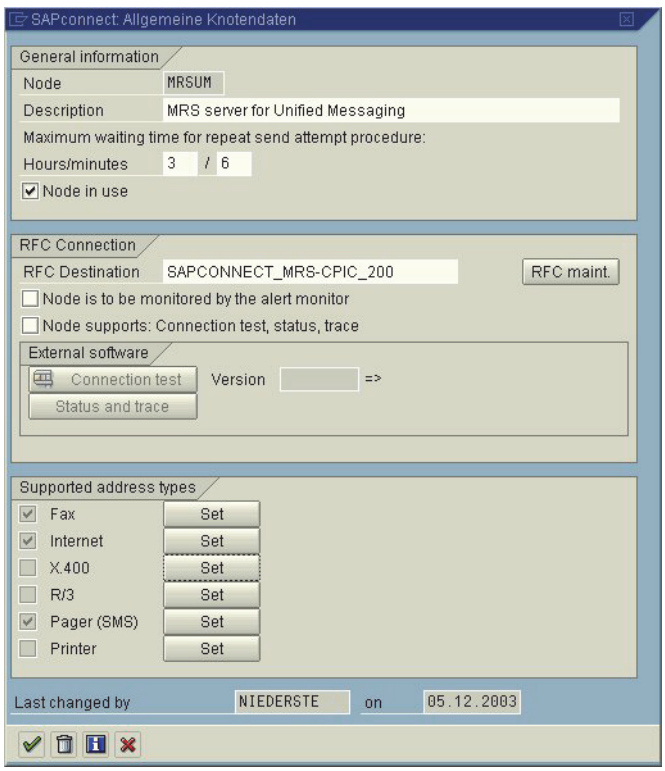


NOTE:
When you set the waiting period make sure that shorter maintenance works on the system do not lead to the message transmission being reported as failed to the respective SAP users.
We recommend to set the waiting period to at least three hours.

43. Confirm your settings with **Continue**.

44. In the following dialog select none of the available options (**Node can resolve path references** and **Node is to be monitored by the alert monitor**).
45. Push **Continue**.
46. In the following dialog select the **Node is ready for use** option and save the settings with **Continue**.

The next window displays all information on the node just configured. Furthermore, you can check all settings made and modify them if required. By selecting one of the **Set** buttons you can reconfigure the respective address type or adapt parameters already set.



NOTE:
You reach this dialog via **SAP menu > Basis Tools > Business Communication > Communication > SAPconnect (/nSCOT)** under the menu option **View > Nodes**. Select one of the nodes listed there.

Now you have configured the logical node for connecting the XPR server via the SAPconnect interface. In the next section we will create an SAPconnect job.

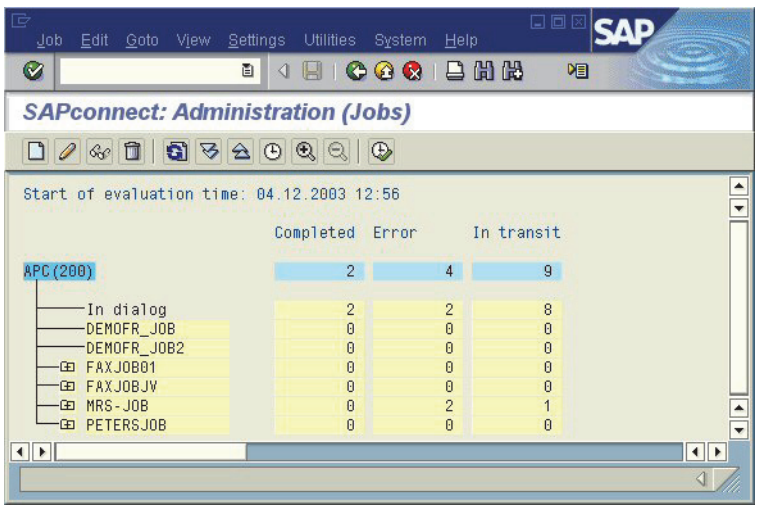
Job setting

In the background of SAP R/3 the SAPconnect job is in charge of sending ready-to-transmit messages to external systems (nodes).

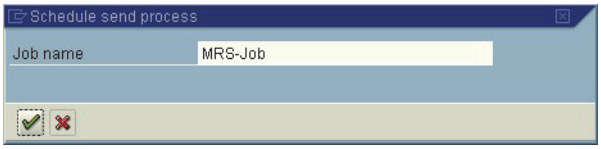
IMPORTANT:
The following job configuration must be performed under an SAP user with sufficient system privileges, since otherwise it will probably not be executed as desired.
Since the privilege order under SAP R/3 is version-dependent, we recommend to perform the configuration under a user account with full administrative privileges.

How to configure a job:

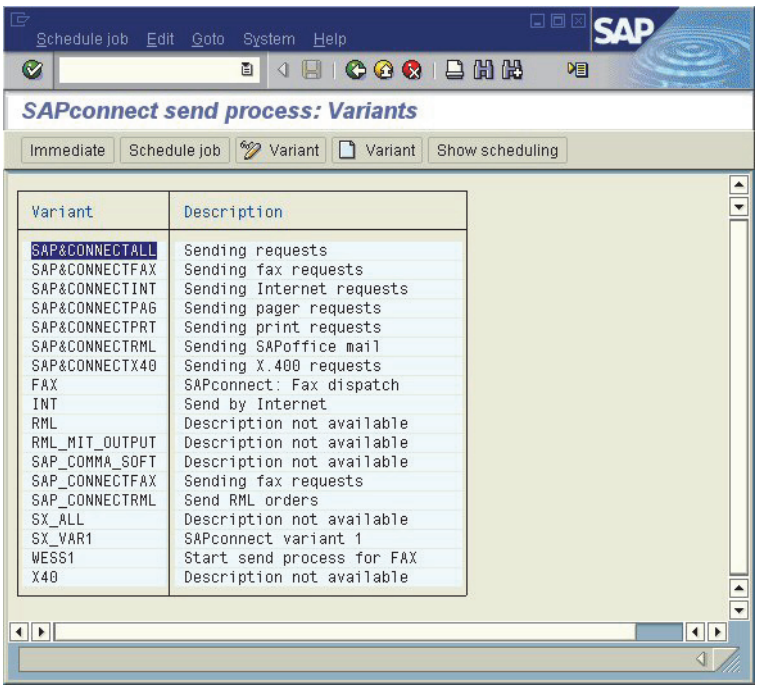
1. Push the **F3** function key to return to the *SAP Easy Access Extended Relationship Management*.
2. Enter the transaction code **/nSCON** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Business Communication > Communication > SAPconnect** with a doubleclick.
3. In the **View** menu of the opened dialog select the **Jobs** option.
4. Push the **Create** icon in the toolbar to define a new job.



5. Enter a unique name in the **Job name** field and confirm your entry with the **OK** icon of the dialog.

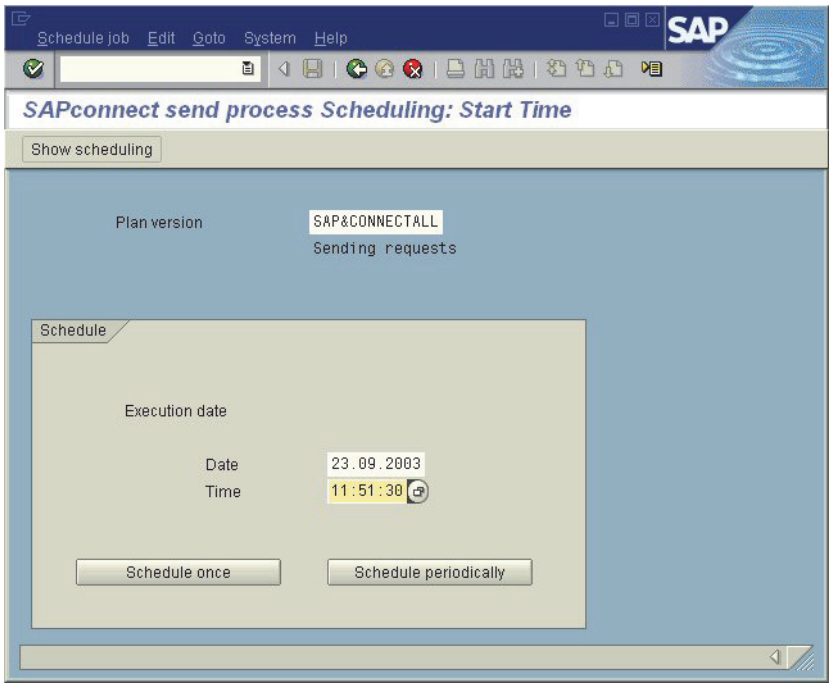


6. Select the **SAP&CONNECTALL** version to have all message types sent by the new job. Then click **Schedule job**.



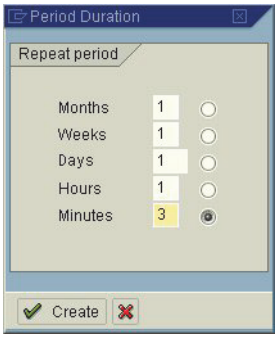
NOTE:
By selecting another job variant you can also generate SAP jobs with specified tasks. The **SAP&CONNECTFAX** version generates, for example, a job that merely transmits fax messages.

7. In the **Date** and **Time** fields specify the first execution of the new job.



IMPORTANT:
Check the automatically generated entry in the **Time** field, which displays the start time of the job.
Since the SAP system waits with the initial start of the job until one hour after the job's configuration, change the suggested entries to an earlier time.

8. Select the **Schedule periodically** option and set the **Repeat period** in the now open dialog.



IMPORTANT:
A repeat period selected too short may overload the SAP application server and lead to performance losses in the SAP operation.
Useful is a setting between three to five minutes. In the end it is always a compromise between the desire to send a new message as quickly as possible, and not calling on the system for message transmissions too strongly.

9. Confirm your settings with the **Create** button.

Now you have defined an SAPconnect job for message transmission. The configuration of a postmaster account under SAP R/3 comes next.

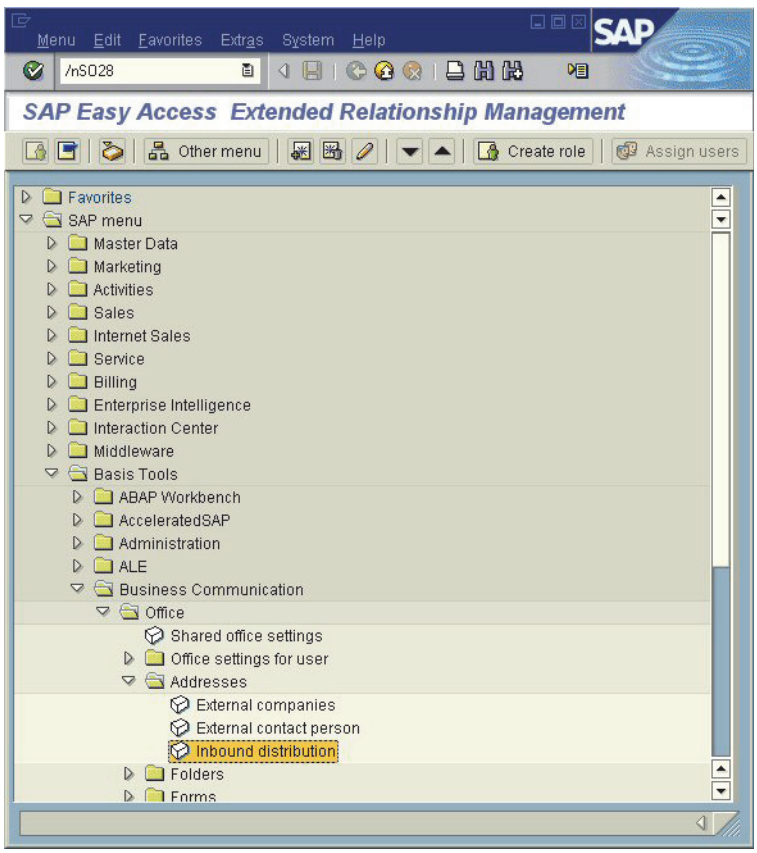
Postmaster configuration

SAP R/3 only accepts messages from external systems if message delivery to an SAP user is possible.

If a message is addressed to a user unknown in SAP R/3, the message is rejected in case of a missing postmaster account. If, however, such a postmaster has been configured for the respective message type, an otherwise undeliverable message can be routed to this configured postmaster account.

How to configure the required postmaster:

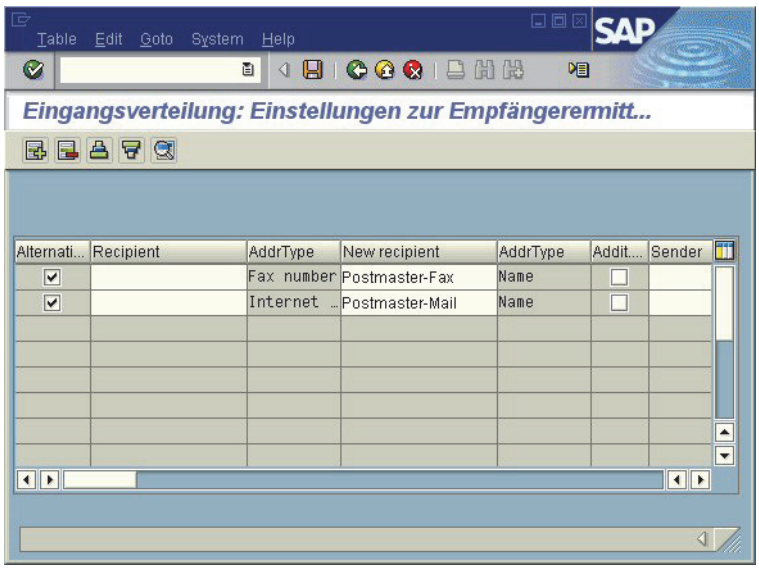
1. Push the **F3** function key to return to the *SAP Easy Access Extended Relationship Management*.
2. Enter the transaction code **/nSO28** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Business Communication > Office > Addresses > Inbound distribution** with a doubleclick.



3. Push the **Add Row** icon in the toolbar.
4. In the table perform the following settings from left to right:

AddrType:	*<Address type of the messages for which this user is to take on the postmaster function>*
New recipient:	*<Name of the SAP user that you want to define as postmaster>*
AddrType:	Name

NOTE:
For each message type to be passed on by the XPR server to the SAP R/3 system, an associated postmaster should be configured.
In this example, two SAP users were previously defined with the alias names **Postmaster-Mail** and **Postmaster-Fax** under SAP R/3. You can however define any other SAP user for the postmaster function.



5. Select the **Alternative** option for each postmaster.

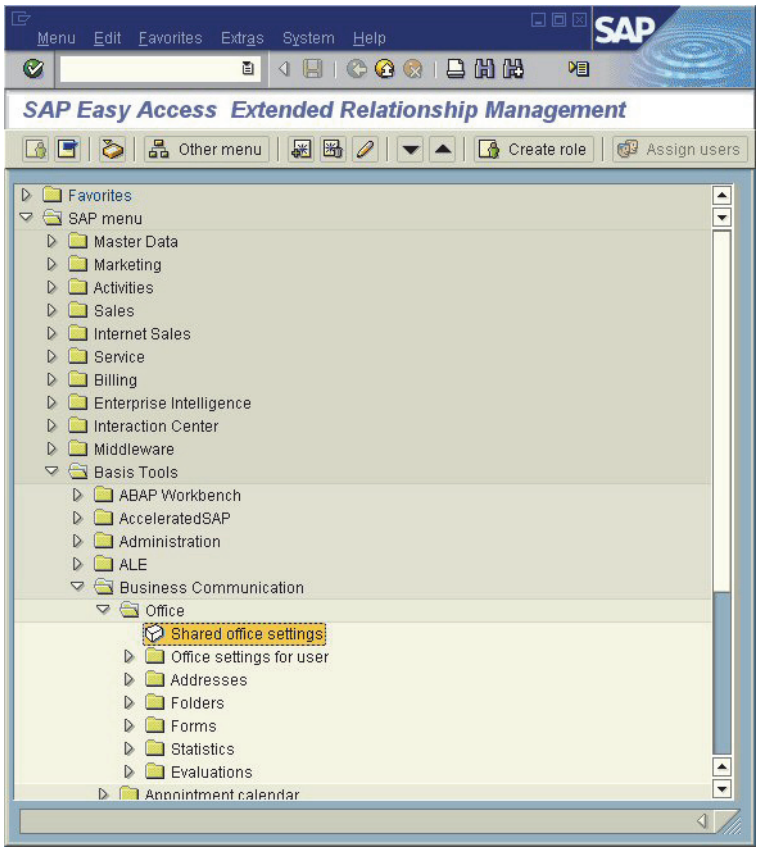
You have thus defined postmasters for the message types **Internet** and **Fax** to who all undeliverable messages of the associating type can be routed.

Now the privileges for external sending of messages from the *Business Workplace* need to be configured.

Checking the external send privileges for the *Business Workplace*

Now the privileges for external sending of messages from the *Business Workplace* need to be configured.

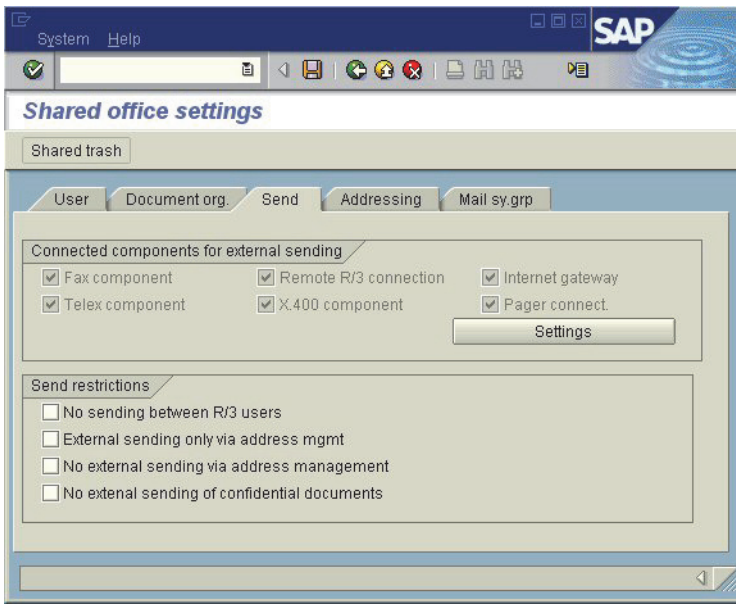
1. Push the **F3** function key to return to the *SAP Easy Access Extended Relationship Management*.
2. Enter the transaction code **/nSO16** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Business Communication > Office > Shared office settings** with a doubleclick.



3. In the window now open access the *Send* tab.

4. Make sure that in the **Connected components for external sending** portion all required components are selected.
   At least those components must be active that correspond to the message types previously defined by you in the node configuration. In our case these are:

   - the **Fax component** for sending fax messages,
   - the **Internet connection** for sending e-mails.
   - **Pager connect** for sending short messages.



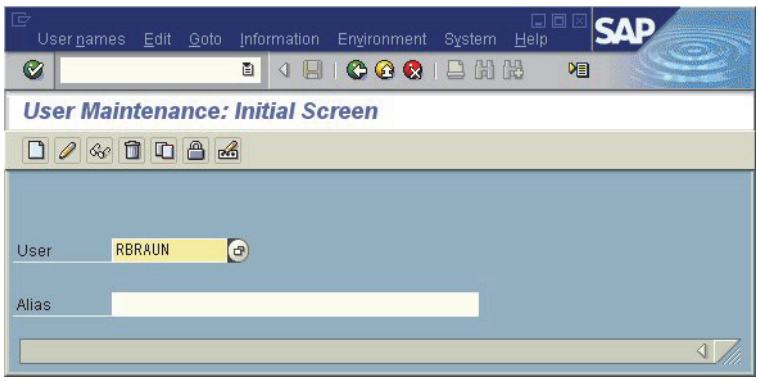
If you cannot select required options, consult your SAP system administrator for activating them.

Now you have made sure that messages can be routed via the XPR server from within SAP R/3. Next in the configuration is setting the SAP user profile.

SAP user profile setting

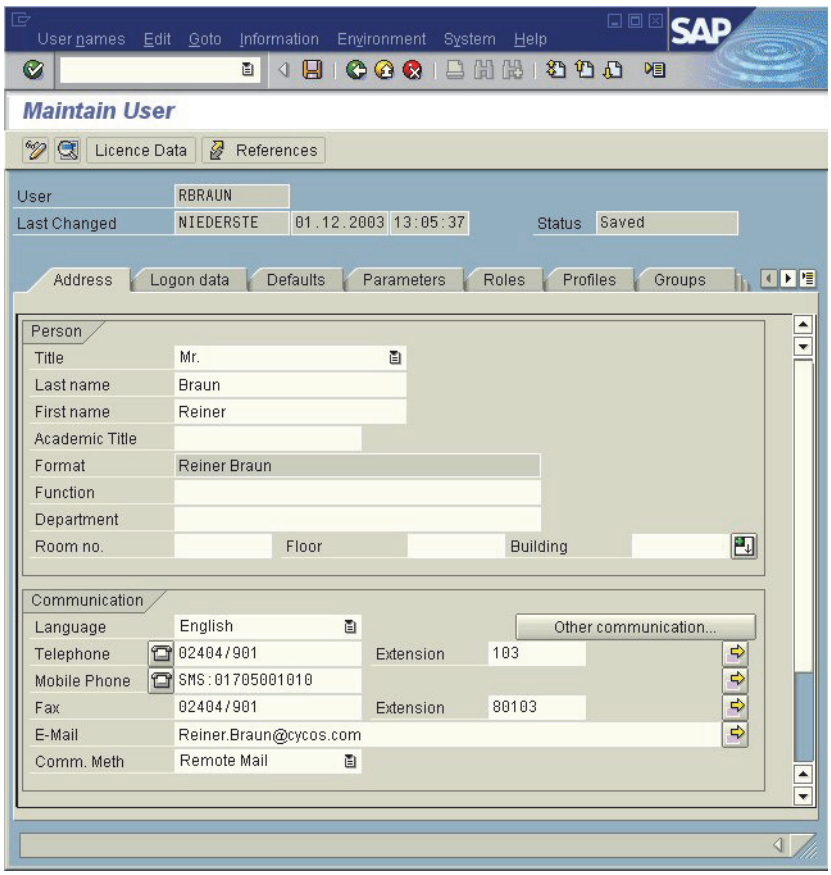
To ensure the correct delivery of messages between the XPR server and SAP R/3, the SAP profile of our example user must be adapted. Proceed as follows:

1. Push the **F3** function key to return to the *SAP Easy Access Extended Relationship Management*.
2. Enter the transaction code **/nSU01** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Administration > User Maintenance > Users** with a doubleclick.
3. In the **User** field enter the user name the profile of which you want to customize and click the **Change** icon in the toolbar.



NOTE:
If you want to adapt the profile under which you are currently logged in to SAP R/3, enter the transaction code **/nSU1** to be directly taken to the configuration form of the logged-in profile.

4. Enter the corresponding data in the associated contact fields (for example **Fax** and **Mobile Phone**) for the previously configured message types.



NOTE:
Depending on the R/3 version it may happen that the mobile phone field is not immediately displayed. In this case select the **Other communication** button.

SAP recommends using the following address formats:

- for **Fax:** <*area code*>/<*main station*>–<*extension*>
- for **SMS:** SMS:<*cellphone number*>.

You have thus accomplished the SAP system adjustment.

continue with Section 4.5.4.4, “XPR Server System Adjustments”, on page 190.

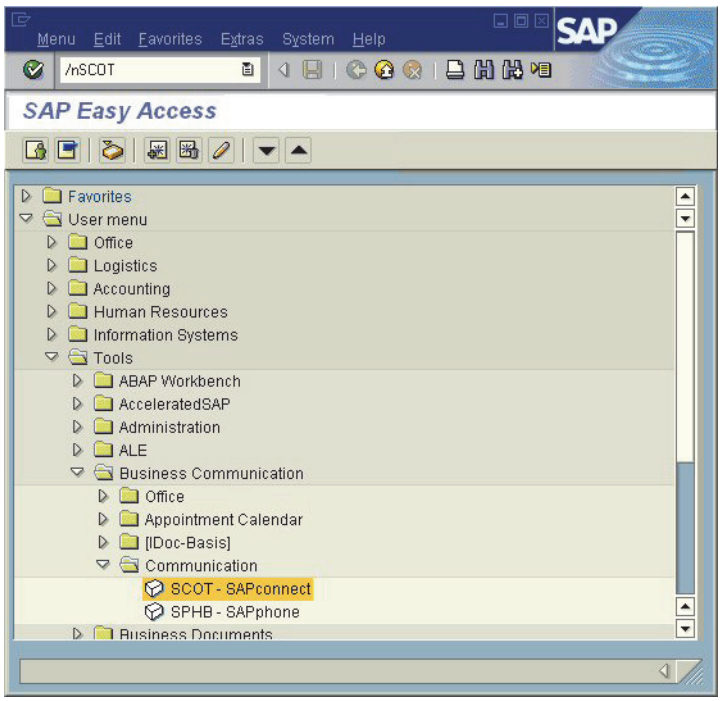
4.5.4.2 Adjustments under SAP R/3 Version 4.6C

In the following we will describe the configuration steps for the system adjustments under SAP R/3 version 4.6C.

Setting the communication methods

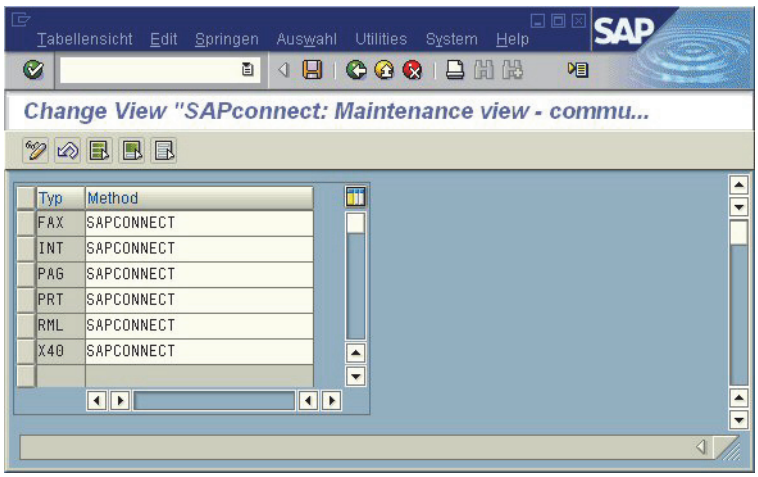
First we perform settings for the various communication methods. In doing so we define which message types are sent by SAP R/3 via the SAPconnect interface.

1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.
2. Enter the transaction code **/nSCOT** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Business Communication > Communication > SCOT– SAPconnect** with a doubleclick.



3. In the **Settings** menu of the dialog now open select the **communication methods** option.

4. Make sure that for each media type to be exchanged between the XPR server and SAP system the **SAPconnect** method is specified.
   You can make alterations by selecting the respective field and subsequently choosing the associating selector icon.



5. Save the new settings with the **Save** icon in the toolbar.

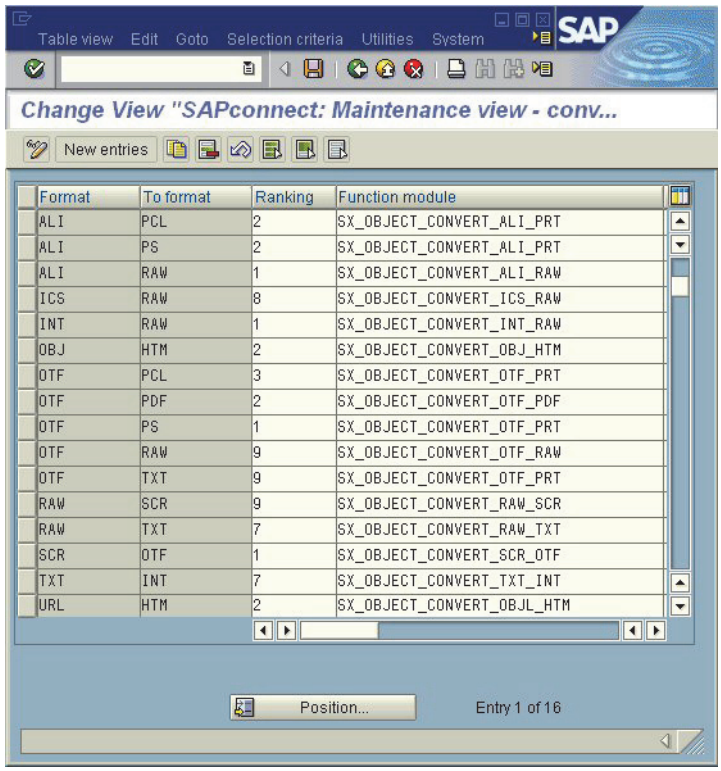
You have now configured the communication method. We will now continue with the conversion rules settings.

Conversion rule settings

Conversion rules define into which formats SAP R/3 can convert documents to be sent.

1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.
2. Enter the transaction code **/nSCOT** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Business Communication > Communication > SCOT– SAPconnect** with a doubleclick.
3. In the **Settings** menu of the dialog now open select the **Conversion rules** option.

4. If required perform special settings here.



NOTE:
Check the parameters configured here if you do not exclusively work with postscript format (PS).
If you want to use the PCL5 format as well, select a conversion rule with the desired original format and the destination format 'PS'. Click the **Copy as…** icon and change the destination format 'PS' to 'PCL'. Confirm your modification with the **Enter** icon (this simple supplementation works as for the formats 'PS' and 'PCL' the same SAP conversion module is used).
Via **Ranking** (possible values are *1...9*) you can prioritize rules with the same original format.

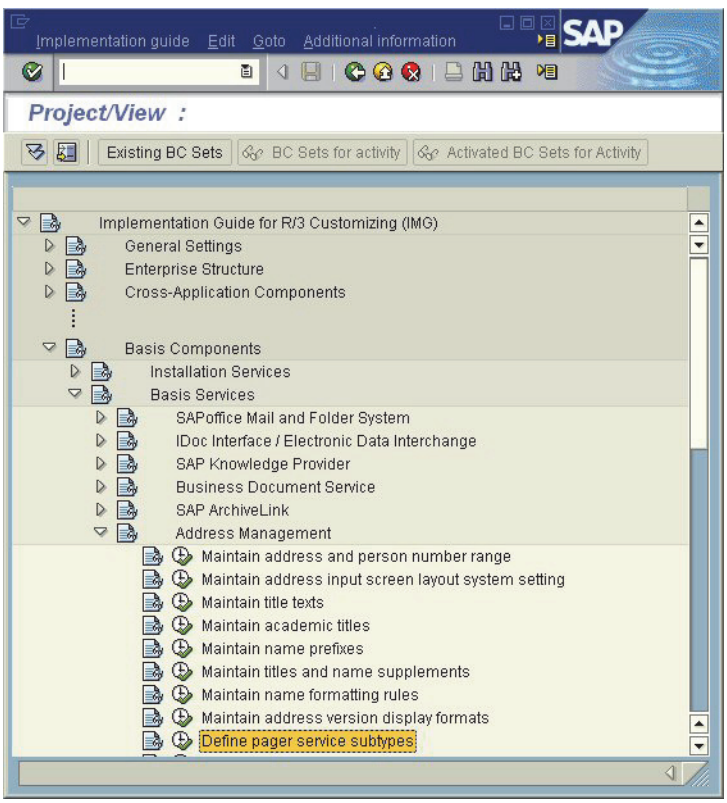
5. Confirm your modifications with the **Save** icon in the toolbar.

After configuring the conversion rules we will now define a pager subtype for the SMS.

Configuration of a pager subtype for SMS

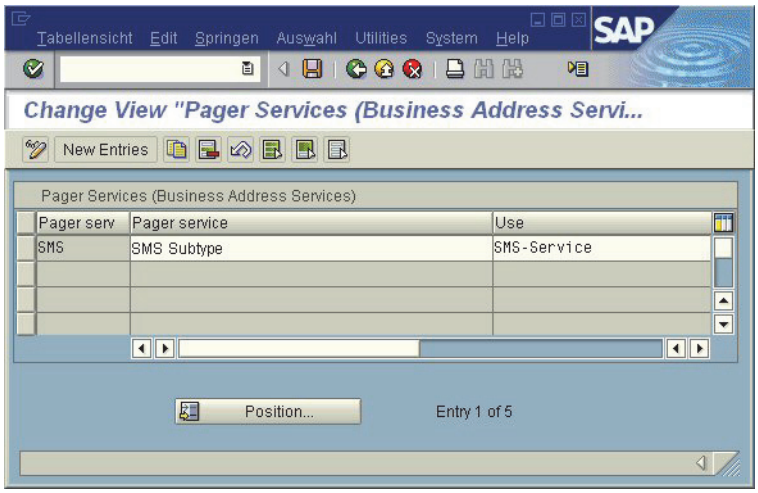
The XPR server transmits inbound short/pager messages with a destination phone number of the format *NVS:SMS/<phone number>* to the SAP destination system. The SMS subtype must be defined there so that this message type can be correctly recognized in SAP R/3.

1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.
2. Enter the transaction code **/nSPRO** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Accelerated SAP > Customizing > SPRO-Edit Project** with a doubleclick.
3. Select the **SAP Reference IMG** button.
4. Select the menu option **Implementation Guide for R/3 Customizing (IMG) > Basis Components > Basis Services > Address Management > Define pager service subtypes**.



5. In the table perform the following settings from left to right:

   Pag. Service SMS
   Pager service: *<Short description of this entry>*
   Use: SMS-Service



6. Save the settings with the **Save** icon in the toolbar.

IMPORTANT:
To modify these node-spanning settings a customizing job must exist or be newly created.

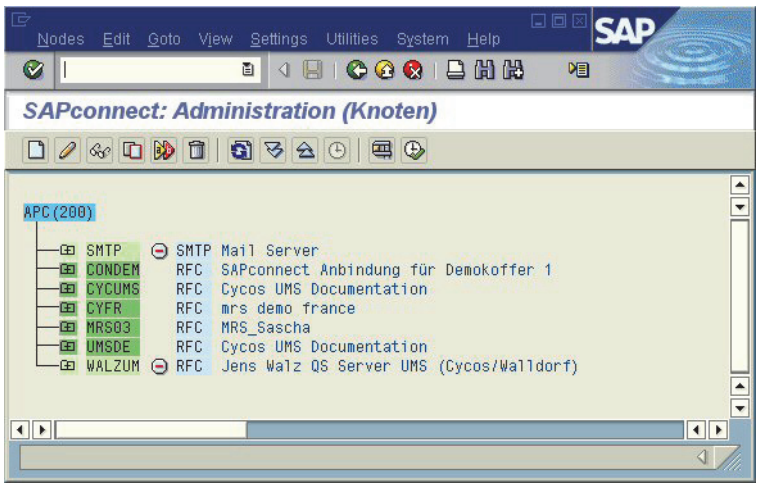
The SMS subtype, required for the configuration of the node under SAP R/3, is thus defined.

Setting the node

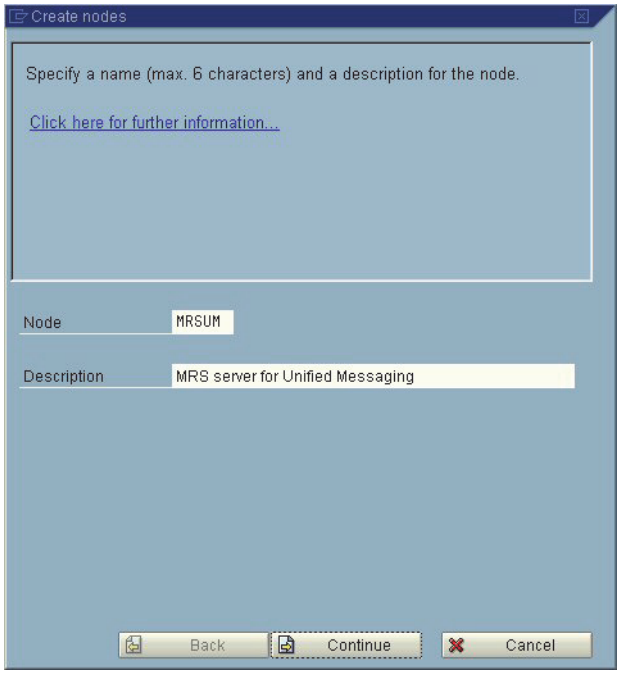
SAP R/3 administers externally activated systems in logical format as so-called nodes. With configuring such a node, specifications are made as regards e.g. for which address area the active system is in charge, or which data formats are supported by it.

How to configure the XPR server as SAP node:

1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.
2. Enter the transaction code **/nSCOT** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Business Communication > Communication > SCOT–SAPconnect** with a doubleclick.
3. In the **View** menu of the dialog now open select the **Node option**.
4. Push the **Create** icon in the toolbar to define a new node.

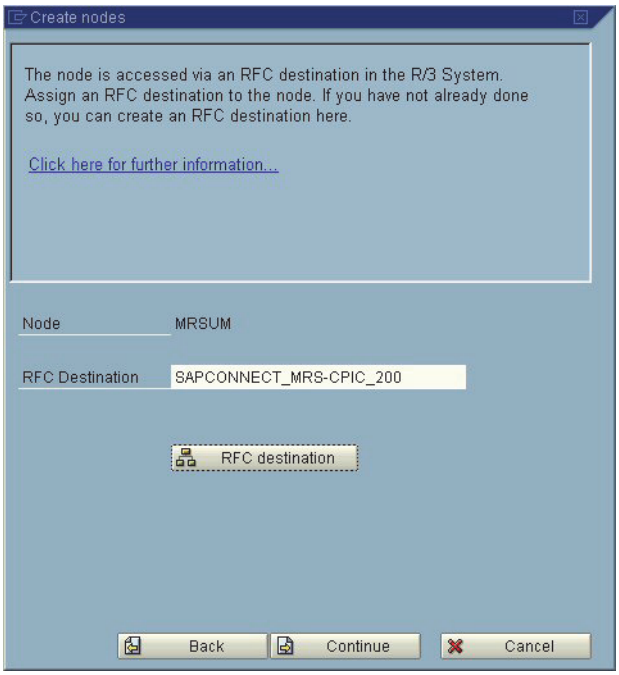


5. Enter a name for the new node in the **Node** field. The name must not exceed 6 characters.



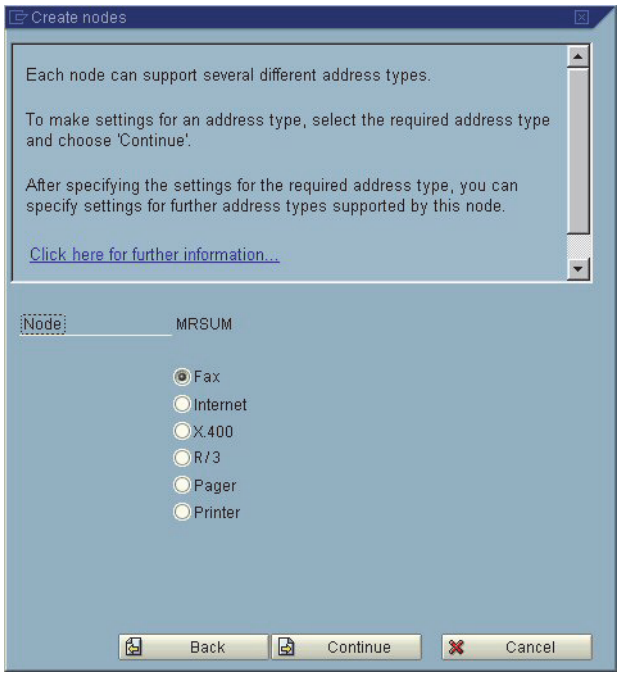
6. In the **Description** field enter a short description for the node respectively the active system.
7. Push **Continue**.

8. In the **RFC Destination** field enter the previously configured RFC destination, or open a selection list with a click on the selector icon at the end of the activated text field.



9. Push **Continue**.

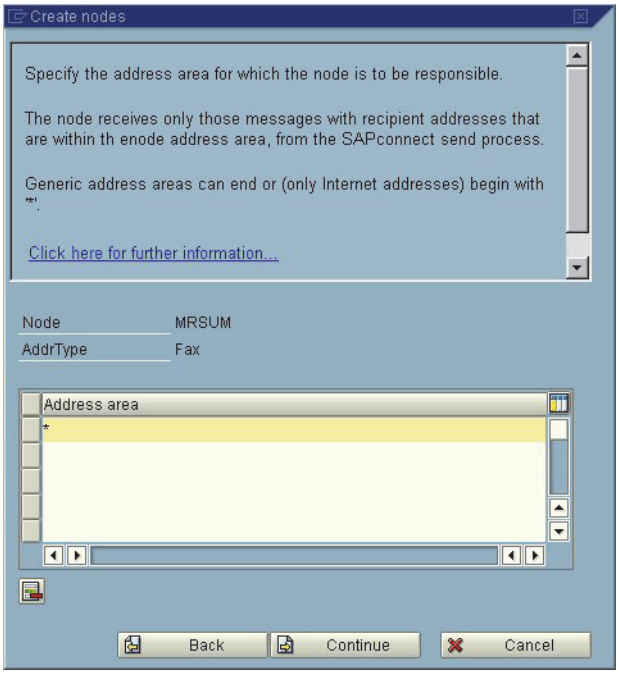
10. Select **Fax** as address type for the new node.



NOTE:
You can select only one address type (message service). After defining this type you can however configure further address types for this node in succession.
In the following we will describe the configuration of the address types *Fax*, *Internet (SMTP)* and *PAGER (SMS)*. In the course of your system configuration only select the address types that you want to use in your XPR-SAP environment.

11. Confirm your selection with **Continue**.

12. Define the address area (calling number range) for which this node is to take on the routing.



The structure of the filter entries for the address area of type *Fax* is: *<country code><optional number string><optional wildcard character '*'>* A filter hit always occurs after the longest precise match.

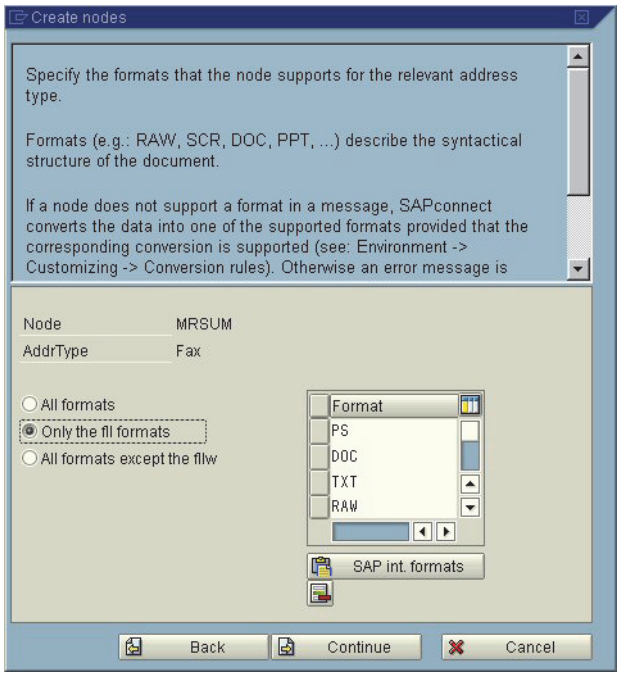
Example: Address area=DE02402*
All fax messages beginning with the number string *492402* are handed over to this node by the SAP system.

In our environment we want the fax messages of all calling numbers be passed on to the XPR server. Therefore we enter '*' as address area.

For the addressing schemes of the various addressing types compare Section 3.2.1, “Address Formats and ANI Hits”, on page 39.

13. Push **Continue**.

14. Select the **Only the fll formats** option and define the formats into which SAP R/3 converts internal document formats before they are passed on to the node.



IMPORTANT:
Do not configure a combination of the format types PS, PCL or PDF within an address type (for example Fax, Internet, etc.). This may lead to conversion problems.

We recommend defining the formats:

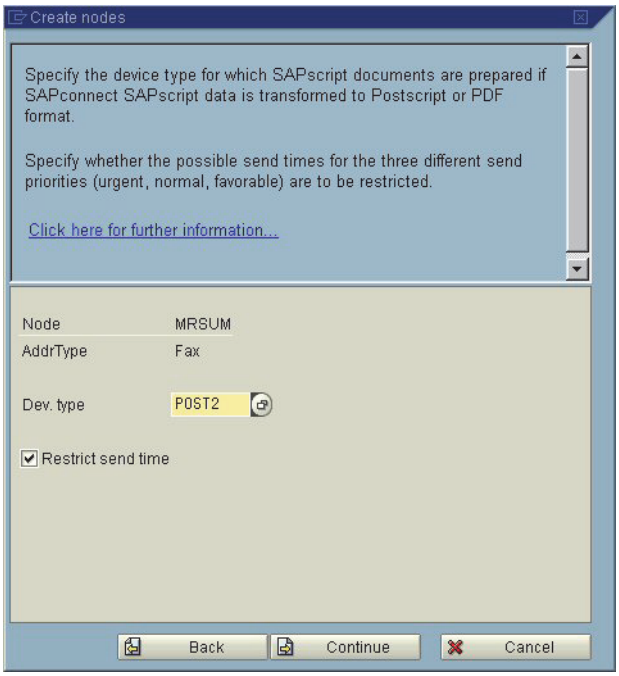
- PS
- TXT
- RAW
- 'MS Office' formats (for example DOC)

Via the additional options (**All formats** and **All formats except the fllw**) you can select a varying definition strategy of the desired formats.

If you want to send a document type from SAP R/3 not specified here, R/3 converts the respective document automatically into a format defined here. This, however, requires the previous definition of the corresponding conversion rule (cf. Section 4.5.4.2, "Conversion rule settings", on page 138).

If the corresponding conversion rule has not been defined, SAP R/3 issues an error message.

15. Push **Continue**.
16. In the next dialog specify for which device type SAPscript documents are prepared in SAP R/3 if a format conversion (for example to PS, PCF or PDF) is performed.



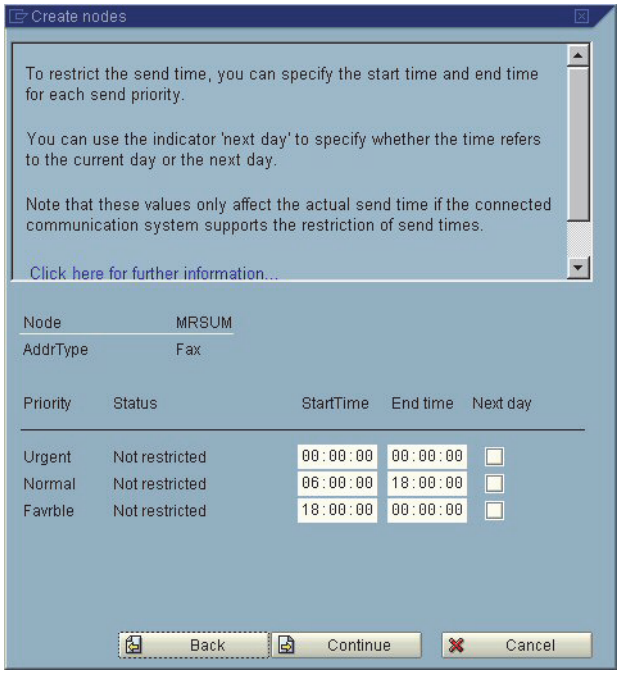
Check the parameters configured here if you do not exclusively work with postscript or text output.

We recommend:

- for **PCL:** HPLJ4 or HPLJIIID as HP PCL 5 driver
- for **PS:** POST2 (in older R/3 versions, POST is available only)

17. Select the **Restrict send time** option.
18. Push **Continue**.

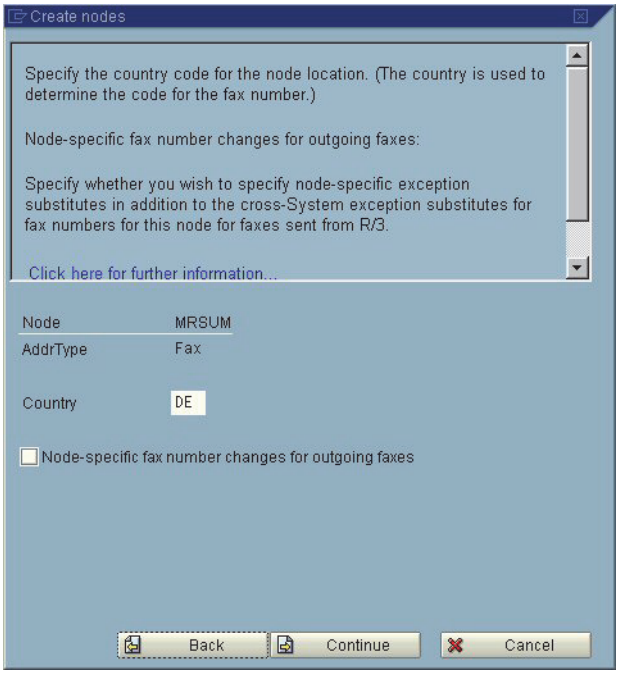
19. Depending on three priority statuses specify send time restrictions for messages of this address type.



IMPORTANT:
The XPR server does not explicitly evaluate the start and end times specified here, but merely the priority status passed on with a message. The dedicated start times for sending messages of the individual priorities must be configured in the XPR server if needed.
Settings of any kind must be performed in this dialog so that the SAP system transmits the required status information with the message to the XPR server.

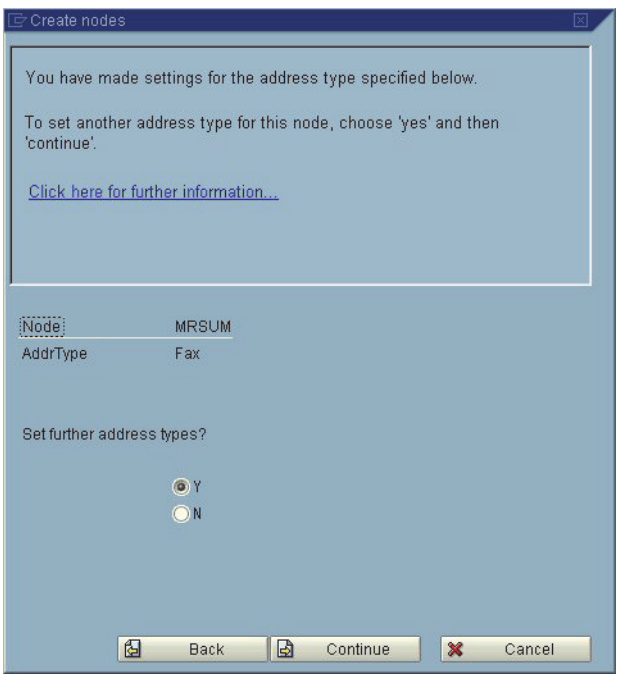
20. Push **Continue**.

21. In the **Country** field specify the country code for the node location. This entry is required to determine the code for calling numbers.



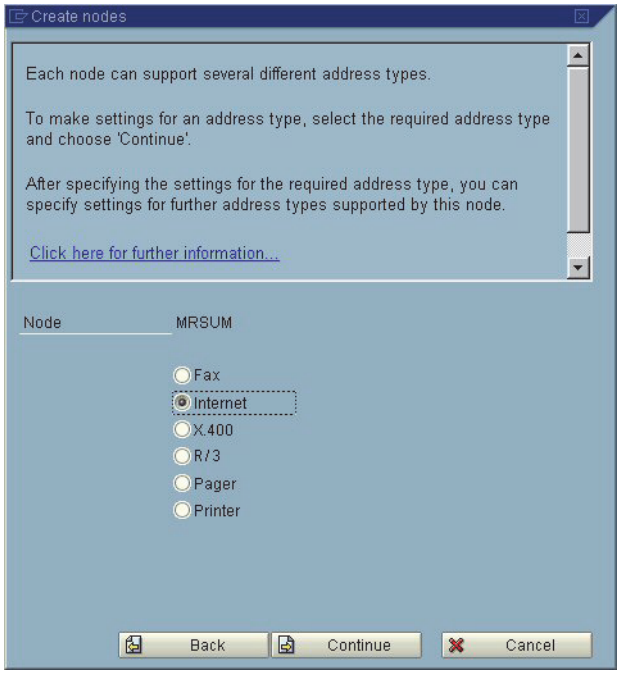
22. Push **Continue**.

23. Answer the question whether to set further address types with **Yes**.



24. Push **Continue**.

25. Next we configure the address type *Internet*. Select the **Internet** option in the following dialog.



26. Push **Continue**.

27. Just like under the *Fax* address type, enter the address areas in the table for which SAP R/3 is to send e-mails to the XPR server for routing.

NOTE:
At this point you can use filter formats to configure an intelligent message routing via the XPR server.
With our configuration you can, for example, send an e-mail with the target address *<cellphone number>@sms.mydomain.com* to the XPR server, which transmits the information contained in the e-mail as short message into the public network.
By defining the corresponding routing rules/address conversions in the XPR server, the individual address structures are adapted to the common address formats.
You find continuative information on generating such routing rules in the *OpenScape Xpressions Server Administration* manual.

28. Push **Continue**.

29. Select the **Only the fll formats** option and define the formats into which SAP R/3 converts internal document formats before they are passed on to the node.

    IMPORTANT:
    Do not configure a combination of the format types PS, PCL or PDF within an address type (for example Fax, Internet, etc.). This may lead to conversion problems.

    We recommend defining the formats:

    - TXT
    - RAW
    - 'MS Office' formats (for example DOC)
    - PDF (may be useful for newer SAP R/3 versions).

    Via the additional options (**All formats** and **All formats except the fllw**) you can select a varying definition strategy of the desired formats.

    If you want to send a document type from SAP R/3 not specified here, R/3 converts the respective document automatically into a format defined here. This, however, requires the previous definition of the corresponding conversion rule (cf. Section 4.5.4.2, "Conversion rule settings", on page 138).

    If the corresponding conversion rule has not been defined, SAP R/3 issues an error message.

30. Push **Continue**.

31. In the next dialog specify for which device type SAPscript documents are prepared in SAP R/3 if a format conversion (for example to PS, PCF or PDF) is performed.

    Check the parameters configured here if you do not exclusively work with postscript or text output.

    We recommend:

    - for **PCL:** HPLJ4 or HPLJIIID as HP PCL 5 driver
    - for **PS:** POST2 (in older R/3 versions, POST is available only)

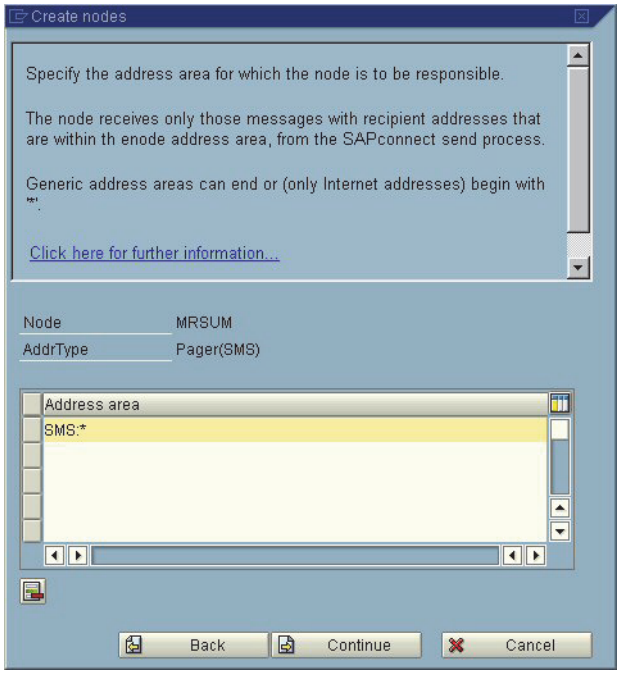
32. Select the **Restrict send time** option.

    IMPORTANT:
    The XPR server does not explicitly evaluate the start and end times specified here, but merely the priority status passed on with a message. The dedicated start times for sending messages of the individual priorities must be configured in the XPR server if needed.
    Settings of any kind must be performed in this dialog so that the SAP system transmits the required status information with the message to the XPR server.

    ---

33. Push **Continue**.
34. Depending on three priority statuses specify send time restrictions for messages of the **Internet** address type.
35. Push **Continue**.
36. Answer the question whether to set further address types with **Yes**.
37. Push **Continue**.
38. Next we configure the *Pager (SMS)* address type. In the following dialog select the **Pager (SMS)** option.
39. Push **Continue**.

40. Just like under the *Fax* address type, enter the address areas in the table for which SAP R/3 is to send e-mails to the XPR server for routing.



41. Push **Continue**.

42. Select the **Only the fll formats** option and define the formats into which SAP R/3 converts internal document formats before they are passed on to the node.

    We recommend defining the formats:

    - TXT
    - RAW.

    Via the additional options (**All formats** and **All formats except the fllw**) you can select a varying definition strategy of the desired formats.

    If you want to send a document type from SAP R/3 not specified here, R/3 converts the respective document automatically into a format defined here. This, however, requires the previous definition of the corresponding conversion rule (cf. Section 4.5.4.2, “Conversion rule settings”, on page 138).

    If the corresponding conversion rule has not been defined, SAP R/3 issues an error message.

43. Push **Continue**.

44. In the next dialog specify for which device type SAPscript documents are prepared in SAP R/3 if a format conversion (for example to PS, PCF or PDF) is performed.

NOTE:
Check the parameters configured here if you do not exclusively work with postscript or text output.

---

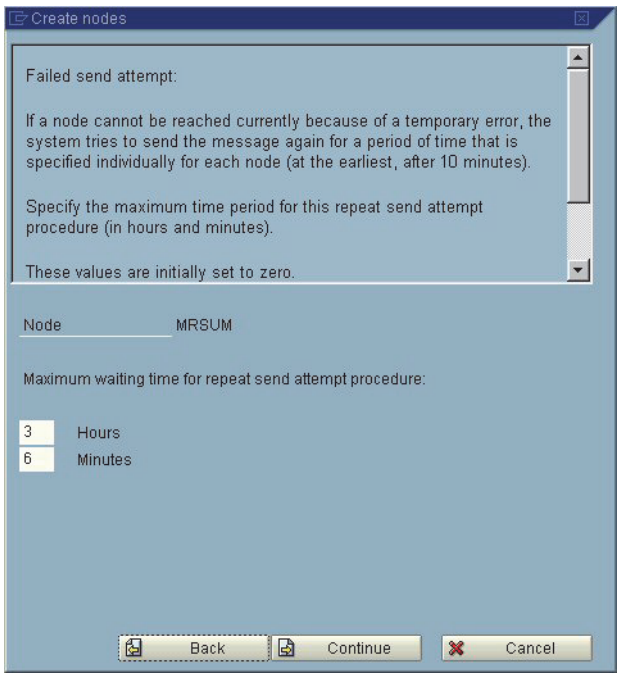
45. Select the **Restrict send time** option.

IMPORTANT:
The XPR server does not explicitly evaluate the start and end times specified here, but merely the priority status passed on with a message. The dedicated start times for sending messages of the individual priorities must be configured in the XPR server if needed.
Settings of any kind must be performed in this dialog so that the SAP system transmits the required status information with the message to the XPR server.

---

46. Push **Continue**.
47. Depending on three priority statuses specify send time restrictions for messages of the **Pager (SMS)** address type.
48. Push **Continue**.
49. In the following dialog answer the question whether to set further address types with **No**.
50. Push **Continue**.

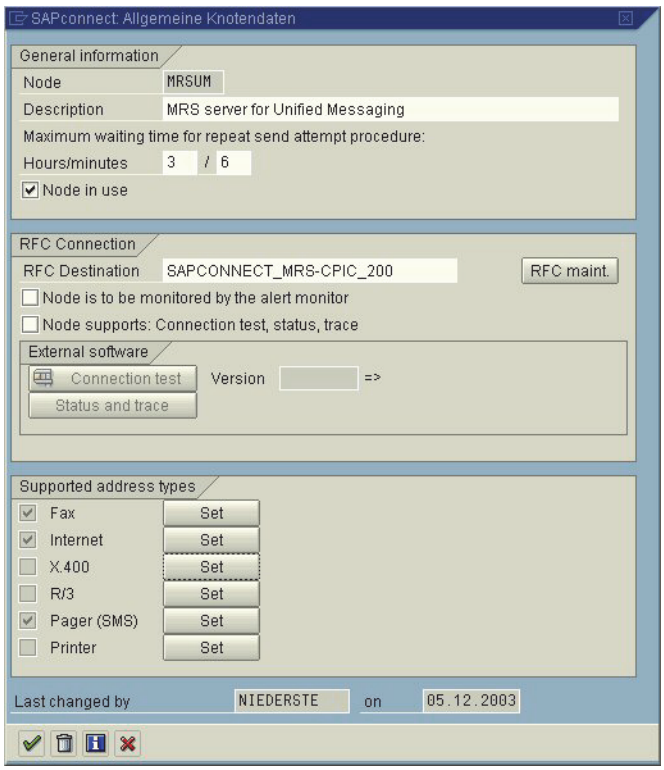
51. Make an entry in the Hours and Minutes field to define how long SAP R/3 is to repeat the transmission of a message to this node. If the time set is exceeded, the originator is informed by a note that the message could not be delivered.



NOTE:
When you set the waiting period make sure that shorter maintenance works on the system do not lead to the message transmission being reported as failed to the respective SAP users.
We recommend to set the waiting period to at least three hours.

52. Confirm your settings with **Continue**.
53. In the following dialog select none of the available options (**Node can resolve path references** and **Node is to be monitored by the alert monitor**).
54. Push **Continue**.
55. In the following dialog select the **Node is ready for use** option and save the settings with **Continue**.

56. The next window displays all information on the node just configured. Furthermore, you can check all settings made and modify them if required. By selecting one of the **Set** buttons you can reconfigure the respective address type or adapt parameters already set.



NOTE:
You reach this dialog via **User menu >Tools > Business Communication > Communication > SCOT–SAPconnect (/nSCOT)** under the menu option **View > Nodes**. Select one of the nodes listed there.

Now you have configured the logical node for connecting the XPR server via the SAPconnect interface. In the next section we will create an SAPconnect job.

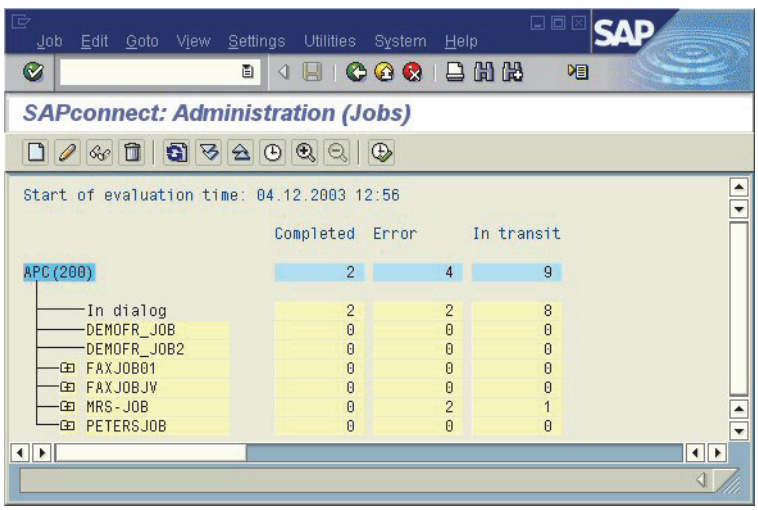
Job setting

In the background of SAP R/3 the SAPconnect job is in charge of sending ready-to-transmit messages to external systems (nodes).

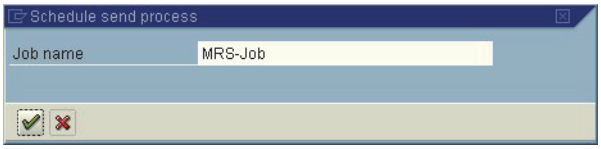
IMPORTANT:
The following job configuration must be performed under an SAP user with sufficient system privileges, since otherwise it will probably not be executed as desired.
Since the privilege order under SAP R/3 is version-dependent, we recommend to perform the configuration under a user account with full administrative privileges.

How to configure a job:

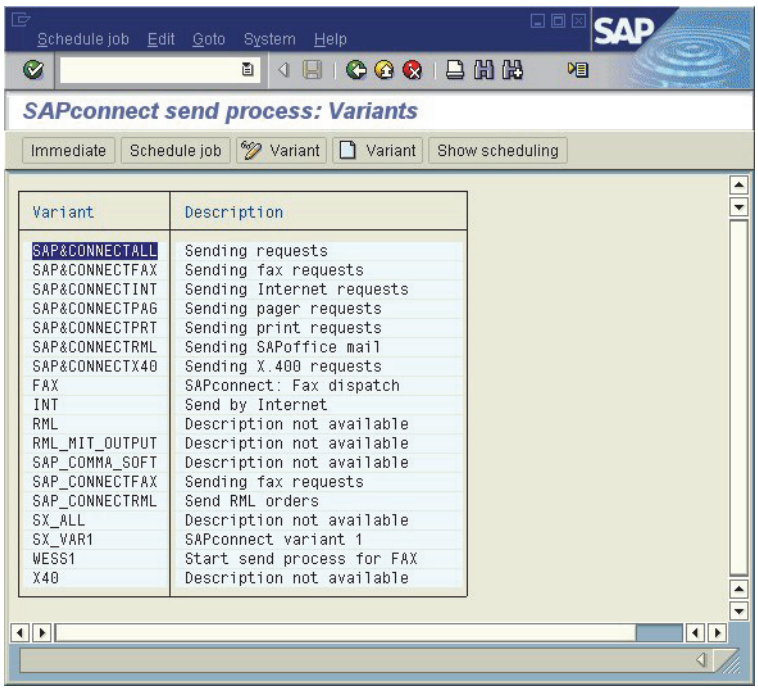
1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.
2. Enter the transaction code **/nSCOT** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Business Communication > Communication > SCOT–SAPconnect** with a doubleclick.
3. In the **View** menu of the opened dialog select the **Jobs** option.
4. Push the **Create** icon in the toolbar to define a new job.



5. Enter a unique name in the **Job name** field and confirm your entry with the **Continue** icon.

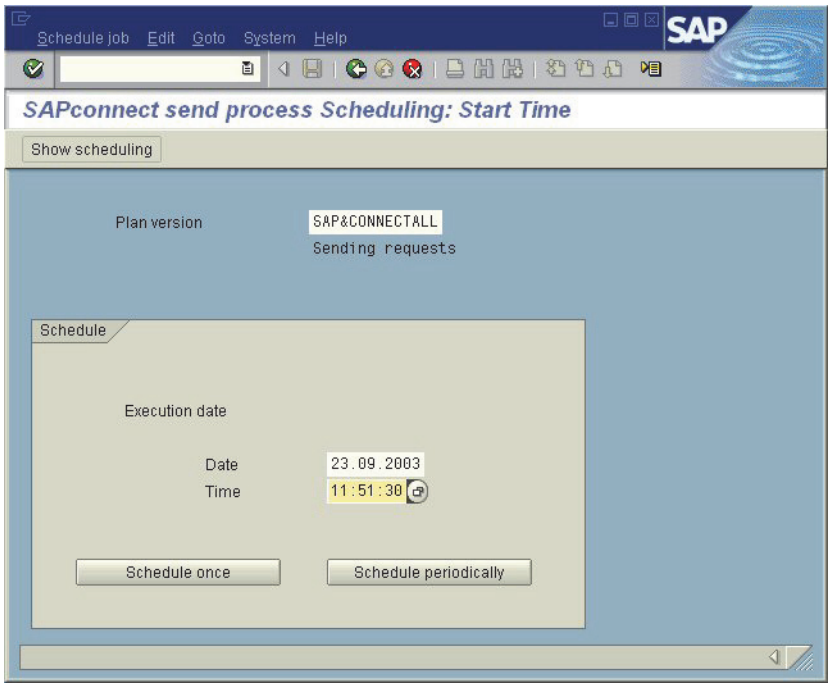


6. Select the **SAP&CONNECTALL** version to have all message types sent by the new job. Then click **Schedule job**.



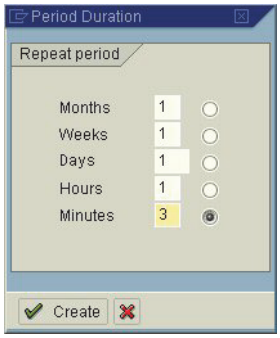
NOTE:
By selecting another job variant you can also generate SAP jobs with specified tasks. The **SAP&CONNECTFAX** version generates, for example, a job that merely transmits fax messages.

7. In the **Date** and **Time** fields specify the first execution of the new job.



IMPORTANT:
Check the automatically generated entry in the **Time** field, which displays the start time of the job.
Since the SAP system waits with the initial start of the job until one hour after the job's configuration, change the suggested entries to an earlier time.

8. Select the **Schedule periodically** option and set the **Repeat period** in the now open dialog.



IMPORTANT:
A repeat period selected too short may overload the SAP application server and lead to performance losses in the SAP operation.
Useful is a setting between three to five minutes. In the end it is always a compromise between the desire to send a new message as quickly as possible, and not calling on the system for message transmissions too strongly.

9. Confirm your settings with the **Create** button.

Now you have defined an SAPconnect job for message transmission. The configuration of a postmaster account under SAP R/3 comes next.

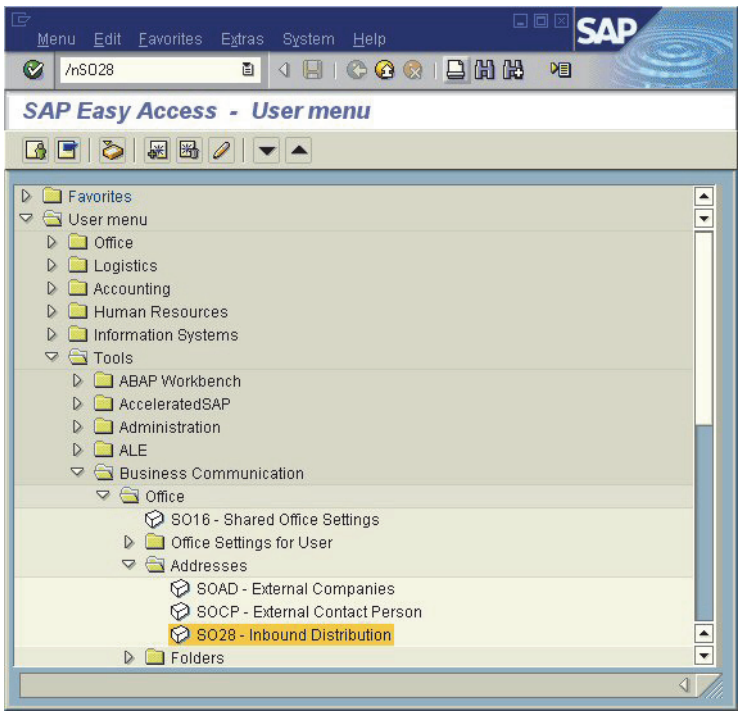
Postmaster configuration

SAP R/3 only accepts messages from external systems if message delivery to an SAP user is possible.

If a message is addressed to a user unknown in SAP R/3, the message is rejected in case of a missing postmaster account. If, however, such a postmaster has been configured for the respective message type, an otherwise undeliverable message can be routed to this configured postmaster account.

How to configure the required postmaster:

1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.
2. Enter the transaction code **/nSO28** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Business Communication > Office > Addresses > SO28– Inbound Distribution** with a doubleclick.



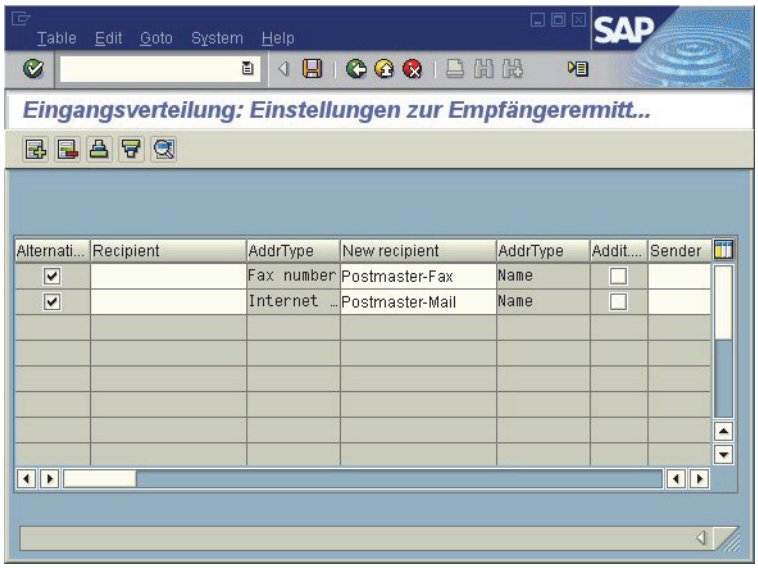
3. Push the **Add Row** icon in the toolbar.

4. In the table perform the following settings from left to right:

   AddrType: *<Address type of the messages for which this user is to take on the postmaster function>*

   New recipient: *<Name of the SAP user that you want to define as postmaster>*

   AddrType: Name



NOTE:
For each message type to be passed on by the XPR server to the SAP R/3 system, an associated postmaster should be configured.
In this example, two SAP users were previously defined with the alias names **Postmaster-Mail** and **Postmaster-Fax** under SAP R/3. You can however define any SAP user for the postmaster function.

5. Select the **Alternative** option for each postmaster.

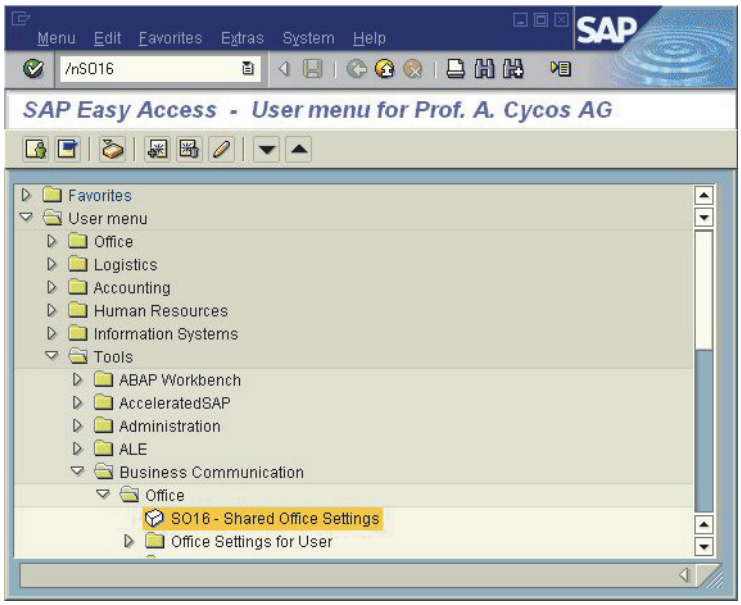
You have thus defined postmasters for the message types **Internet** and **Fax** to who all undeliverable messages of the associating type can be routed.

Now the privileges for external sending of messages from the *Business Workplace* need to be configured.

Checking the external send privileges for the *Business Workplace*

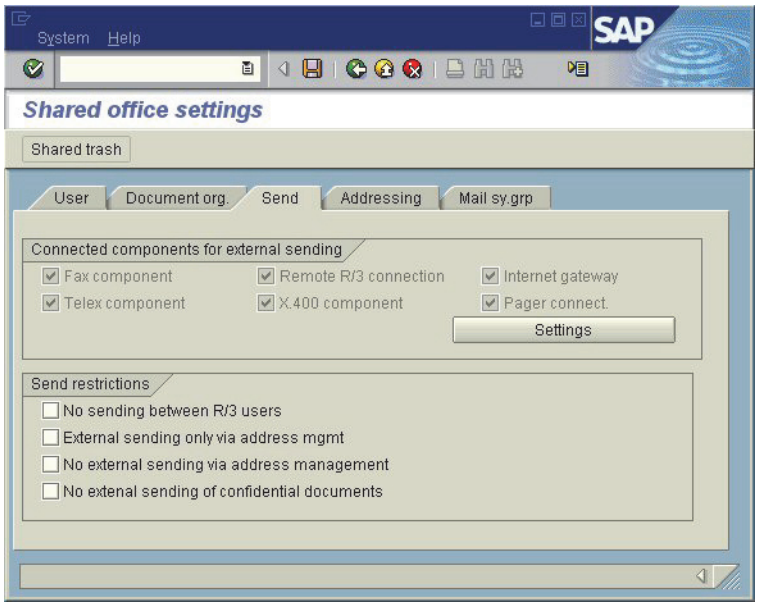
Now the privileges for external sending of messages from the *Business Workplace* need to be configured.

1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.
2. Enter the transaction code **/nSO16** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Business Communication > Office > SO16–Shared Office Settings** with a doubleclick.



3. In the window now open access the *Send* tab.

4. Make sure that in the **Connected components for external sending** portion all required components are selected.



At least those components must be active that correspond to the message types previously defined by you in the node configuration. In our case these are:

- the **Fax component** for sending fax messages,
- the **Internet connection** for sending e-mails.
- **Pager connect** for sending short messages.

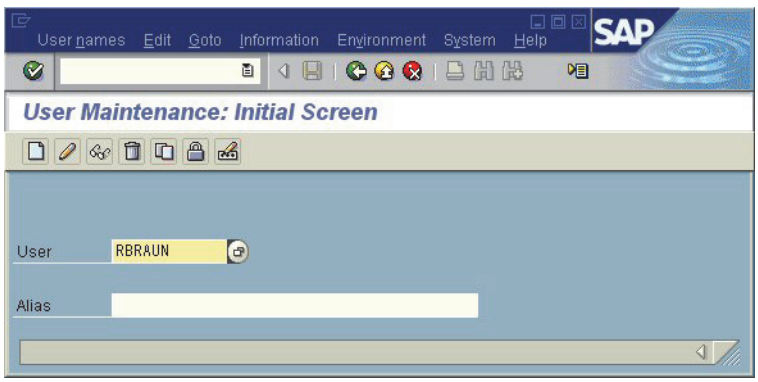
NOTE:
If you cannot select required options, consult your SAP system administrator for activating them.

Now you have made sure that messages can be routed via the XPR server from within SAP R/3. Next in the configuration is setting the SAP user profile.

SAP user profile setting

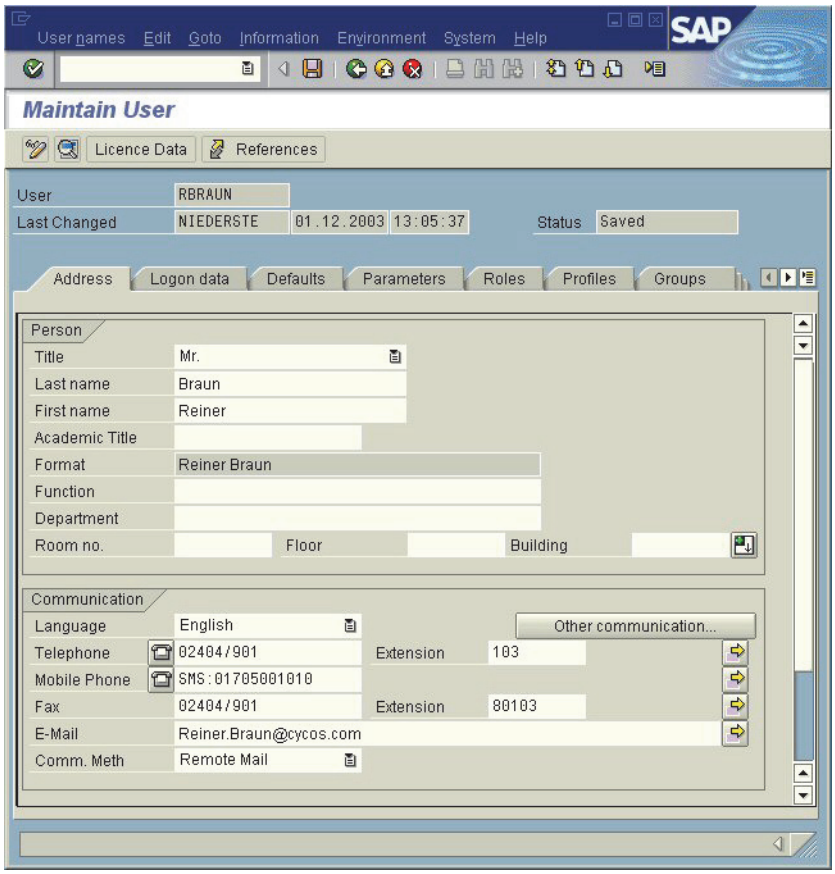
To ensure the correct delivery of messages between the XPR server and SAP R/3, the SAP profile of our example user must be adapted. Proceed as follows:

1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.
2. Enter the transaction code **/nSU01** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Administration > User Maintenance > SU01–Users** with a doubleclick.
3. In the **User** field enter the user name the profile of which you want to customize and click the **Change** icon in the toolbar.



NOTE:
If you want to adapt the profile under which you are currently logged in to SAP R/3, enter the transaction code **/nSU1** to be directly taken to the configuration form of the logged-in profile.

4. Enter the corresponding data in the associated contact fields (for example **Fax** and **Mobile Phone**) for the previously configured message types.



NOTE:
Depending on the R/3 version it may happen that the mobile phone field is not immediately displayed. In this case select the **Other communication** button.

SAP recommends using the following address formats:

- for **Fax:** <*area code*>/<*main station*>–<*extension*>
- for **SMS:** SMS:<*cellphone number*>.

You have thus accomplished the SAP system adjustment.

Continue with Section 4.5.4.4, “XPR Server System Adjustments”, on page 190.

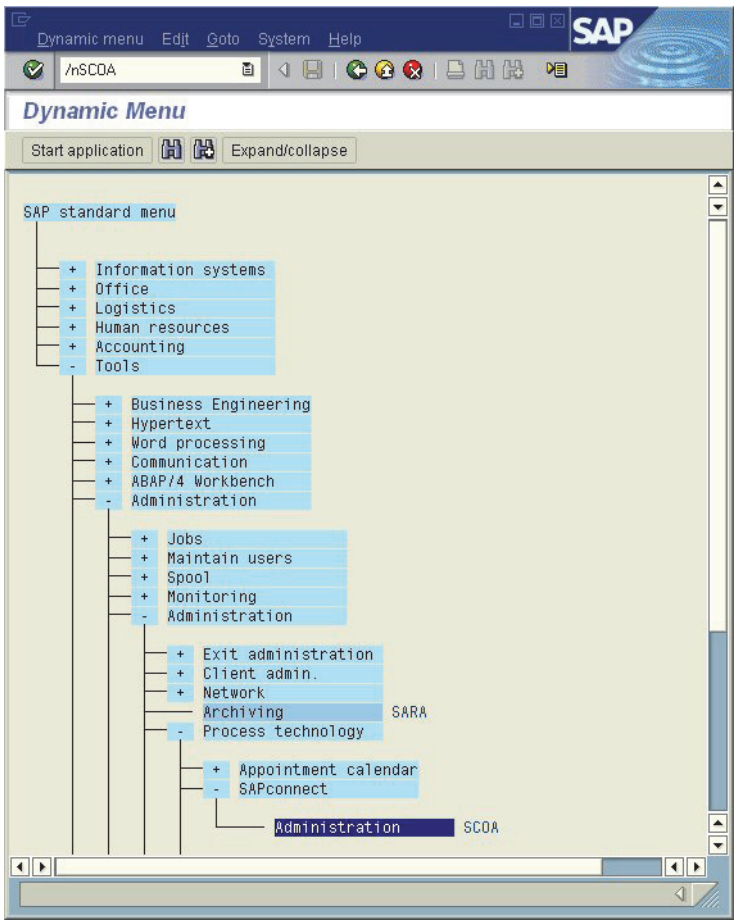
4.5.4.3 Adjustments under SAP R/3 Version 3.1i

In the following we will describe the configuration steps under SAP R/3 version 3.1i.

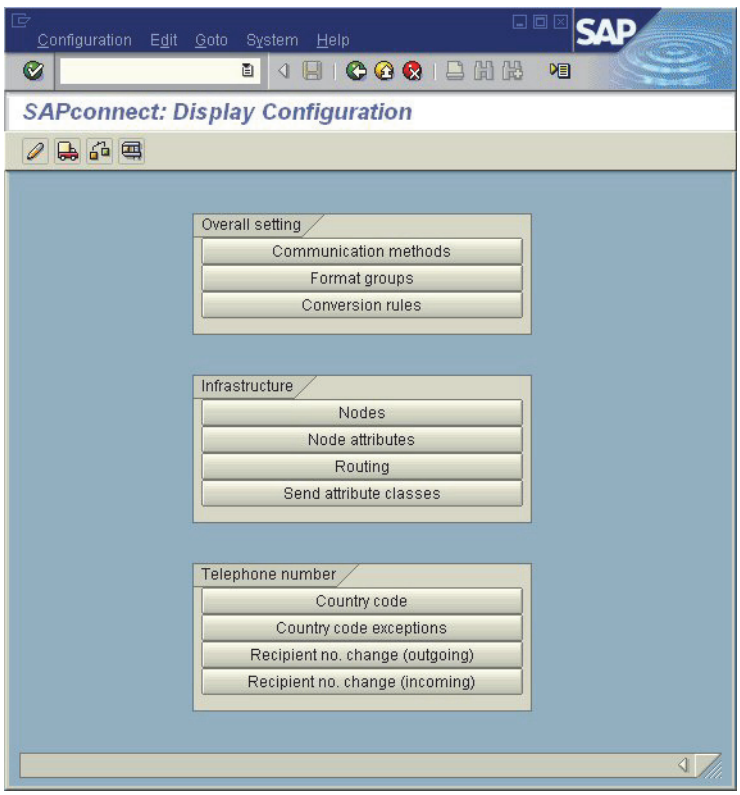
Setting the communication methods

First we perform settings for the various communication methods. In doing so we define which message types are sent by SAP R/3 via the SAPconnect interface.

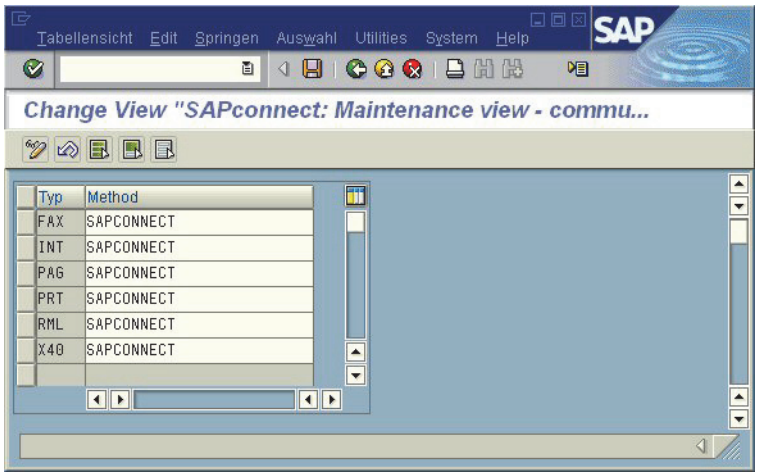
1. Push the **F3** function key to return to the SAP standard menu.
2. Enter the transaction code **/nSCON** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP standard menu > Tools > Administration > Administration > Process technology > SAPconnect** with a doubleclick.



3. In the window now open push the **Configuration** button.
4. Under *Overall setting* push the **Communication methods** button.



5. Make sure that for each media type to be exchanged between the XPR server and SAP system the **SAPconnect** method is specified.
   You can modify entries by pushing the **Display –> Change** icon. Select the method of the desired entry and subsequently the matching method via the associated selector icon.



6. Save the new settings with the **Save** icon in the toolbar.

You have now configured the communication method. We will continue with the format group settings.

Format groups setting

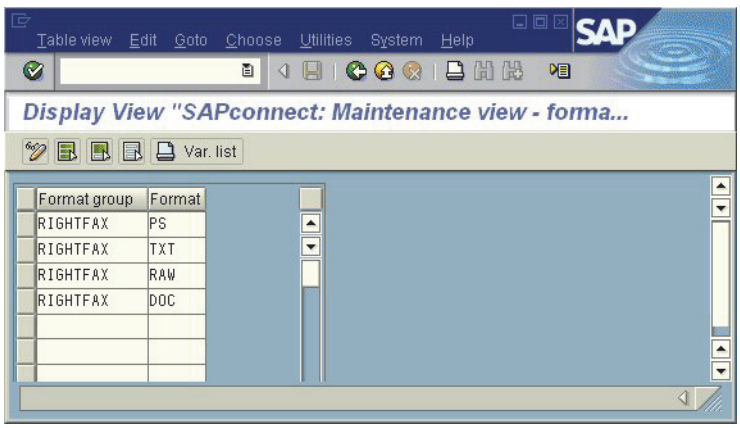
We will now perform the settings for the various format groups. Format groups settings are in other SAP versions often performed under the *node settings*.

A format group defines the formats into which SAP R/3 converts internal document formats before they are passed on to a specific node. The assignment of nodes and formats groups occurs later during the node configuration. Since we will assign a format group to each desired communication type (fax, Internet, etc.) there, the corresponding number of groups must be set at this point already. In the event that various communication types are set with the same formats, the number of format groups may be smaller.

1. Push the **Back** icon in the toolbar to return to the SAPconnect interface configuration.
2. Under *Overall setting* push the **Format groups** button.
3. Push the **Display–>Change** icon and subsequently the **New entries** button now available.

Define all required format groups with their respective formats, into which SAP converts internal document formats, before they are passed on to the node. Proceed as follows:

4. Enter a name for the new group in the **Format group** column.



5. Enter a format to be supported for the group in the **Format** column.

6. Continue this process until all format groups with their respective formats are defined.

IMPORTANT:
Do not configure a combination of the format types PS, PCL or PDF within a format group. This may lead to conversion problems.

We recommend defining the formats:

For the address type *Fax*:

- PS
- TXT
- RAW
- 'MS Office' formats (for example DOC)

For the address type *Internet*:

- TXT
- RAW
- 'MS Office' formats (for example DOC)
- PDF (may be useful for newer SAP R/3 versions).

If you want to send a document type via a node late on and this type has not been specified for its associating format group here, R/3 converts the respective document automatically into a format defined here. This, however, requires the definition of a corresponding conversion rule in the next section.

If the corresponding conversion rule has not been defined, SAP R/3 issues an error message.

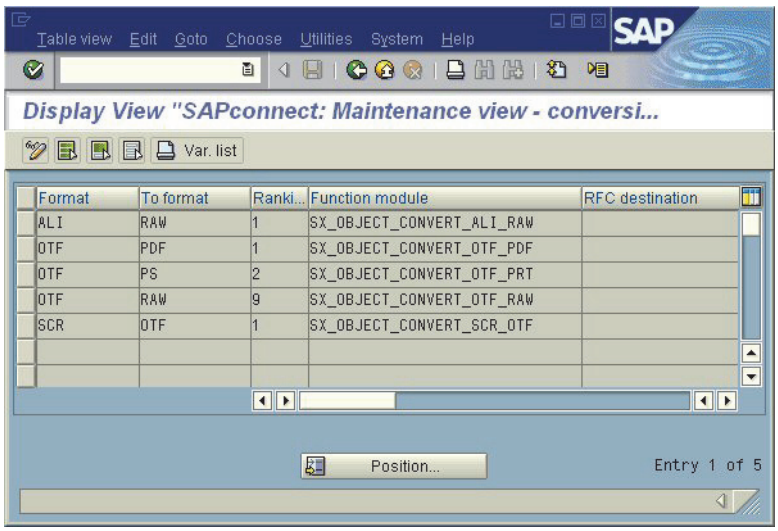
7. Confirm your modifications with the **Save** icon in the toolbar.

We will continue with the conversion rules settings.

Conversion rule settings

Conversion rules define into which formats SAP R/3 can convert documents to be sent. They are thus directly related to the format groups just configured.

1. Push the **Back** icon in the toolbar to return to the SAPconnect interface configuration.
2. Under *Overall setting* push the **Conversion rules** button.
3. If required perform special settings here.



NOTE:
Check the parameters configured here if you do not exclusively work with postscript format (PS).
If you want to use the PCL5 format as well, select a conversion rule with the desired original format and the destination format 'PS'. Click the **Copy as…** icon and change the destination format 'PS' to 'PCL'. Confirm your modification with the **Enter** icon (this simple supplementation works as for the formats 'PS' and 'PCL' the same SAP conversion module is used).
Via ranking (possible values are *1...9*) you can prioritize rules with the same original format.

4. Confirm your modifications with the **Save** icon in the toolbar.

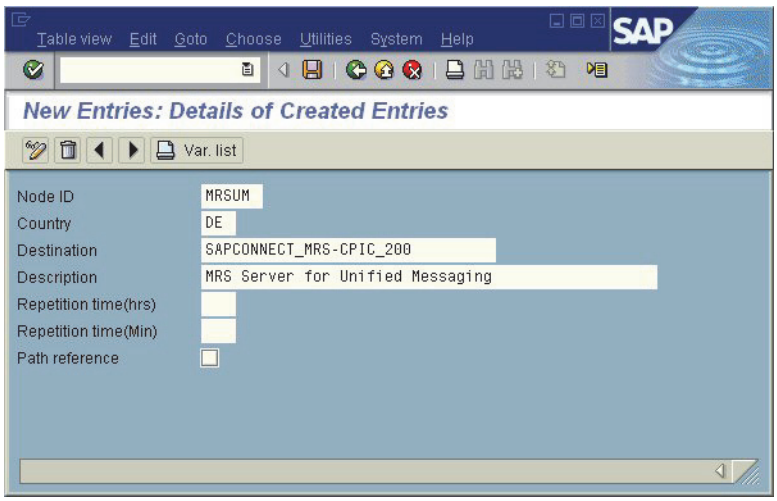
After configuring the format conversions we will now set the node.

Setting the node

SAP R/3 administers externally activated systems in logical format as so-called nodes. With configuring such a node, specifications are made as regards e.g. for which address area the active system is in charge, or which data formats are supported by it.

How to configure the XPR server as SAP node:

1. Push the **Back** icon in the toolbar to return to the SAPconnect interface configuration.
2. Under *Infrastructure* push the **Nodes** button.
3. Push the **Display–>Change** icon and subsequently the **New entries** button now available.
4. Enter a name for the new node in the **Node ID** field. The name must not exceed 6 characters.



5. In the **Country** field define the country token for the node. With a click on the selector icon at the end of the selected text field you can open a selection list to assist you in making this entry.
6. In the **Destination** field enter the RFC destination already defined. The selector icon is of help here as well.
7. In the **Description** field enter a short description for the node.

8. Save the newly set node with the **Save** icon in the toolbar.

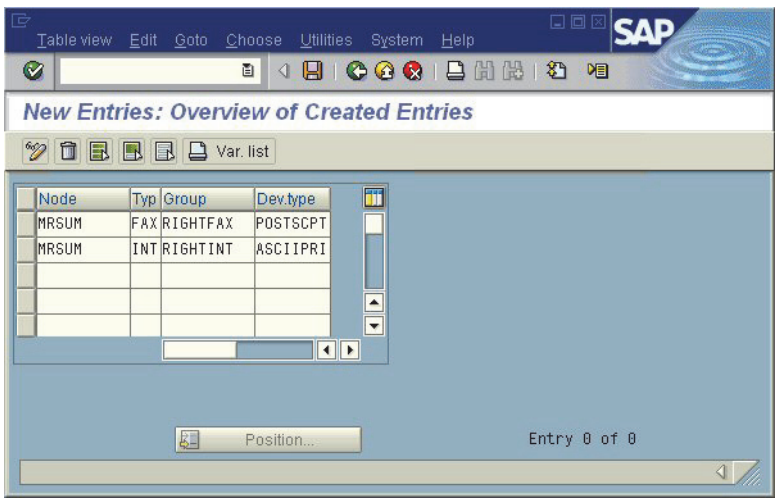
IMPORTANT:
To create a new node, a modification job must be present or newly defined.

---

9. Push **Continue**.

Some further node settings must still be performed. Proceed as follows:

1. Push the **Back** icon in the toolbar to return to the SAPconnect interface configuration.
2. Under *Infrastructure* push the **Node attributes** button.
3. Push the **Display–>Change** icon and subsequently the **New entries** button now available.
4. In the **Node** column enter the node previously set. With a click on the selector icon at the end of the selected text field you can open a selection list to assist you in making this entry.



5. In the **Type** column enter an address type for which our node is to be in charge. The selector icon is of help here as well.
6. In the **Group** column enter one of the previously configured format groups that defines the supported formats for the selected address type. The selector icon is of help here as well.
7. In the **Dev.type** column select a device for which SAPscript documents are prepared in SAP R/3 if a format conversion is carried out (for example to PS, PCF or PDF).
8. Continue in this way until all desired address types have been defined for our new node.

9. Save the newly set node with the **Save** icon in the toolbar.

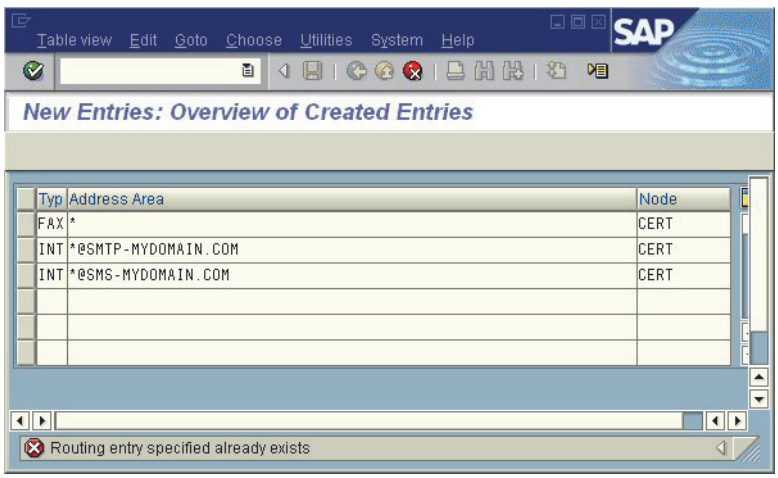
IMPORTANT:
To create a new node, a modification job must be present or newly defined.

Setting the node has thus been accomplished. We will continue with the routing definition.

Setting the routing

This type of configuration determines which messages are sent from SAP R/3 via which node.

1. Push the **Back** icon in the toolbar to return to the SAPconnect interface configuration.
2. Under *Infrastructure* push the **Routing** button.
3. Push the **Display–>Change** icon and subsequently the **New entries** button now available.
4. In the **Type** column enter an address type our node is to route. With a click on the selector icon at the end of the selected text field you can open a selection list to assist you in making this entry.



5. In the **Address Area** column define an address area that specifies for which addresses of the previously selected address type our node is to take on the routing.
   We do not restrict the fax message area in our configuration. In the case of the Internet service our node solely routes messages with the two specified domain descriptions.

   For the filter entry structure the following formats apply:

   - Address type *FAX*:
     <country code><optional digit string><optional wildcard character ''>*

     Example: *DE02402**
     All fax messages beginning with the number string 49*2402* are handed over to this node by the SAP system.

     A filter hit occurs after the longest precise match. In our environment we want the fax messages of all calling numbers be passed on to the XPR server. Therefore we enter '*' as address area.

   - Address type *INTERNET*:
     At this point you can use filter formats to configure an intelligent e-mail routing via the XPR server.
     With our configuration you can, for example, send an e-mail with the target address *<cellphone number>@sms.mydomain.com* to the XPR server, which transmits the information contained in the e-mail as short message into the public network.
     By defining the corresponding routing rules/address conversions in the XPR server, the individual address structures are adapted to the common address formats. You find continuative information on generating such routing rules in the *OpenScape Xpressions Server Administration* manual.

   For the addressing schemes of the various addressing types compare Section 3.2.1, “Address Formats and ANI Hits”, on page 39.

6. Repeat the configuration steps 4 and 5 until at least one address range is specified for each address type defined in the node properties.

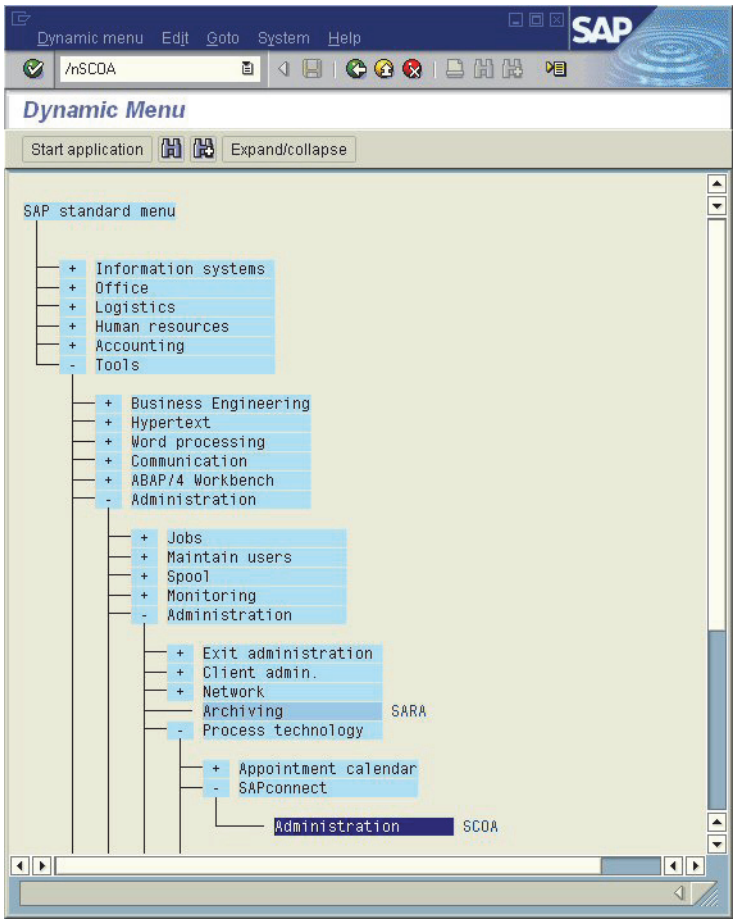
7. Save the new settings with the **Save** icon in the toolbar.

Setting the routing has thus been accomplished. We will continue with the SAP job setting.

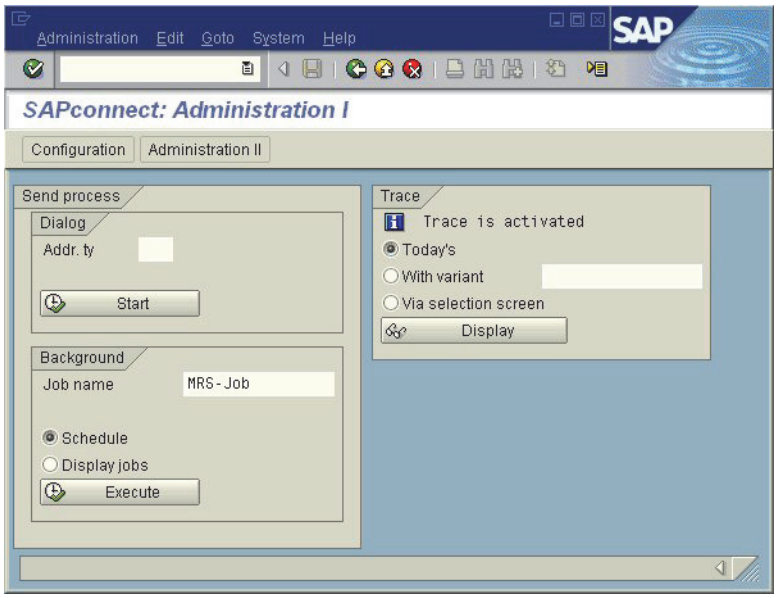
Job setting

In the background of SAP R/3 the SAPconnect job is in charge of sending ready-to-transmit messages to external systems (nodes). How to configure a job:

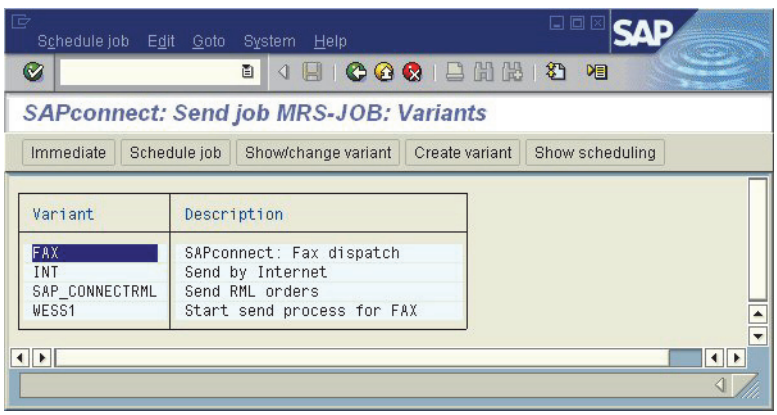
1. Push the **F3** function key to return to the SAP standard menu.
2. Enter the transaction code **/nSCOA** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP standard menu > Tools > Administration > Administration > Process technology > SAPconnect** with a doubleclick.



3. In the **Job name** field enter a name for the new job.

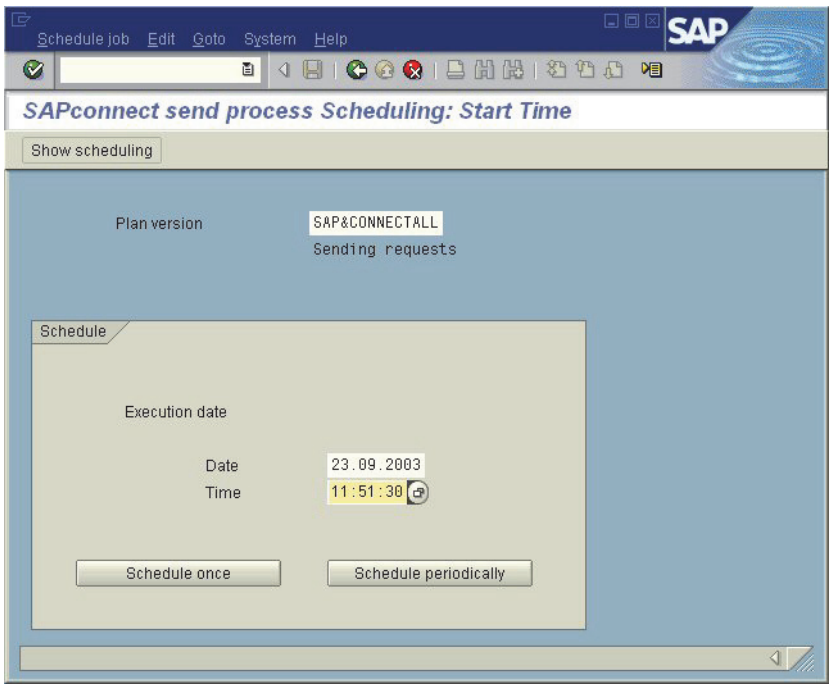


4. In the *Background* portion select the **Schedule** option.
5. Push the **Execute** button.
6. Select variant **FAX** to have all due fax messages sent by the new job.



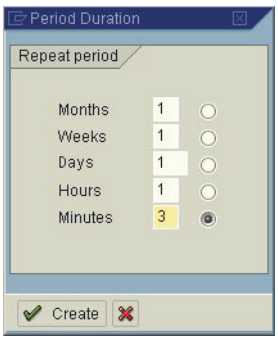
NOTE:
By selecting or configuring (**Create variant**) another job variant you can also create SAP jobs for other tasks. For example, a job that sends all due messages of all address types.

7. Push the **Schedule job** button.
8. In the **Date** and **Time** fields specify the first execution of the new job.



IMPORTANT:
Check the automatically generated entry in the **Time** field, which displays the start time of the job.
Since the SAP system waits with the initial start of the job until one hour after the job's configuration, change the suggested entries to an earlier time.

9. Select the **Schedule periodically** option and set the **Repeat period** in the now open dialog.



IMPORTANT:
A repeat period selected too short may overload the SAP application server and lead to performance losses in the SAP operation.
Useful is a setting between three to five minutes. In the end it is always a compromise between the desire to send a new message as quickly as possible, and not calling on the system for message transmissions too strongly.

10. Confirm your settings with the **Create** button.

Now you have defined an SAPconnect job for fax message transmission. The configuration of a postmaster account under SAP R/3 comes next.

Postmaster configuration

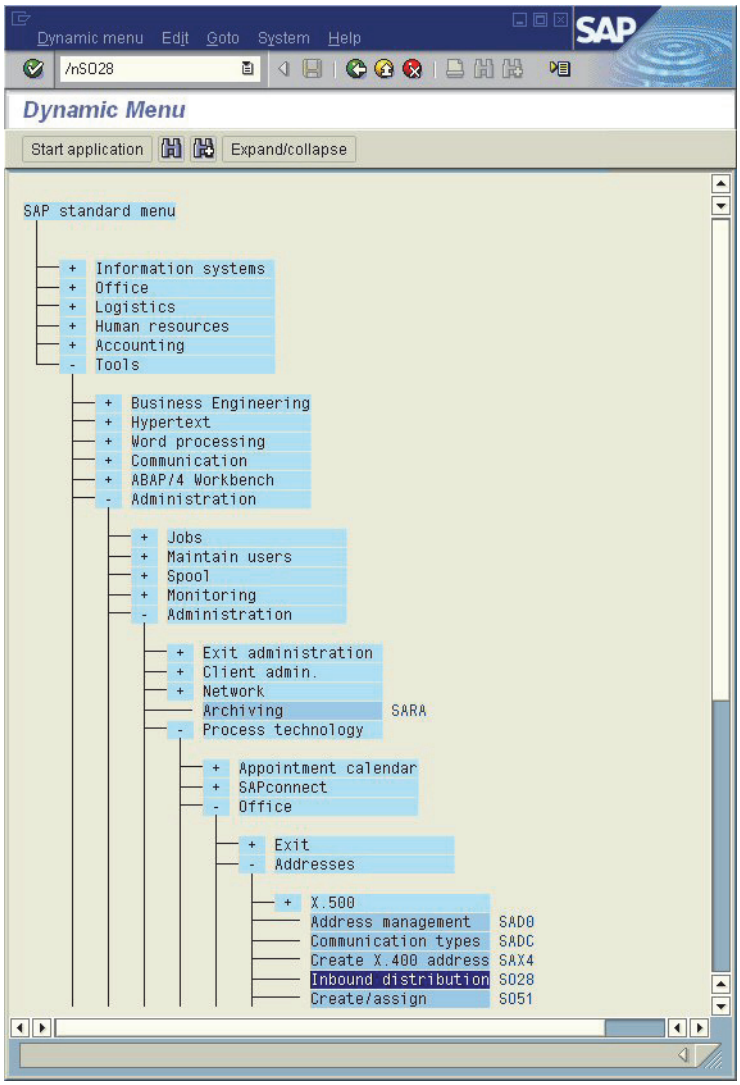
SAP R/3 only accepts messages from external systems if message delivery to an SAP user is possible.

If a message is addressed to a user unknown in SAP R/3, the message is rejected in case of a missing postmaster account. If, however, such a postmaster has been configured for the respective message type, an otherwise undeliverable message can be routed to this configured postmaster account.

How to configure the required postmaster:

1. Push the **F3** function key to return to the SAP standard menu.

2. Enter the transaction code **/nSO28** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP standard menu > Tools > Administration > Administration > Process technology > Office > Addresses > Inbound distribution** with a doubleclick.



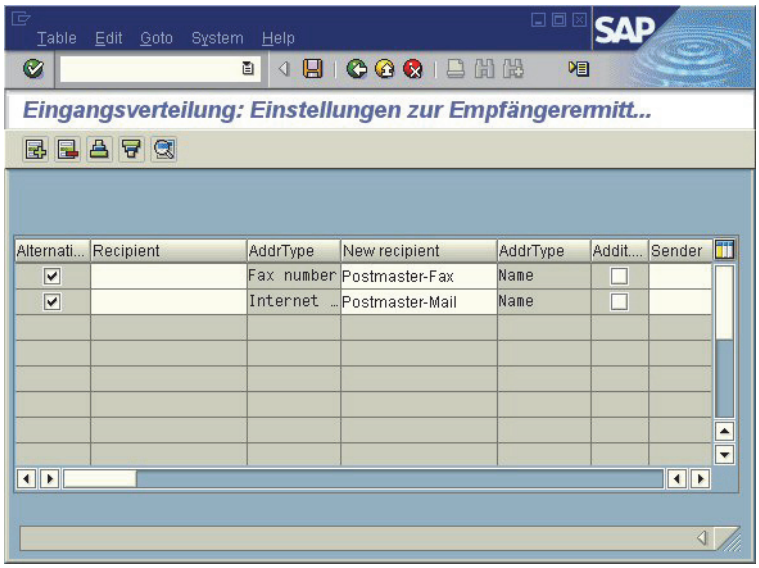
3. Push the **Add Row** icon in the toolbar.

4. In the table perform the following settings from left to right:

   AddrType: *<Address type of the messages for which this user is to take on the postmaster function>*

   New recipient: *<Name of the SAP user that you want to define as postmaster>*

   AddrType: Name



NOTE:
For each message type to be passed on by the XPR server to the SAP R/3 system, an associated postmaster should be configured.
In this example, two SAP users were previously defined with the alias names **Postmaster-Mail** and **Postmaster-Fax** under SAP R/3. You can however define any SAP user for the postmaster function.

5. Select the **Alternative** option for each postmaster.

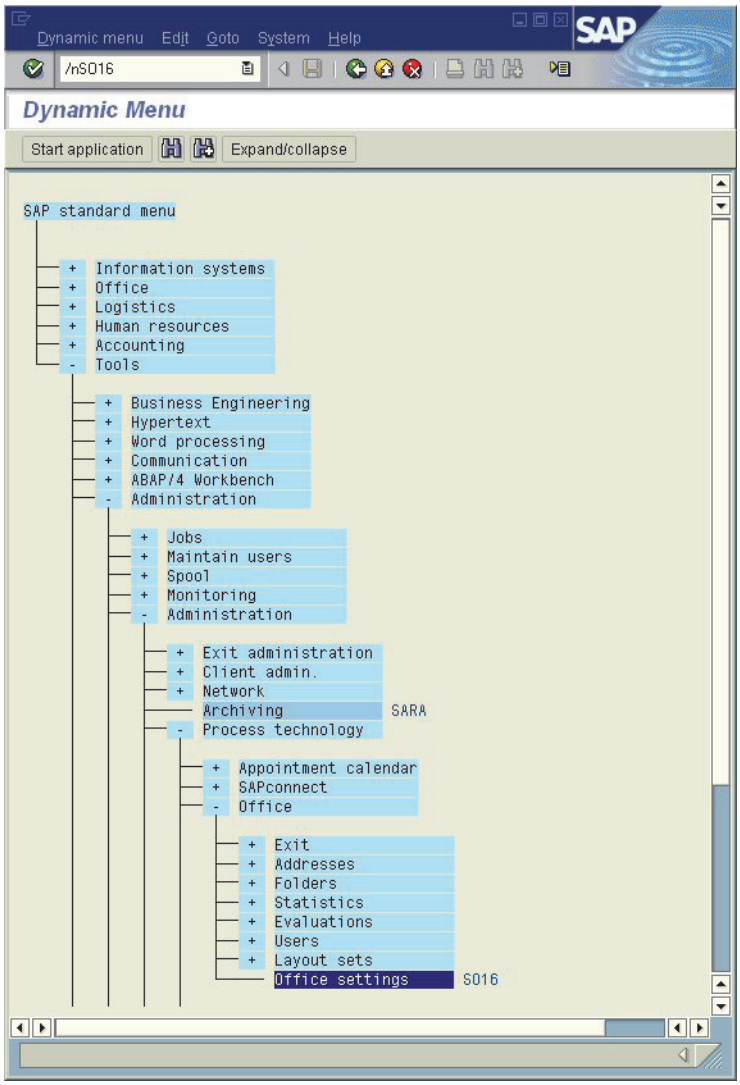
You have thus defined postmasters for the message types **Internet** and **Fax** to who all undeliverable messages of the associating type can be routed.

Now the privileges for external sending of messages from the *SAPoffice* need to be configured.

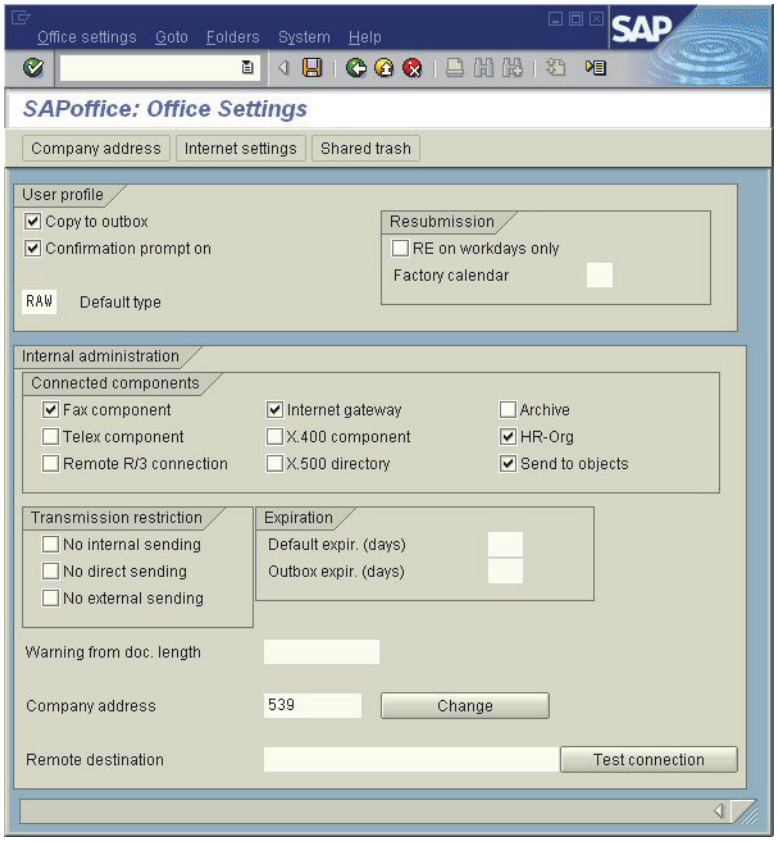
Checking the external send privileges for *SAPoffice*

The privileges for external message sending from *SAPoffice* need to be checked now.

1. Push the **F3** function key to return to the SAP standard menu.
2. Enter the transaction code **/nSO16** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP standard menu > Tools > Administration > Administration > Process technology > Office > Office settings** with a doubleclick.



3. Make sure that all required components are selected in the *Internal administration: Connected components* portion.



At least those components must be active that correspond to the message types previously defined by you in the node configuration. In our case these are:

- the **Fax component** for sending fax messages,
- the **Internet gateway** for sending e-mails.

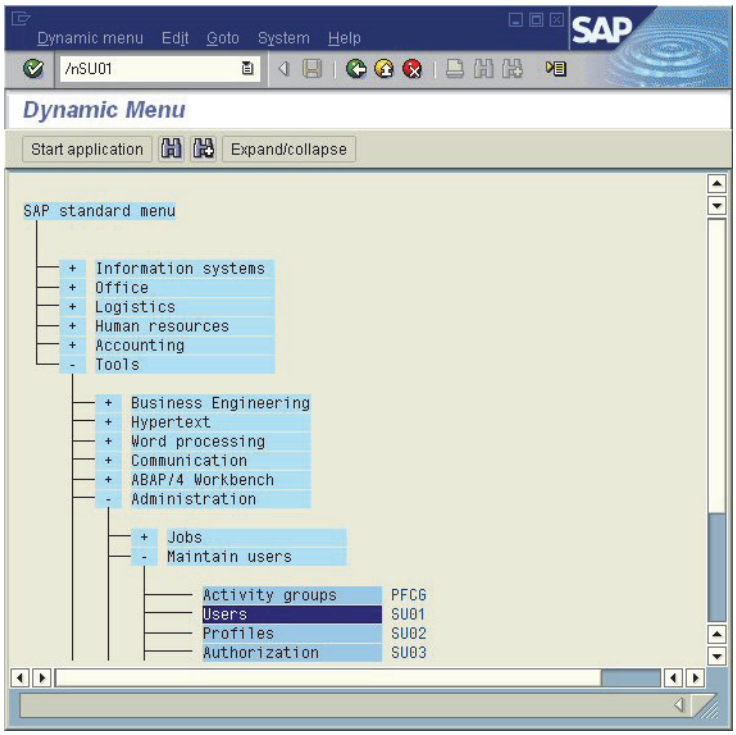
NOTE:
If you cannot select required options, consult your SAP system administrator for activating them.

Now you have made sure that messages can be sent from within *SAPoffice*. Next in the configuration is setting the SAP user profile.

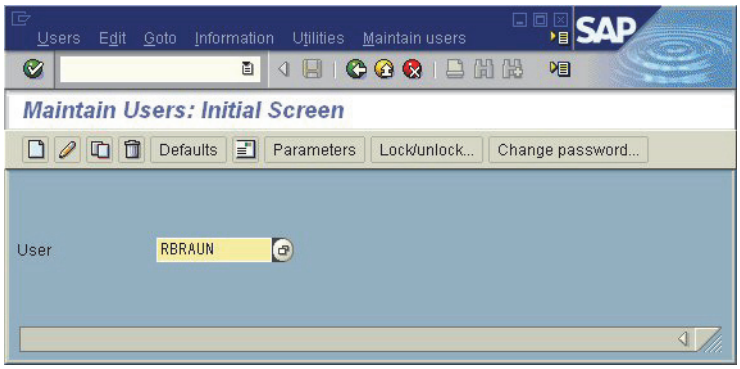
SAP user profile setting

To ensure the correct delivery of messages between XPR server and SAP, the SAP profile of our example user must be adapted. Proceed as follows:

4. Push the **F3** function key to return to the SAP standard menu.
5. Enter the transaction code **/nSU01** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP standard menu > Tools > Administration > User Maintenance > Users** with a doubleclick.



6. In the **User** field enter a user name for the virtual CPI-C user and push the **Create** icon in the toolbar. In the **User** field enter the user name the profile of which you want to customize and click the **Change** icon in the toolbar.



NOTE:
If you want to adapt the profile under which you are currently logged in to SAP R/3, enter the transaction code **/nSU1** to be directly taken to the configuration form of the logged-in profile.

7. Enter the corresponding data in the associating contact fields (for example Fax number and E-mail address) for the previously configured message types.

   SAP recommends using the following address formats:

   - for **Fax:** <*area code*>/<*main station*>–<*extension*>
   - for **SMS:** SMS:<*cellphone number*>.

You have thus accomplished the SAP system adjustment.

Continue with performing the still required XPR server settings in the next section.

4.5.4.4 XPR Server System Adjustments

After adapting the SAP system, you now need to perform some XPR server settings. We start with extending the XPR user database.

Extending the XPR user database

For the XPR-SAP integration, a new field must be added to the XPR user database. Proceed as follows:

1. Start the auxiliary program `InfoTool.exe` from the directory <*XPR Install*>`\SDKTools\` with the command line:
   `infotool maskexport file=export.txt`.

   NOTE:
   The InfoTool is among other things used for editing the XPR user database. With the program call
   `infotool maskexport file=export.txt`
   the correlation database structure is exported to the `export.txt` text file. In this format it can be edited and later be reimported modified to the XPR server by the InfoTool command parameter **maskimport**.
   You find detailed information on the InfoTool in the *OpenScape Xpressions Server Administration* manual.

2. Open the text file generated in the `SDKTools` directory with the Windows editor and look for the *$mask USER* entry.

3. Insert the new *SAPR3APC* database field for example under the **QUOTAUSED** entry followed by 50 '#' characters. This defines the new **SAPR3APC** field with a display length of 50 characters in the user mask.

NOTE:
The database field description results from the logical line realized by the SAP3APL. SAPR3APC is composed of the APL name and the short name defined on the XPR server with the SAPR3 APL configuration (cf. *Section 4.5.3.4, "SAPR3 APL settings", on page 98*).

$mask `USER`

```
[…]
QUOTAUSED   ##############
APR3APC     ##################################################
LMACCOUNT   ##################################################
PAGER_01    ##################################
[…]
```

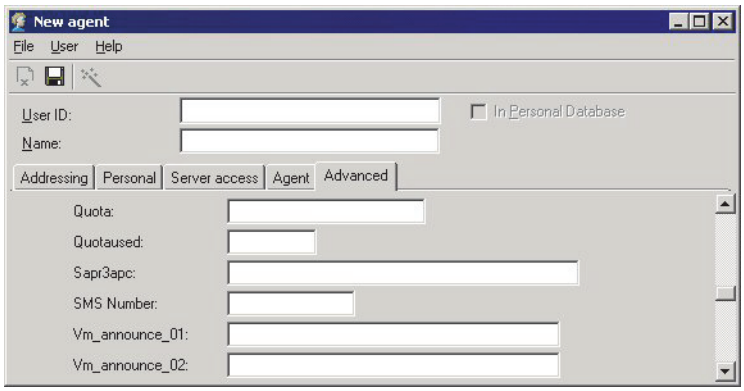
4. In the `export.txt` file look for the *$attrib* entry.
5. For reasons of clarity insert the new **SAPR3APC** database field followed by 'CHAR' under the QUOTAUSED entry, too. This defines that the new field may contain one character of type *CHAR* per '#' character.

*$attri*b

```
[…]
QUOTAUSED   PSUPER,CHAR
SAPR3APC    CHAR
SMS         DNO,PSUPER,HIDE,CHAR,UNIQUE
SMS#        DNOREAD,CHAR
[…]
```

6. Restart the `InfoTool.exe` auxiliary program from the *<XPR Install>*`\SDKTools\` directory. This time with the command line: `infotool maskimport file=export.txt`.

7. If you define a new user, for example via the XPR client application *Communications*, the new field ***Sapr3apc*** is displayed in the ***Advanced*** tab.



The user database modification is thus accomplished and we can now move on to the user entry maintenance.

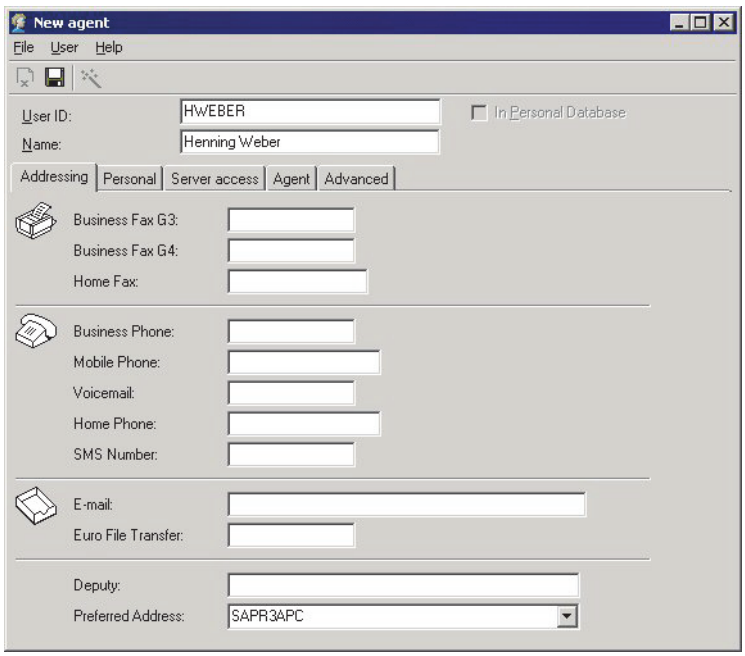
Maintaining user entries in the XPR database

SAP users who are to receive messages via the XPR server must also be present in the XPR database. Furthermore, special entries must be made for them. These settings can be performed in different ways (cf. Section 3.2.2, “User Profile Replication”, on page 42). In our example we will perform this configuration manually.

Proceed as follows:

1. Log in to *Communications* as administrator.
2. Select from the menu bar **File > New > User** to define a new XPR user.
3. Switch to the *Addressing* tab.

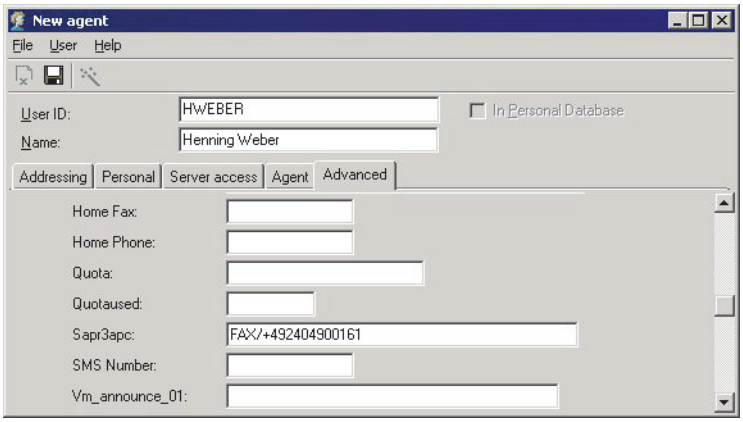
4. In the **User ID** field enter a user ID for the new user.



IMPORTANT:
If manually defined XPR users are to operate under the 'AutoLearn' mode late on, the XPR user name (Name) must be created correspondingly to the automatic generation by 'AutoLearn' (cf. Section 3.2.2.4, "XPR Server 'AutoLearn'Mode", on page 44). If you do not respect this, 'AutoLearn' will create another profile for each SAP user manually defined in the XPR server.

5. In the **Name** field enter the user name at length if required.
6. In the **Preferred Address** field select *SAPR3APC*.
7. Switch to the *Advanced* tab.

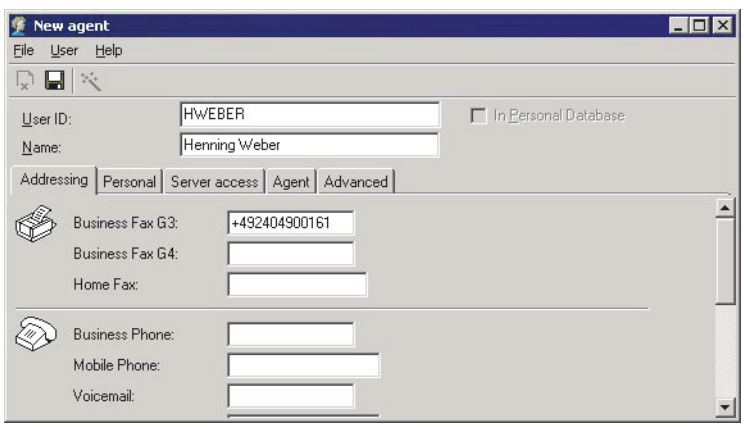
8. In the **Sapr3apc** field enter the user's SAP fax address.



The address comprises of:

- The service token 'FAX'
- A '/'
- The leading plus sign
- The normalized fax number

9. Switch to the *Addressing* tab and enter in the **Business Fax G3** field the user's fax number in the described format. This time, however, without the service token.



NOTE:
The fax number entered here must match the one in SAP R/3. Furthermore, it must be within the calling number range defined for the voicemail script in the ISDN APL.

The configuration of the Unified Messaging solution is thus complete. A short system test will be performed in the next section.

4.5.5 Conclusive Unified Messaging System Test

To test the system we send and receive a fax each. In this way we can test fax transmission and receiving under SAP R/3 and see whether the XPR server correctly routes the message.

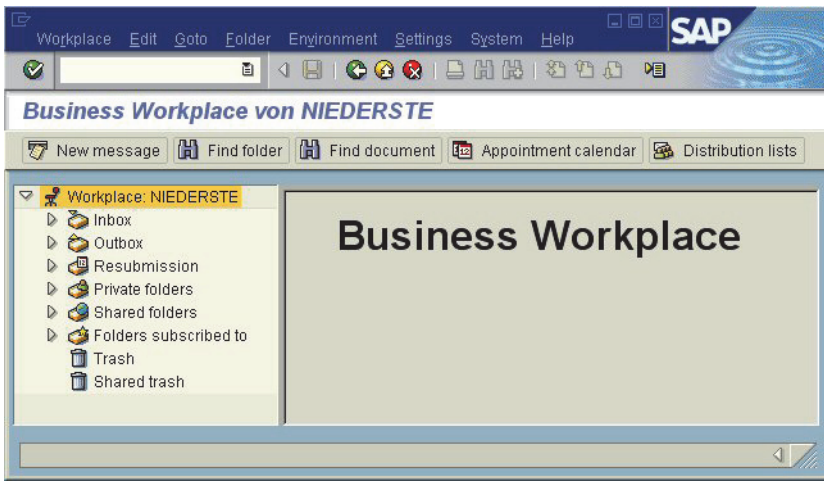
This part is divided into the following sections:

- Test under CRM 3.1/R/3 4.6C
- Test under SAP R/3 3.1i.

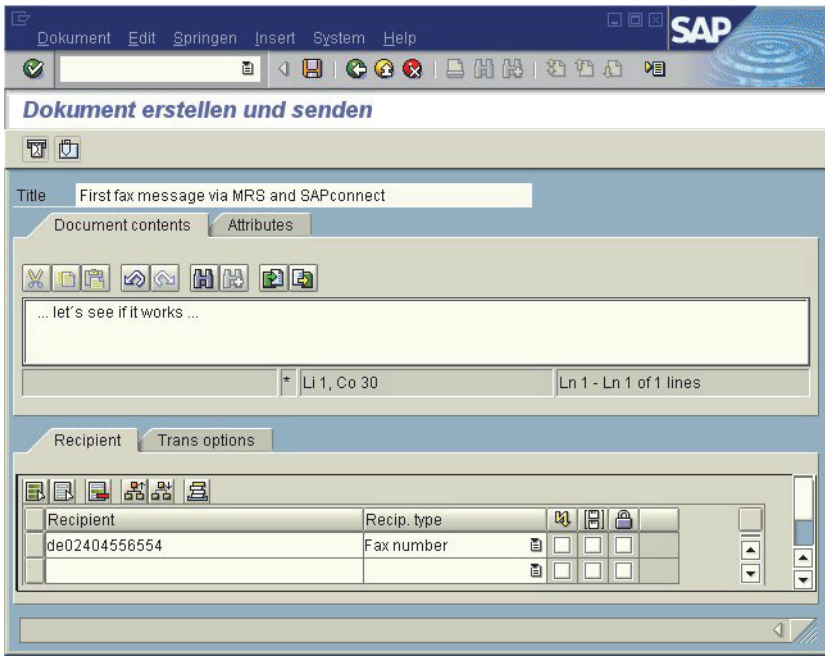
4.5.5.1 Test under CRM 3.1/R/3 4.6C

In the following we describe a short system test of the Unified Messaging solution for the SAP versions CRM 3.1 and R/3 4.6C. In this test we send a message from the SAP R/3 *Business Workplace*.

1. Select the **SAP Business Workplace** icon in the toolbar of the SAP user menu to switch to the *SAP Business Workplace*.
2. Select the **New message** icon in the toolbar.



3. Enter a short text in the **Title** and **Document contents** field each.



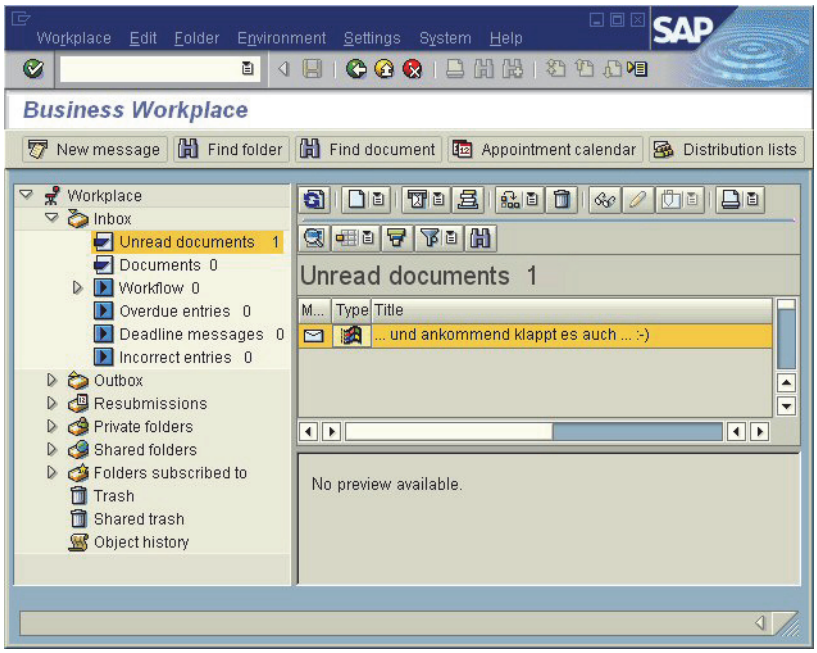
4. Under **Recipient** enter the **fax number** of the fax device you want to send the message to. Make sure that the calling number format is correct!
5. For the Recip. type select the **Fax number** option.
6. Select the **Send** icon in the toolbar.

Since we do not want to wait for the automatic transmission of the new message from the SAP system to the XPR server at this point, we manually trigger our previously configured job:

7. Switch to the SAPconnect interface display as follows:
   - *CRM version 3.1:*
     Enter the transaction code **/nSCON** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Business Communication > Communication > SAPconnect** with a doubleclick.
   - *SAP R/3 version 4.6C:*
     Enter the transaction code **/nSCOT** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Tools > Business Communication > Communication > SCOT–SAPconnect** with a doubleclick.
8. In the **View** menu of the opened dialog select the **Jobs** option.
9. Select the **Start send process** icon in the toolbar to initiate the manual fax transmission.
10. Select address type **Fax** in the dialog now open.
11. Confirm your selection with the **Continue** button.
12. A new fax message will shortly arrive at the fax device.

After the transmission of a fax message from within SAP R/3 we will now send a fax to our SAP user. Proceed as follows:

1. Send a fax to our test user's calling number from a fax device.
2. In the *Business Workplace* select the **Inbox > Unread documents** folder and check the arrival of the new fax message.



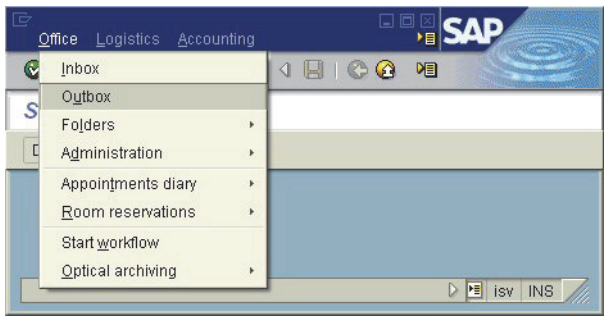
If all configurations have been performed correctly, a new fax appears in the inbox.

Thus you can send as well as receive incoming fax messages.

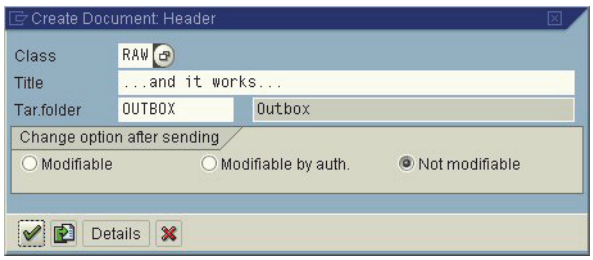
4.5.5.2 Test under SAP R/3 3.1i

In the following we describe a short system test of the Unified Messaging solution for the SAP-R/3 version 3.1i. In this test we send a message from the *SAPoffice*.

1. After logging in to the SAP application server select the **Office > Outbox** option.

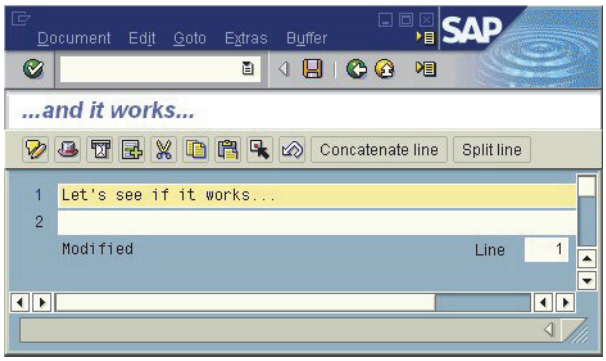


2. Select the **Create** icon in the toolbar. The dialog for creating a new message opens.
3. In the **Class** field enter the *RAW* document type.

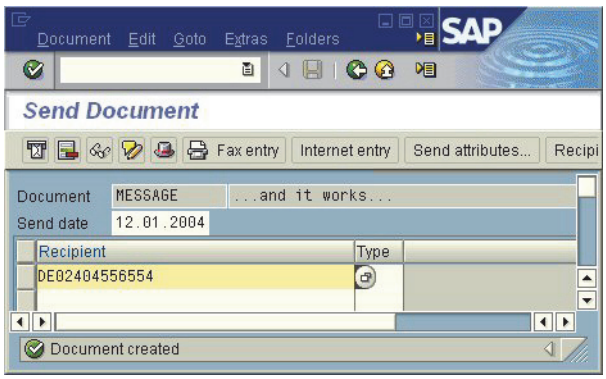


4. In the **Title** field specify a subject line for the new message.
5. Make sure that ***OUTBOX*** is selected as ***Target folder***.
6. Push the **Continue** button.

7. Enter a short message and subsequently select the **Send** icon in the toolbar.



8. Under **Recipient** enter the desired target calling number of the fax device you want to send the message to. Make sure that the calling number format is correct!

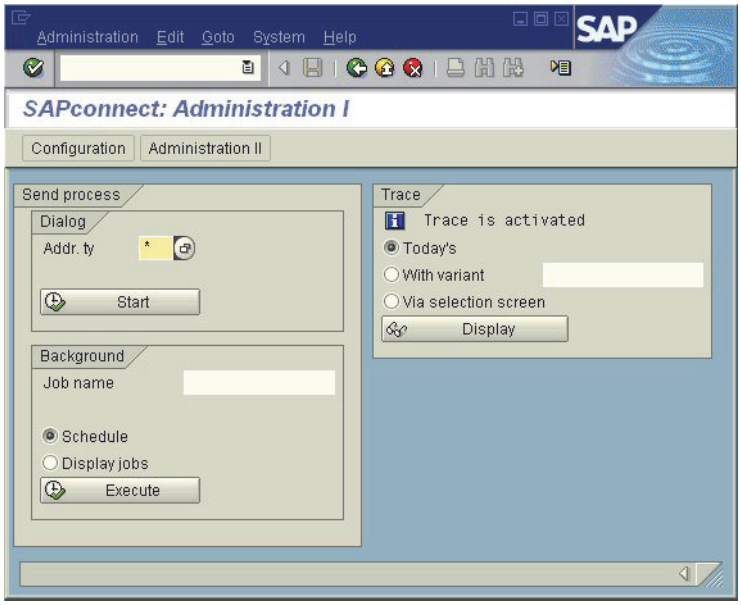


9. Select the **Send** icon in the toolbar.

Since we do not want to wait for the automatic transmission of the new message from the SAP system to the XPR server at this point, we manually trigger our previously configured job. Proceed as follows:

10. Enter the transaction code **/nSCOA** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP standard menu > Tools > Administration > Administration > Process technology > SAPconnect** with a doubleclick.

11. In the **Addr.type** field enter the joker character '* . In this way SAP transmits the new messages of all address types to the respective nodes.



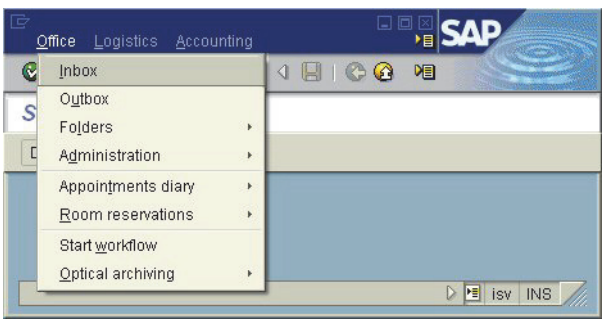
12. Push the **Start** button.

13. A new fax message will shortly arrive at the fax device.

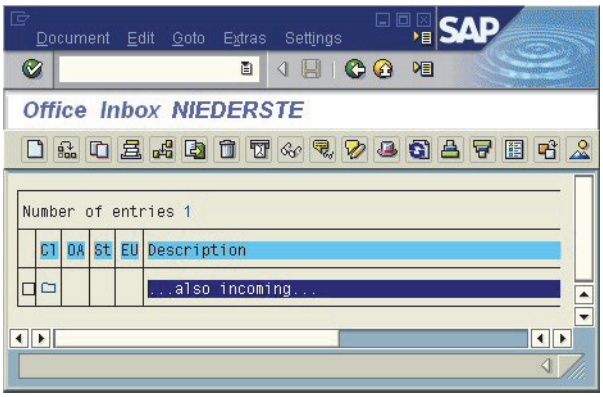
After the transmission of a fax message from within SAP R/3 we will now send a fax to our SAP user. Proceed as follows:

1. Send a fax to the test user's calling number from a fax device.

2. After logging in to the SAP application server select the **Office > Inbox** option in the menu bar and in *SAPoffice* the **Folders > Outbox** option in the menu bar.



3. Select the **Total** button to display all new incoming messages.



If all configurations have been performed correctly, a new fax appears in the *SAPoffice* inbox.

Thus you can send as well as receive incoming fax messages.

4.6 Configuring Unified Messaging via *SMTP Interface*

This section describes the concept of an XPR-SAP integration via the SMTP interface and its configuration in the XPR server and SAP system.

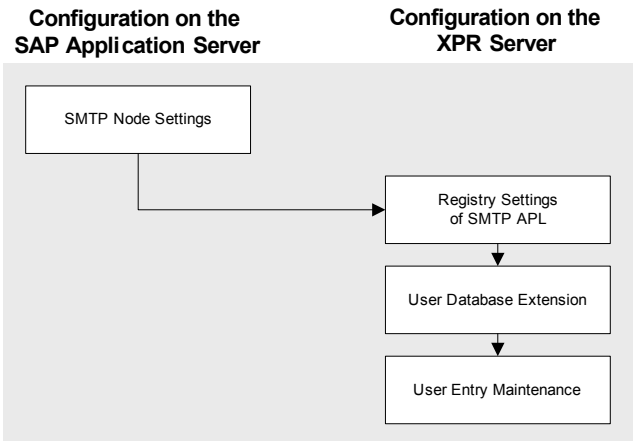
For the following configuration we assume a running SAP system and an XPR server with installed SMTP APL. Furthermore, a possibly available firewall must be configured in a way that the SMTP Relay server can send messages.

4.6.1 General Integration Concept

The SAP system can use the SMTP interface to directly communicate with an external SMTP server. It is thus able to send outbound fax and SMS messages of SAP users and receive fax and SMS messages that arrive for SAP users.

In the course of the next sections we will connect the SAP system to the XPR server via the SMTP interface. In this process an SMTP Relay server that receives messages from the SAP system and forwards them to the XPR server shall be used. Such a Relay server may be an available Exchange server.

The following flow chart provides a first overview of the steps required for the configuration and described in detail on the pages to follow.



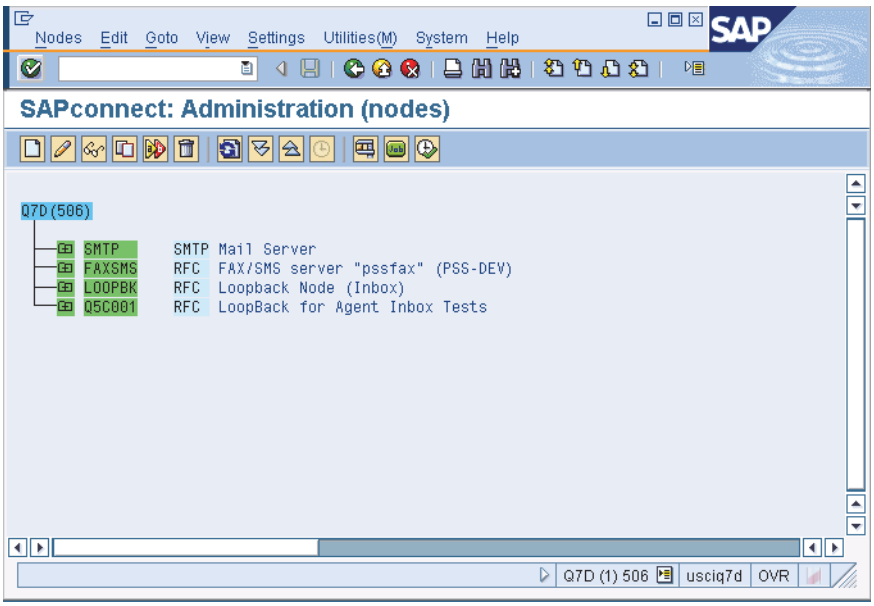
After this first overview we begin with the SAP system configuration. The description documents the configuration for the CRM version 4.0 (basis 6.20).

4.6.2 Configuring the SAP System

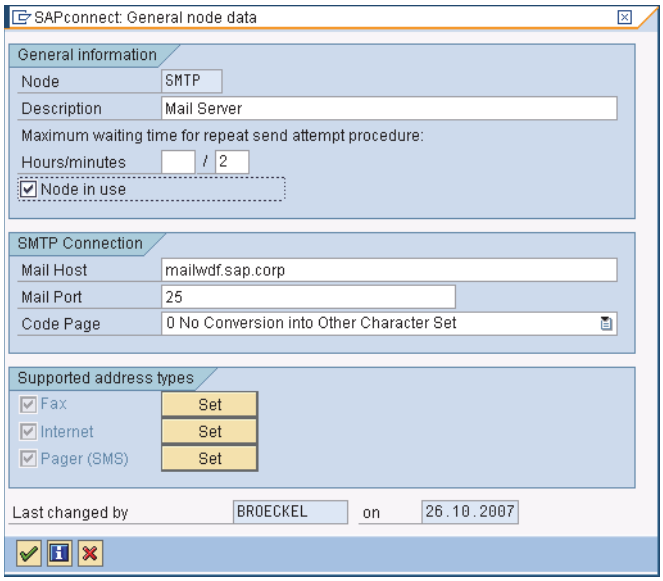
On the SAP system you only need to configure the SMTP node of the SAP system for the connection via the SMTP interface.

Proceed as follows:

1. Log on to the SAP application server via the SAPGUI.
2. Enter the transaction code **/nSCON** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Business Communication > Communication > SAPconnect** with a doubleclick.
3. In the **View** menu of the dialog now open select the **Node option**.



4. Select the existing node **SMTP** with a doubleclick.



5. In the **Description** field enter a short description for the node respectively the active system.

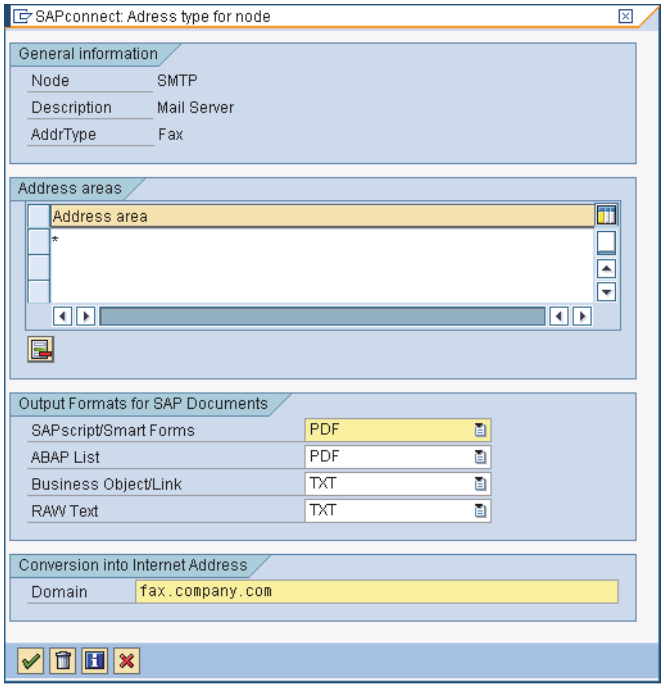
6. Enter in the **Mail Host** field the IP address under which the server SMTP Relay server is reached. You can also specify the fully qualified name of the SMTP Relay server as alternative.

NOTE: A possibly available firewall must be configured in a way that the SMTP Relay server can send messages.

---

7. Verify that the **Node in use** option is inactive.

8. Select under **Supported address types** the **Set** button for the **Fax** address type.



9. Enter under **Adress areas** the address areas for which SAP R/3 is to send messages to the XPR server for transmission.

NOTE:
At this point you can use filter formats to configure an intelligent message routing via the XPR server.
By defining the corresponding routing rules/address conversions in the XPR server, the individual address structures are adapted to the common address formats.
You find continuative information on generating such routing rules in the *OpenScape Xpressions Server Administration* manual.

---

10. Specify under **Output Formats for SAP Documents** the default formats into which SAP R/3 converts internal document formats before they are transferred to the node.

IMPORTANT:
The conversion settings made here only concern some of the SAP - individual formats – namely SAPScript (SCR) and ABAP Listen (ALI). Further options are later accessible with the node maintenance.
Message attachments of all other formats are passed on to the node transparently in the format present.

---

11. Enter the domain for the XPR server under **Domain**.
12. Confirm the settings with the **OK** button of the dialog.
13. Set for all further desired address types the default formats by selecting the respectively associated **Set** button.
14. Confirm the node settings with the **OK** button of the dialog.

You have now configured the SMTP node of the SAP system.

4.6.3 XPR Server Configuration

For the connection via the SMTP interface you now need to configure the SMTP APL of the XPR server.

Proceed as follows:

Configuring registry values for the SMTP APL

1. Start the registry editor on the XPR server computer system.
2. Switch to the directory:

   `HKLM\SOFTWARE\Wow6432Node\PP-COM\MRS\SmtpApl`
3. Verify that value **1** has been entered in the **SAP_Enable** registry value.

   This setting activates the SMTP interface in the SMTP APL.
4. Specify in the **DefaultSapUsers** registry value entries of the following format:

   <*default user*>;<*domain*>

   These entries have the following function:
   If a message is sent via the SMTP APL the originator of which is unknown in the XPR server, the SMTP APL uses the settings of the specified default user to send the message. Such settings may be e.g.: fax stationery or send privileges.
   Individual default users can be defined for different address domains via the domain specification.

   Example:
   `EnterpriseSmtpUser;Enterprise.com`
   `CycosSmtpUser;Cycos.com`

You have now configured the registry values for the SMTP APL.

Extending the XPR user database

For the XPR-SAP integration, a new field must be added to the XPR user database. Proceed as follows:

1. Start the auxiliary program `InfoTool.exe` from the directory *<XPR Install>*`\SDKTools\` with the command line:
   `infotool maskexport file=export.txt`.

   NOTE:
   The InfoTool is among other things used for editing the XPR user database. With the program call
   `infotool maskexport file=export.txt`
   the correlation database structure is exported to the `export.txt` text file. In this format it can be edited and later be reimported modified to the XPR server by the InfoTool command parameter **maskimport**.
   You find detailed information on the InfoTool in the *OpenScape Xpressions Server Administration* manual.

2. Open the text file generated in the `SDKTools` directory with the Windows editor and look for the *$mask USER* entry.

3. Insert the new **SAPSMTP** database field for example under the *QUOTAUSED* entry followed by 50 '#' characters. This defines the new **SAPSMTP** field with a display length of 50 characters in the user mask.

```
$mask USER
[…]
QUOTAUSED   ###############
SAPSMTP     ##################################################
LMACCOUNT   ##################################################
PAGER_01    ##################################
[…]
```

4. In the `export.txt` file look for the *$attrib* entry.
5. For reasons of clarity, insert the new **SAPSMTP** database field followed by 'CHAR' under the QUOTAUSED entry, too. This defines that the new field may contain one character of type *CHAR* per '#' character.

```
$attrib
[…]
QUOTAUSED   PSUPER,CHAR
SAPSMTP     CHAR
SMS         DNO,PSUPER,HIDE,CHAR,UNIQUE
SMS#        DNOREAD,CHAR
[…]
```

6. Restart the `InfoTool.exe` auxiliary program from the *<XPR Install>*`\SDKTools\` directory. This time with the command line: `infotool maskimport file=export.txt`.
7. If you define a new user, for example via the XPR client application *Communications*, the new field ***SAPSMTP*** is displayed on the ***Advanced*** tab.

The user database modification is thus accomplished and we can now move on to the user entry maintenance.

Maintaining user entries in the XPR database

SAP users who are to receive messages via the XPR server must also be present in the XPR database. Furthermore, special entries must be made for them. In our example we will perform this configuration manually.

Proceed as follows:

1. Log in to *Communications* as administrator.
2. Select from the menu bar **File > New > User** to define a new XPR user.
3. Switch to the *Addressing* tab.

4. In the **User ID** field enter a user ID for the new user.
5. In the **Name** field enter the user name at length if required.
6. In the **Preferred Address** field select *SAPSMTP*.
7. Switch to the *Advanced* tab.
8. In the **SAPSMTP** field enter the user's SAP fax address.
9. Switch to the *Addressing* tab and enter in the **Business Fax G3** field the user's fax number also.

NOTE:
The fax number entered here must match the one in SAP R/3. Furthermore, it must be within the calling number range defined for the voicemail script in the ISDN APL.

Configuring the SMTP interface is thus complete.

4.7 Configuring CTI via *SAPphone*

This section describes the general concept of a CTI integration via the SAPphone interface and its configuration in the XPR server and SAP system.

The below user interfaces of the various SAP R/3 versions are very different from each other. Therefore, we cannot document a version-spanning user guide for the configuration steps at this point. and have divided the SAP system configuration in two parts:

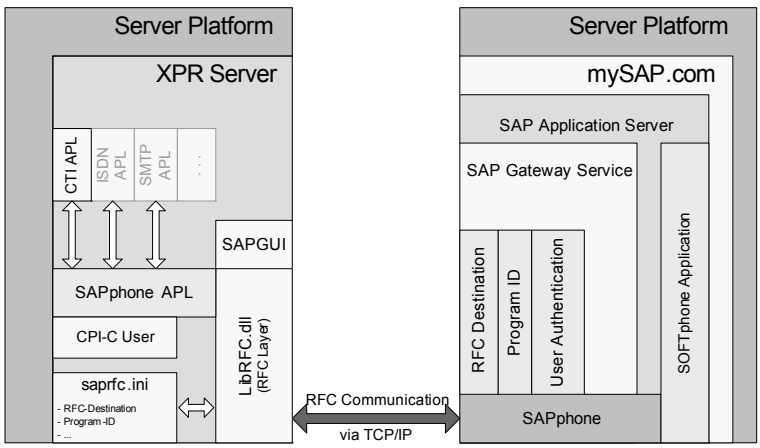
- Configuration under CRM 3.1 (Basis 6.20)
- Configuration under SAP R/3 Version 4.6C.

For the configuration we assume a running SAP system. Furthermore, the SAPPHONE APL must already be installed on the XPR server, since in the following only its configuration will be described. You will find information on the APL installation in Section 4.4, “Installing SAP APLs on the XPR Server”, on page 62.

First, however, some information on the conception of a SAPphone connection in the environment of a CTI solution will be given.

4.7.1 *SAPphone* Communication Structure

The following figure provides an overview of the communication structure via the SAPphone interface:



Like the SAPconnect interface, the SAPphone communication is also based on RFCs of the RFC transport layer. This layer is realized on the XPR server by the `LibRFC32.dll` and configured by the `saprfc.ini` configuration file.

As with connecting via the SAPconnect interface, a CPI-C user with system privileges is called on for authentication on the SAP R/3 side to enable the information exchange between the XPR server and SAP system.

Compared to the communication via the SAPconnect interface, an additional XPR component, the CTI APL, is used. This APL realizes the CTI functionalities and provides the external CTI communication of the XPR server with a PBX. It monitors the status of telephone terminal devices and can interfere in their control.

A softphone application serves as CTI application interface, as provided, for example, by SAPphone.

4.7.2 General Integration Concept

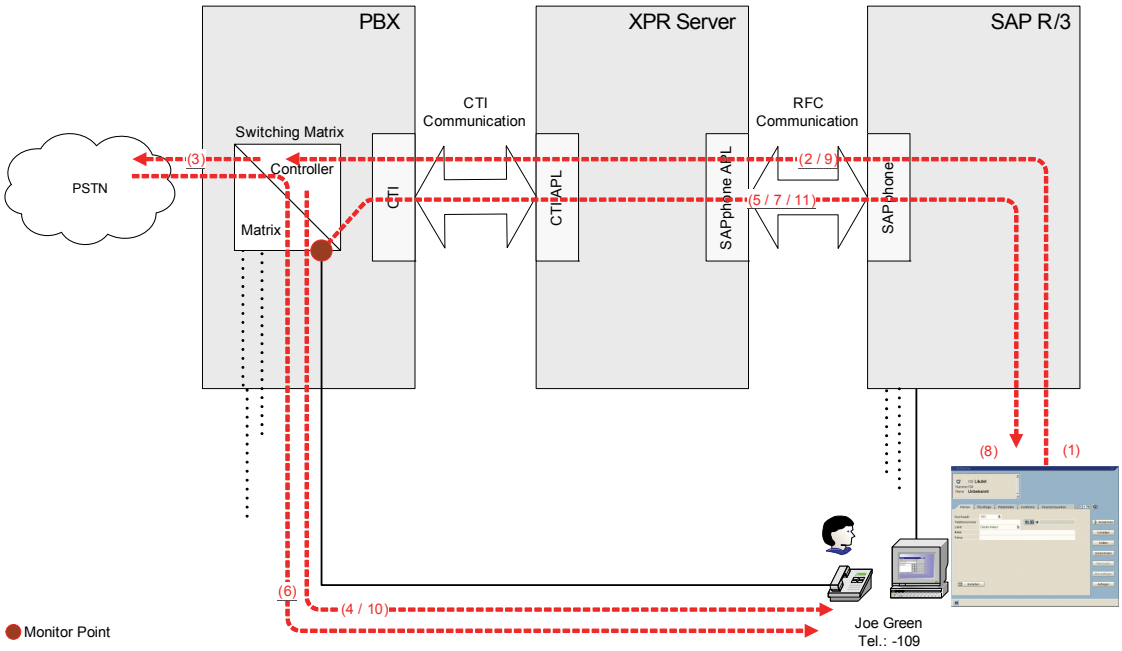
An XPR-SAP integration via SAPphone is, among other things, used in CTI environments. In the following we will describe and configure a corresponding example scenario from this environment.

Scenario

For quite a while, PCs have been at the center of daily office work. Since the medium telephone as well as the computer now exists practically on every desk, the desire for an integration of both platforms is obvious. Such a combination optimizes contact management, in particular since telephone contacts are normally stored in the computer. In case of an integrated communication solution, phone numbers do no longer have to be maintained in parallel on the computer and on the telephone device.
In this chapter we will deal with the setup of a CTI solution that realizes exactly this very basic optimization in the wide field of CTI functionality – establishing a telephone connection from the computer.

How the CTI solution works

The following figure provides a simplified overview of the way our CTI example scenario works.



SAP R/3 sets monitor points via the XPR server in the PBX to receive the system status for specific telephones. These monitor points represent the basis for a functioning CTI solution. In our example we see the monitor point set for the telephone terminal device with extension -109.

How SAP user Joe Green establishes a telephone connection from his PC:

1. After starting the SAPphone – the SAP softphone application – Joe Green enters the desired calling number in the corresponding GUI field and initiates the call. (In the ideal case the SAP user will select the calling number directly via marking a contact entry in a corresponding PC application).
2. SAPphone signalizes the call via the SAP system to the XPR server, which passes it on to the connected PBX via the CTI APL.
3. Upon the incoming call request the PBX establishes a connection – for example to the public telephone network.
4. Subsequently, the PBX signalizes the connection establishment via the associating subscriber line, upon which, for example, the loudspeaker and microphone are automatically activated at Joe Green's phone and a ringing tone sounds.

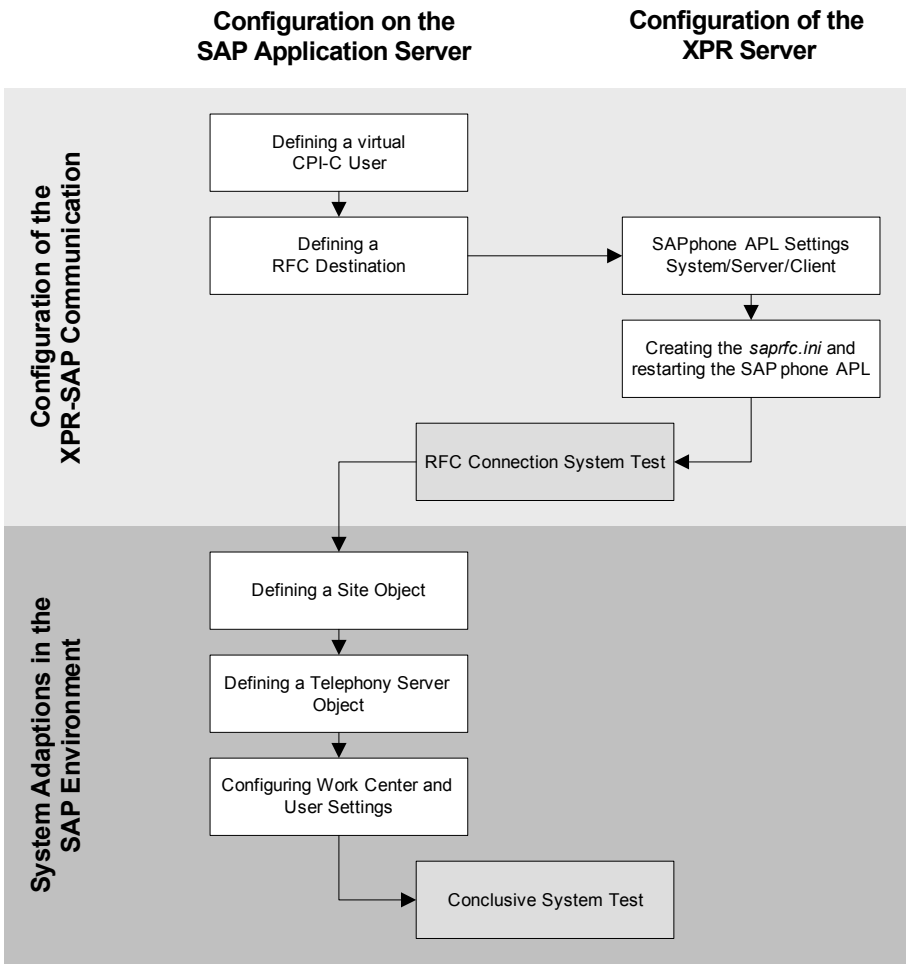
5. With this the status of Joe Green's phone has changed. Thanks to the set monitor point, the PBX signalizes this alteration to the XPR server and thus to the SAP system. Consequently, the softphone indicates this new status information in a suitable format.
6. As soon as the called subscriber picks up the phone, the PBX connects through to the telephone and the conversation can begin.
7. Parallel to this interconnection, the PBX signalizes via the CTI interface the new status of the telephone terminal device to the XPR server, and thus to the SAP system and SAPphone. The softphone application can now display the new status information.
8. Joe Green terminates the call, for example, in SAPphone.
9. SAPphone signalizes this termination via the SAP system and the XPR server to the active PBX upon which the PBX clears the connection.
10. After the call termination in SAPphone the PBX deactivates the loudspeaker and microphone at Joe Green's phone.
11. Finally, the PBX sends the new terminal device status via the CTI interface to the XPR server and thus to the SAP system and to SAPphone. The latter displays the call termination in a suitable format.

NOTE:
In our example description we assume that *SAPphone*, the softphone used, is an application integrated in SAP R/3. Only in this case the associated communication occurs via the SAPphone interface.
If an XPR server SoftPhone client is used instead, the client communicates via the TCP/IP network only directly with the XPR server.

In the course of the next sections we will configure this scenario via the SAPphone interface. The following flow chart provides a first overview of the steps required and described in detail on the pages to follow.

The following configuration steps are based on the basic configuration of the above CTI solution, which does not consider any system redundancies etc.

NOTE: You can also connect an XPR server that has several links to different locations to an SAP system. The Cycos-White-Paper KB001327 provides the information to be considered in this case. You receive this White Paper upon request.



4.7.3 Configuring the XPR-SAP Communication

The XPR-SAP integration via the SAPphone interface uses the same type of RFC communication as an integration under SAPconnect.

In the following two sections we have summarized all steps required for configuring the RFC communication on the SAP side from Section 4.5.3, “Configuring the XPR-SAP Communication”, on page 70ff. However, the descriptions related to the Unified Messaging solution have been adapted here, and the associated screenshots omitted.

This part is divided into the following sections:

- Configuration under CRM 3.1 (Basis 6.20)
- Configuration under SAP R/3 Version 4.6C
- SAPphone APL Configuration.

4.7.3.1 Configuration under CRM 3.1 (Basis 6.20)

In the following we will describe the configuration steps under the SAP CRM version 3.1.

Creating a virtual CPI-C user in SAP R/3

1. Log on to the previously configured SAP application server via the SAPGUI.
2. Enter the transaction code **/nSU01** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Administration > User Maintenance > Users** with a doubleclick.
3. In the **User** field enter a user name for the virtual CPI-C user and push the **Create** icon in the toolbar.

   NOTE:
   At this point we recommend to select a ’speaking’ name. We use the name *MRS-CPIC*.

4. In the ***Last name*** field of the ***Address*** tab enter a name for the user.

   NOTE:
   We recommend copying the user name at this point.

5. In the **Language** field select the desired language option.
6. Switch to the *Logon data* tab.
7. Assign a **Password** to the user and select the **Communications** option as **User Type**.

IMPORTANT:
Note that SAP R/3 differentiates upper and lower case with password entries.

NOTE:
Depending on the SAP version the CPI-C user type is also called *CPIC user* (through SAP R/3 4.6C) or *system user* (after SAP R/3 4.6C).

8. Switch to the *Profiles* tab.
9. In the table under **Profile** enter the user profile **S_A.SCON** and confirm the entry with the enter key of your keyboard.

NOTE:
You can also grant full SAP system privileges (*SAP_ALL*, *SAP_NEW*) to the virtual user. Since user type *CPI-C* is selected, you cannot log in at the SAP system via this user from outside. In this way abuse of the granted privileges is prevented.

10. Save the settings for the virtual user with the **Save** icon in the toolbar.

Now you have created the virtual user *MRS-CPIC* who will later be used for communication between the XPR server and the SAP application server.

We will now continue with configuring the RFC destination.

Defining an RFC destination in SAP R/3

1. Push the **F3** function key to return to the *SAP Easy Access Extended Relationship Management*.
2. Enter the transaction code **/nSM59** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Basis Tools > Administration > Administration > Network > RFC Destinations** with a doubleclick.
3. Select **TCP/IP connections** and click on the **Create** button.
4. Assign a name to the RFC destination in the **RFC destination** field.

NOTE:
We recommend choosing a name of the structure *SAPPHONE_<CPIC-user>_<client number>* to enhance clarity.
In our example it is *SAPPHONE_MRS-CPIC_200*.

---

5. Enter letter ***T*** in the ***Connection type*** field to configure a TCP/IP connection.
6. Enter a short description for the RFC destination in the **Description** field.
7. Save the RFC destination settings with the **Save** icon in the toolbar.
8. In the *Technical settings* tab select the **Registered Server Program** option.

NOTE:
This setting informs the SAP application server that an external RFC service will register with it with the program ID to be configured in the next step. This configuration is directly associated with the **TYPE=R** parameter from the `saprfc.ini` of the XPR server (cf. Section 4.7.3.3, “SAPphone APL Configuration”, on page 226).

---

9. In the **Program ID** field assign a string for this logical link between the XPR server and the SAP application server.

IMPORTANT:
The program ID serves later for identifying the logical link. Therefore the string must be **unique**. Respect the use of upper and lower case when you enter it.

NOTE:
We recommend selecting a string of the structure *CTI_<SAP system ID>_<client number>* to enhance clarity. Accordingly, we select the program ID *CTI_APC_200*.

---

10. Save the settings with the **Save** icon in the toolbar.
11. Leave this SAPGUI entry form opened. We will use it again straight after configuring the SAPPHONE APL of the XPR server for a first function test.

Continue with Section 4.7.3.3, “SAPphone APL Configuration”, on page 226.

4.7.3.2 Configuration under SAP R/3 Version 4.6C

In the following paragraphs we will describe the configuration steps under SAP R/3 version 4.6C.

Creating a virtual CPI-C user in SAP R/3

1. Log on to the previously configured SAP application server via the SAPGUI.
2. Enter the transaction code **/nSU01** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Tools > Administration > User Maintenance > SU01–Users** with a doubleclick.
3. In the **User** field enter a user name for the virtual CPI-C user and push the **Create** icon in the toolbar.

NOTE:
We recommend to select a 'speaking' name – for example *MRS-CPIC*.

---

4. In the ***Last name*** field of the ***Address*** tab enter a name for the user.

NOTE:
We recommend copying the user name at this point.

---

5. In the **Language** field select the desired language option. This specification will influence log outputs on RFC level at a later date.
6. Switch to the *Logon data* tab.
7. Assign a **Password** to the user and select the **CPIC** option as **User Type**.

IMPORTANT:
Note that SAP R/3 differentiates upper and lower case with password entries.

NOTE:
Depending on the SAP version the CPI-C user type is also called *system user* (after SAP R/3 4.6C) or *communication user* (from SAP R/3 6.10 Basis).

---

8. Switch to the *Profiles* tab.
9. In the table under **Profile** enter the user profile **S_A.SCON** and confirm the entry with the enter key of your keyboard.

NOTE:
You can also grant full SAP system privileges (*SAP_ALL*, *SAP_NEW*) to the virtual user. Since user type *CPI-C* is selected, you cannot log in at the SAP system via this user profile from outside. In this way abuse of the granted privileges is prevented.

---

10. Save the settings for the virtual user with the **Save** icon in the toolbar.

Now you have created the virtual user *MRS-CPIC* who will later be used for communication between the XPR server and the SAP application server.

We will now continue with configuring the RFC destination.

Defining an RFC destination in SAP R/3

1. Push the **F3** function key to return to the *SAP Easy Access – User menu*.
2. Enter the transaction code **/nSM59** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Administration > Administration > Network > SM95–RFC Destinations** with a doubleclick.
3. Select **TCP/IP connections** and push the **Create** button.
4. Assign a name to the RFC destination in the **RFC destination** field.

NOTE:
We recommend choosing a name of the structure *SAPPHONE_<CPIC-user>_<client number>* to enhance clarity. In our example it is *SAPPHONE_MRS-CPIC_200*.

---

5. Enter letter ***T*** in the ***Connection type*** field to configure a TCP/IP connection.
6. Enter a short description for the RFC destination in the **Description** field.
7. Save the RFC destination settings with the **Save** icon in the toolbar.
8. Push the **Registration** button.

9. In the **Program ID** field assign a string for this logical link between the XPR server and the SAP application server.

IMPORTANT:
The program ID serves later for identifying the logical link. Therefore the string must be **unique**. Respect the use of upper and lower case when you enter it.

NOTE:
We recommend selecting a string of the structure *CTI_<SAP system ID>_<client number>* to enhance clarity. Accordingly, we select the program ID *CTI_APC_200*.

---

10. Save the settings with the **Save** icon in the toolbar.
11. Leave this SAPGUI entry form opened. We will use it again straight after configuring the SAPR3 APL of the XPR server for a first function test.

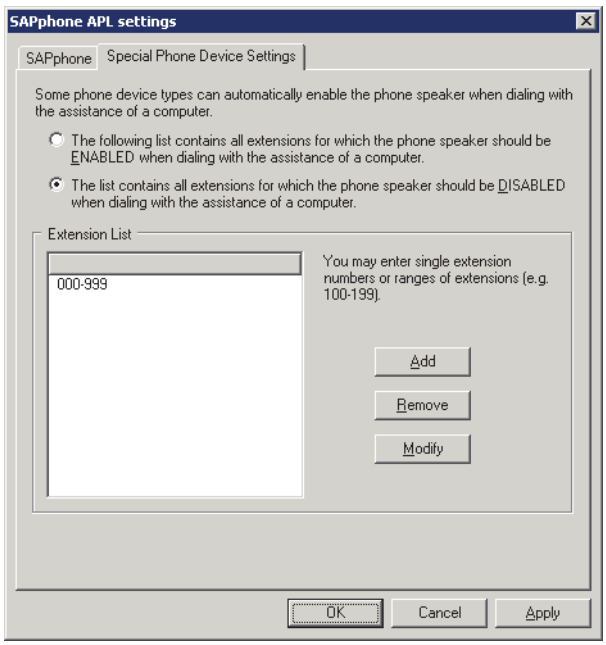
Continue with configuring the XPR server SAPPHONE APL in the next section.

4.7.3.3 SAPphone APL Configuration

If the XPR server and the XPR monitor have not been started yet, start them and proceed as follows:

SAPPHONE APL Settings

1. In the modules window of the XPR monitor select **Settings > SAPphone APL > Set Options** with a doubleclick.
2. In the **SAPphone APL Settings** dialog switch to the *Special Phone Device Settings* tab.
3. Select the **…DISABLED…** option and click on the **Add** button.

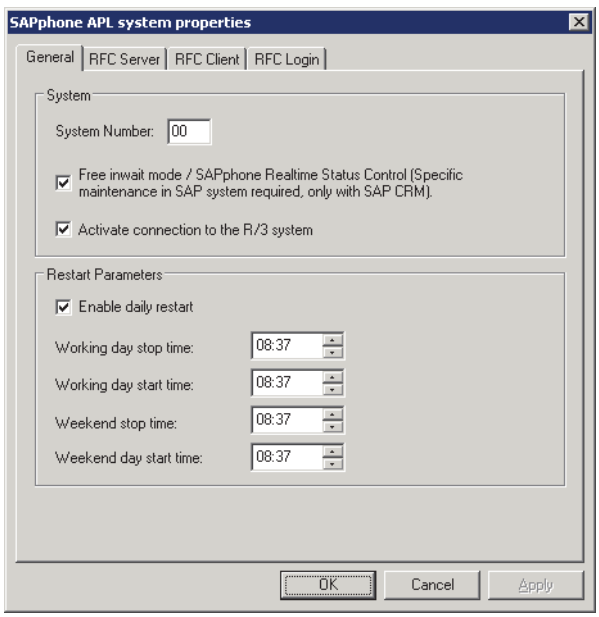


4. In the space under *Extension List* define for which telephones the speakers should be disabled when dialing.

NOTE:
For a correct functionality this CTI feature must be supported by the PBX. Furthermore, additional settings must be performed at the PBX if required.

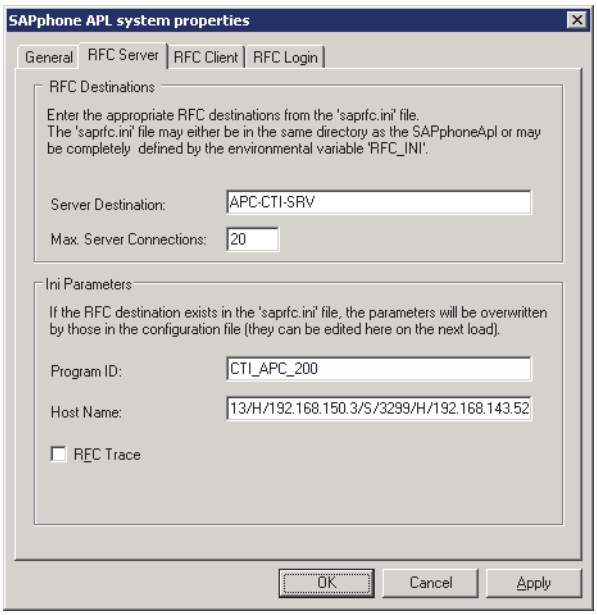
---

5. Switch to the *SAPphone* tab and click on the **Add** button.
6. In the **System Number** field specify the system number of the gateway service with which you want to connect the SAPphone APL.
   The system number specifies the last two digits of the TCP port for which the corresponding gateway service was configured and represents mostly value **00**. In case of doubt consult your SAP administrator for the correct system number.



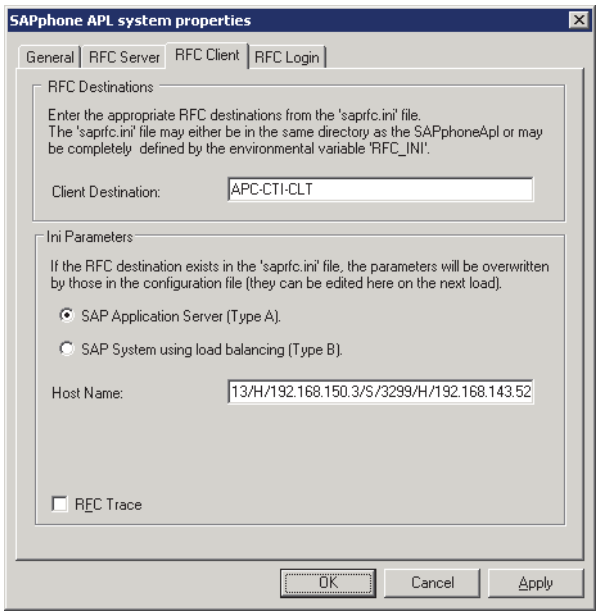
7. Activate the following options:
   - **Free inwait mode**
   - **Activate connection to the R/3 system**
   - **Enable daily restart**
8. Switch to the *RFC Server* tab.

9. In the **Server Destination** field specify a name under which the server configuration data are stored in the `saprfc.ini` for the relevant connection. For our example we choose at this point *APC-CTI-SRV*.



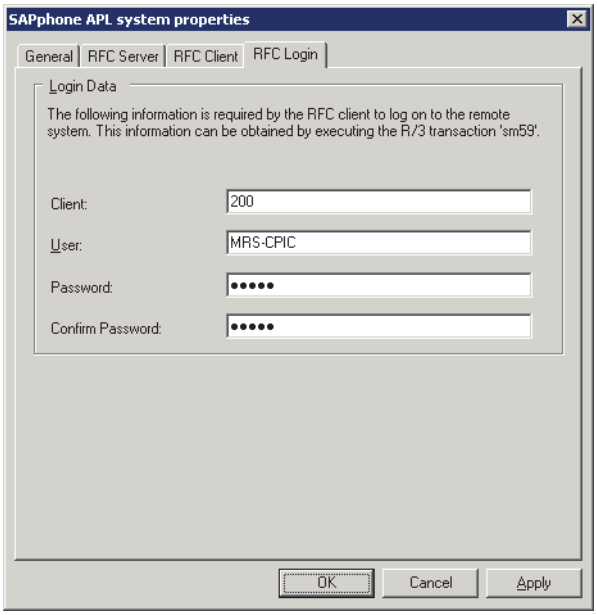
10. In the **Program ID** field enter the ID that you have previously specified when configuring the RFC connection in the SAP system. In our example this is *CTI_APC_200*.
11. In the **Host Name** field specify the router connect string for the host on which the desired gateway server is configured.
12. Switch to the *RFC Client* tab.

13. In the **Client Destination** field specify a name under which the client configuration data are stored in the `saprfc.ini` for the relevant connection. For our example we choose at this point *APC-CTI-CLT*.



14. Select the option **SAP Application Server (Type A)**.
15. In the **Host Name** field specify the router connect string for the host that is configured as application server.
16. Switch to the *RFC Login* tab.

17. In the **Client** field enter the client number to be used.



18. In the **User** field enter the name of the virtual user that you have previously created under SAP R/3**.** In our example this is the user name *MRS-CPIC*.

19. In the **Password** field enter the password of the virtual user as you have previously assigned it under SAP R/3. Repeat the password in the **Confirm Password** field.

20. Confirm your settings with **Apply** and push **OK**.

The SAPphone APL settings are thus complete.

We will now test the configured RFC connection between the XPR server and the SAP system.

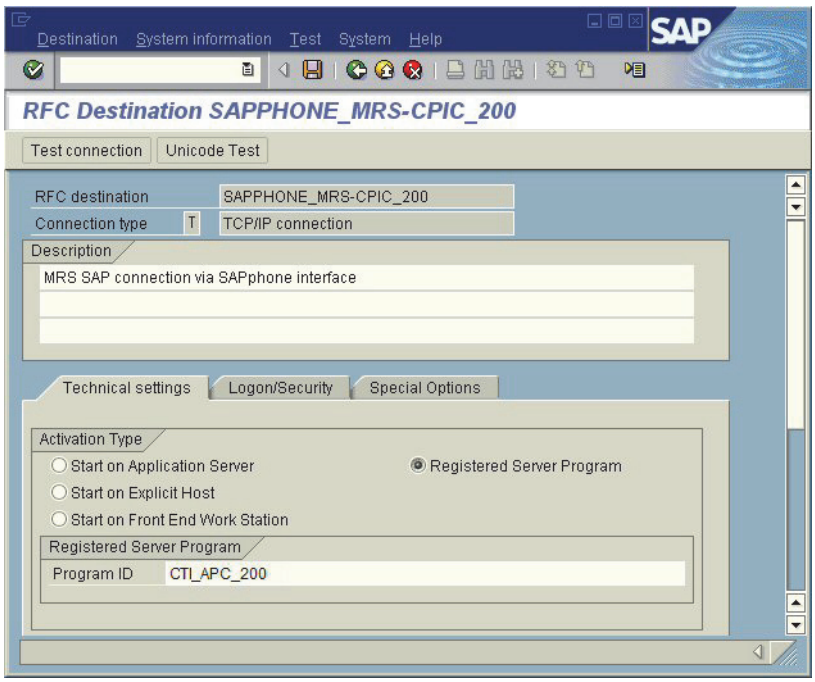
RFC connection test

1. Return to the last SAPGUI entry form and thus to the display of the RFC connection we have configured.

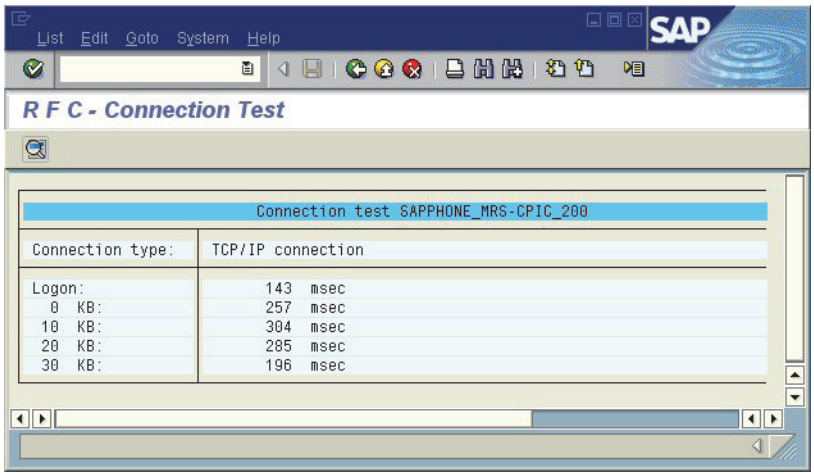
NOTE:
If you have inadvertently closed the SAPGUI, you can reach a selection of all configured RFC connections via **SAP menu > Basis Tools > Administration > Administration > Network > RFC destinations > TCP/IP connections**. You can also select your newly configured connection from the TCP/IP connections via the **/nSM59** transaction code.

---

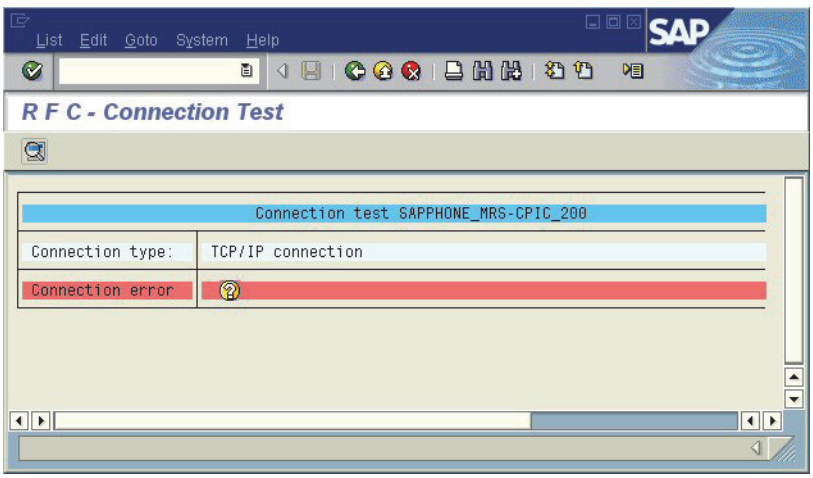
2. Push the **Test connection** button.



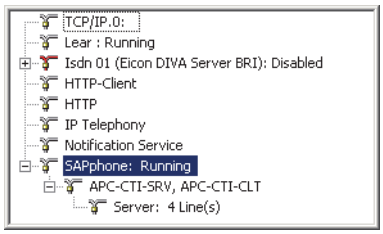
SAP R/3 displays the measured parameters for our RFC connection between the XPR server and the SAP application server. Communication from the SAP system towards the XPR server has obviously been established successfully.



In case of an error the SAP system reports the termination of the connection test with the following message:



3. With a successful communication establishment the **Physical Lines** window of the XPR monitor also displays a constant link for the SAPphone APL. Please check this.



Communication from the XPR server towards the SAP system has thus also been successfully established.

4.7.4 System Adjustment of the XPR-SAP Environment

After successfully testing the basis configuration with the RFC connection, we continue with adapting the SAP system.

This part is divided into the following sections:

- Adjustments under CRM Version 3.1 (Basis 6.20)
- Adjustments under SAP R/3 Version 4.6C.

4.7.4.1 Adjustments under CRM Version 3.1 (Basis 6.20)

In the following paragraphs we will describe the configuration steps for the system adjustments under the SAP version CRM 3.1.

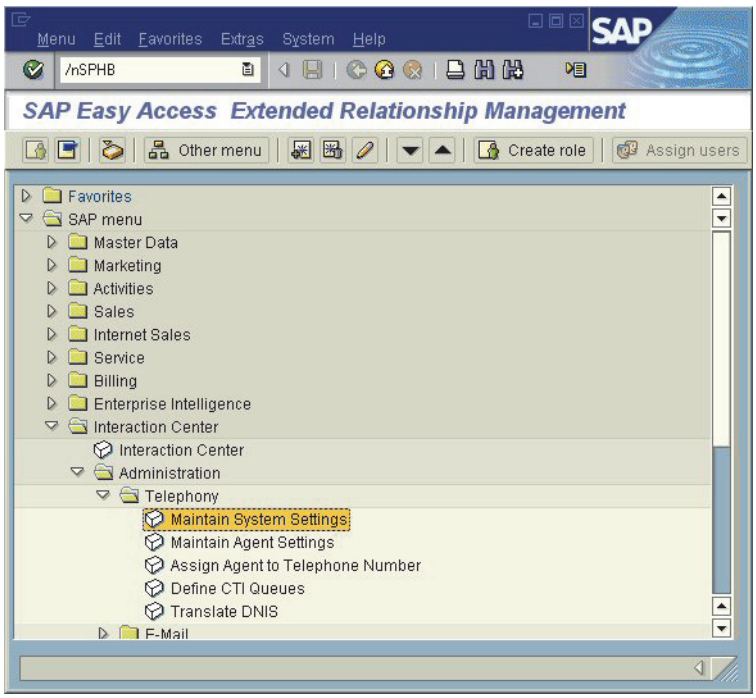
Configuring a site object

SAP R/3 needs some specifications to automatically perform site-dependent adjustments. For example, the calling number normalization requires the calling number structure or the time shift evaluation requires the time zone.

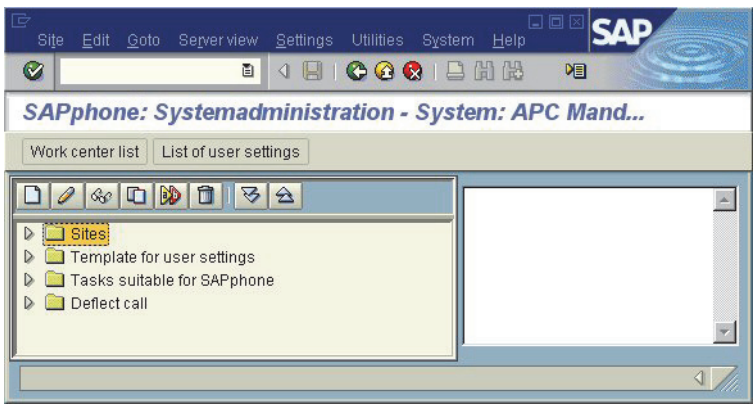
To provide the SAP system with this information, a so-called site object must be defined. Proceed as follows.

1. Select **SAP menu** in the toolbar to return to the *SAP Easy Access Extended Relationship Management*.

2. Enter the transaction code **/nSPHB** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Interaction Center > Administration > Telephony > Maintain System Settings** with a doubleclick.



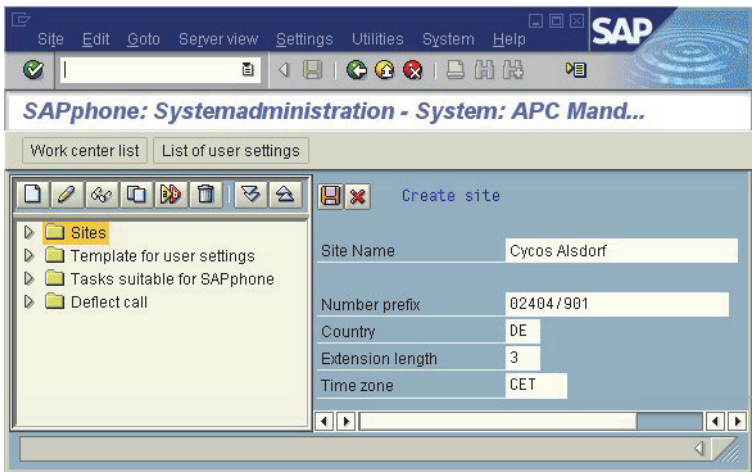
3. In the new menu select the **Site** menu option.



NOTE:
If a suitable site has already been defined on the SAP system, you can use it for further configurations. In this case continue with Section 4.7.4.1, “Configuring a telephony server object”, on page 237.

4. Push the **Create** icon in the toolbar to define a new site.

5. In the **Site name, Number prefix, Country, Extension length** and **Time zone** fields enter the applicable information for this site. Some of these fields offer the option to select values from a logically restricted value range via a selector icon at the end of the respective field.



IMPORTANT:
When you specify the **Number prefix**, separate the area code from the trunk side connection by a '/'. All other separators or none at all are not permissible.

NOTE:
If various configuration options apply for one site, we recommend defining several sites under SAP R/3.
For example, if a site has two number prefixes, define an individual site for each number prefix.

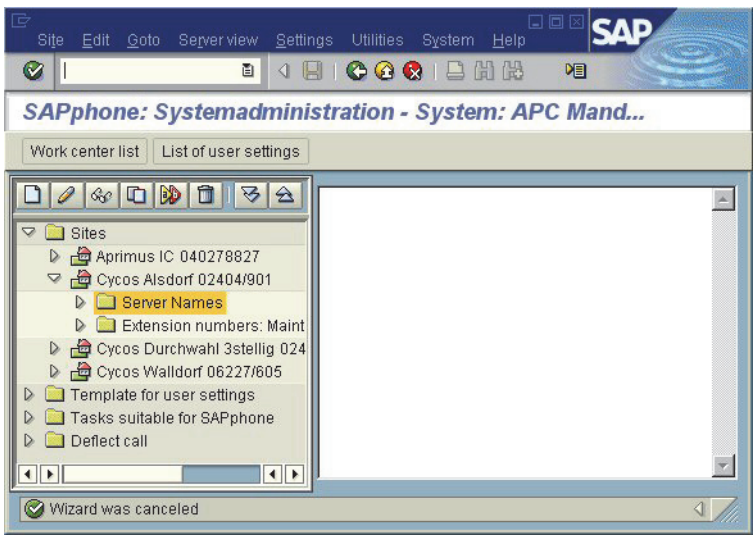
6. Save the new site with the **Save** button in the toolbar.

You have thus defined a new site in SAP R/3.

Configuring a telephony server object

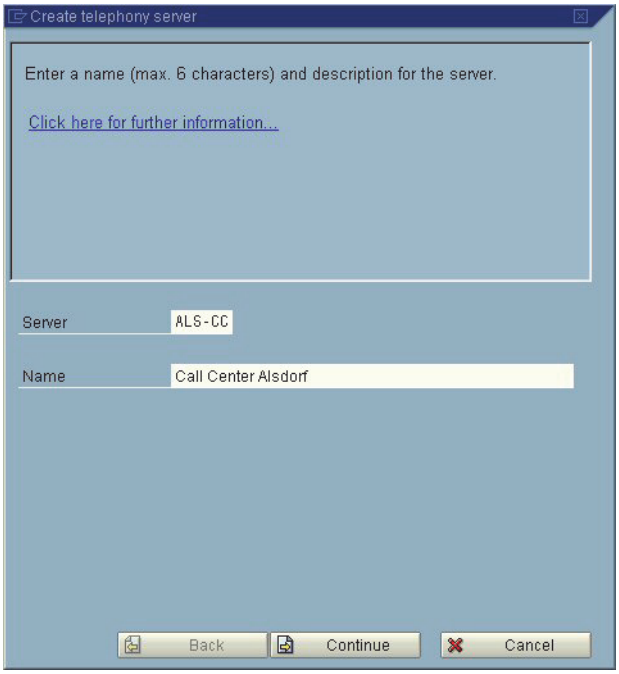
The SAP system is to communicate via the SAPphone interface with an external telephone service – the XPR server. To configure its parameters on the SAP R/3 side, we define a logical telephony server.

7. In the **Sites** menu select the **Server Names** menu option under your site just configured.



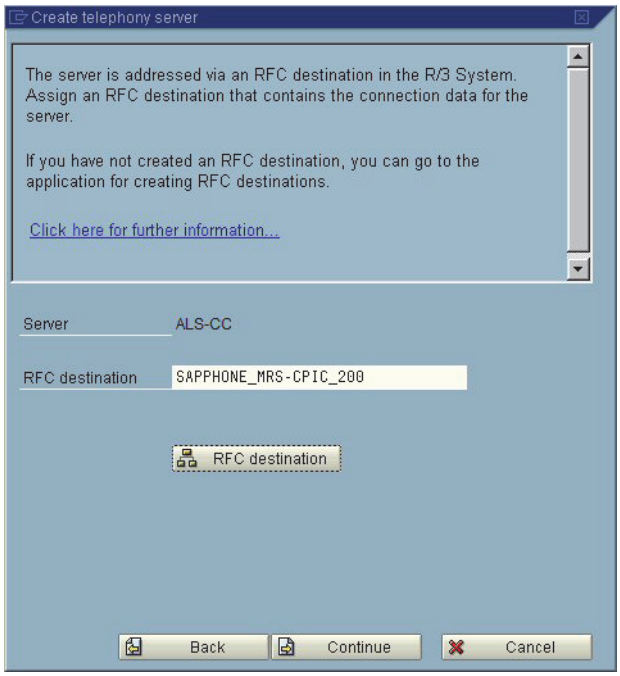
8. Push the **Create** icon in the toolbar to define a new telephony server.
9. Enter a name for the new telephony server in the **Server** field. The name must not exceed 6 characters.

10. In the **Name** field enter a short description of the server. This specification will later simplify the assignment.



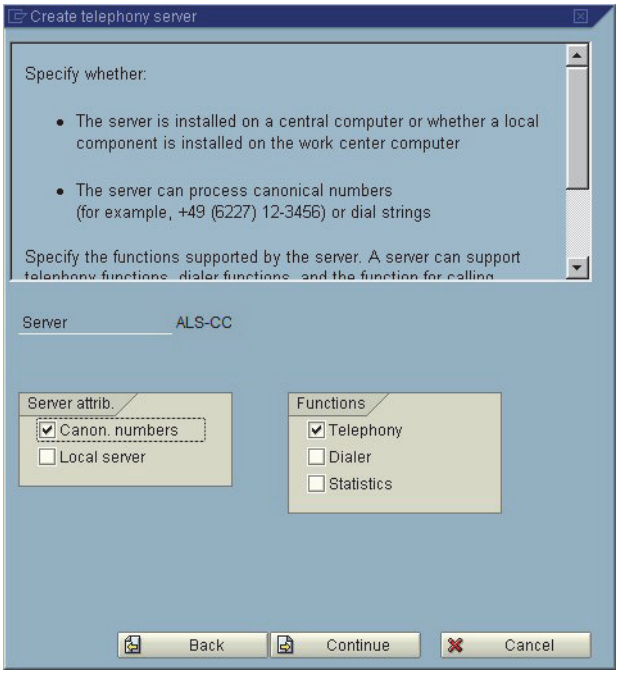
11. Push **Continue**.

12. In the **RFC destination** field enter the previously configured RFC destination. The selector at the end of the marked text field assists you in making a selection.



13. Push **Continue**.

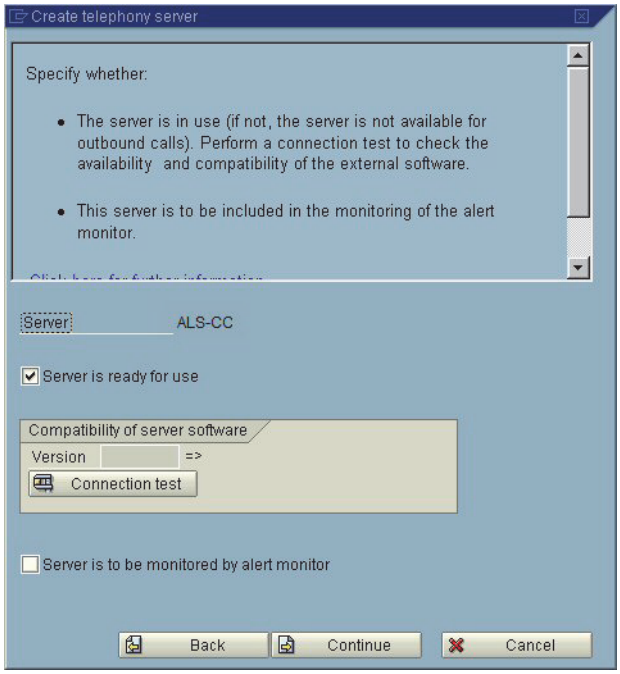
14. Select the **Canon. numbers** (cf. Section 3.2.1, “Address Formats and ANI Hits”, on page 39) and Telephony options.



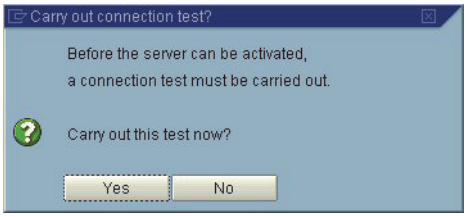
15. Push **Continue**.

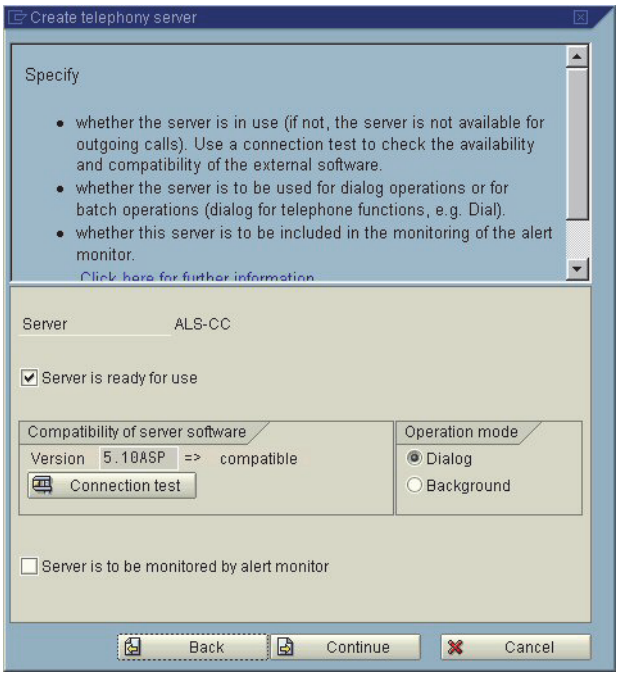
16. Skip the next dialog with **Continue**, since we do not configure a calling number replacement there.

17. Select the **Server is ready for use** option to immediately start the new telephony server.

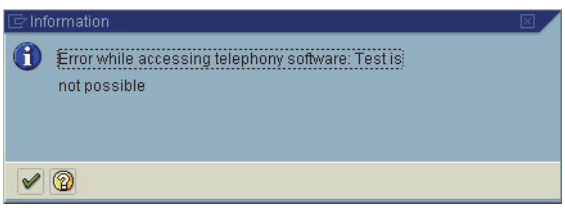


18. SAP R/3 activates the server after a successful system test only. Start this test with **Yes**.





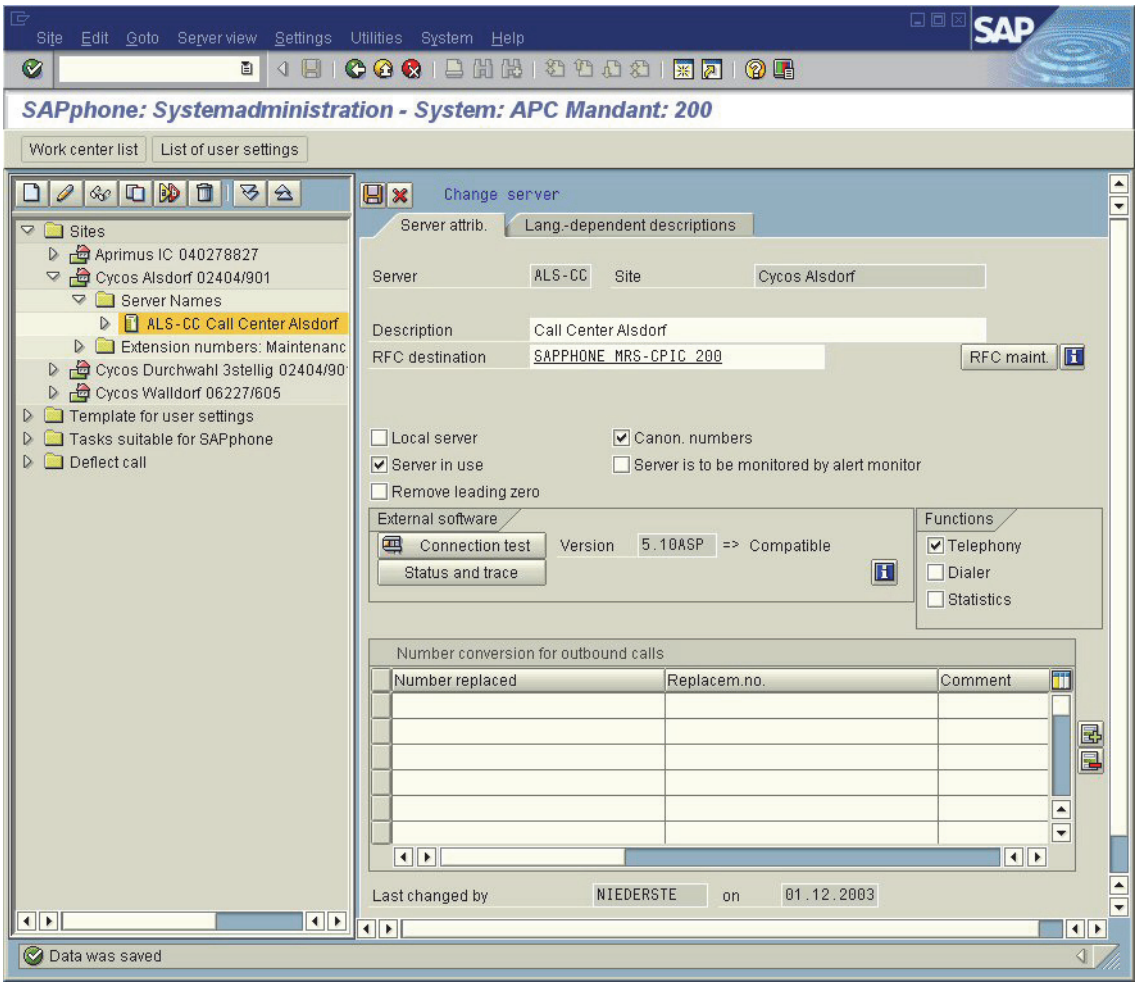
In case of an error the SAP system reports the termination of the connection test with the following message:



19. After a successful test push **Continue**.

20. Save the settings performed with the **Save** icon in the toolbar.

This window displays all information on the telephony server just configured. Furthermore, you can check all settings made and modify them if required.



NOTE:
You reach this dialog via **SAP menu > Interaction Center > Administration > Telephony > Maintain System Settings** (transaction code **/nSPHB**) under the menu option **Sites > Server Names**. Select the desired server from those listed there.

The required telephony server is thus defined. Now you need to adapt the SAP user profile for the application of CTI functions.

Configuration of the work center and user settings

In the following paragraphs we will configure CTI functions under SAP R/3 for the example user Joe Brown. We have previously defined this SAP user under SAP R/3 so that we can now access his profile. Since these settings are saved in the registry of the user workstation by default, the following configurations must be performed on the PC of the relevant user.

To enable Joe Brown using the CTI functions under SAP R/3, we will configure his profile in the following way.

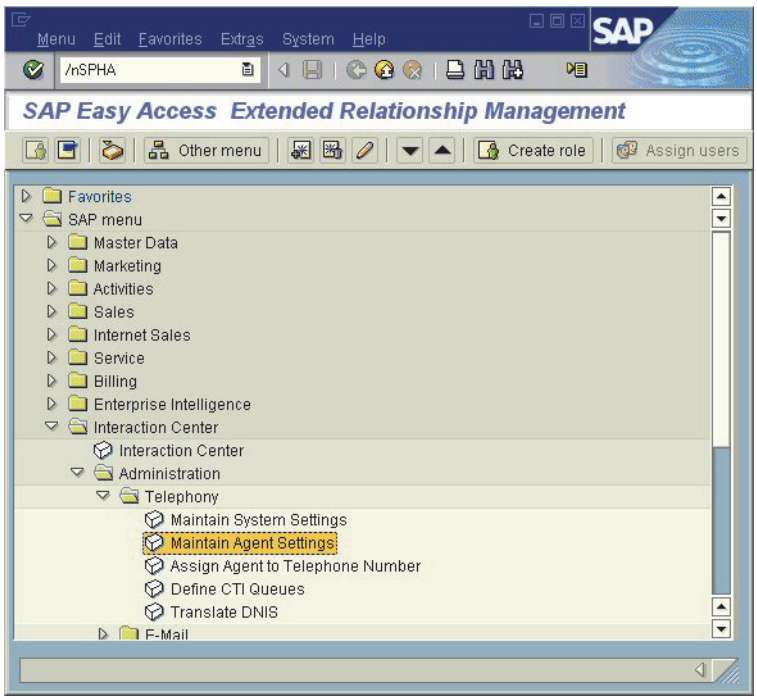
IMPORTANT:
The following settings are administered in the registry of the PC on which you perform settings. You can thus make configurations for only one user on any workstation.

NOTE:
The following manual way of configuration is sufficient for our scenario. In solutions with a large number of CTI users under SAP R/3 it may however be useful not to configure users individually.
In this case the SAP administrator can define so-called sample profiles. The desired SAP users can then be assigned to such a sample profile. A sample profile is also created under the transaction code **/nSPHB**
. You find more information on this in the SAP R/3 product documentation.

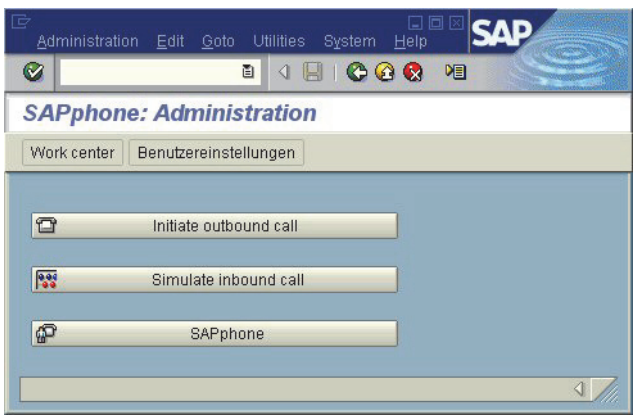
---

1. Log in to the SAP R/3 system via the SAPGUI under the user to be defined.

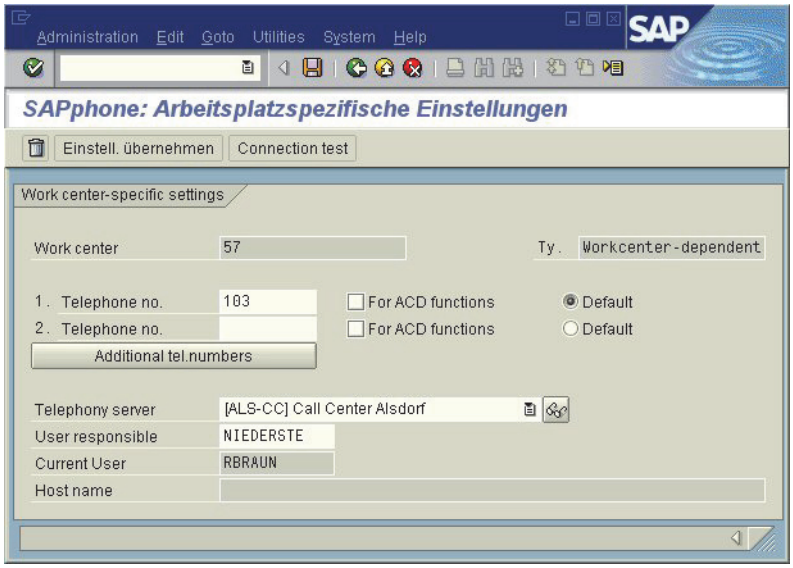
2. Enter the transaction code **/nSPHA** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **SAP menu > Interaction Center > Administration > Telephony > Maintain Agent Settings** with a doubleclick.



3. Push the **Work center** button.

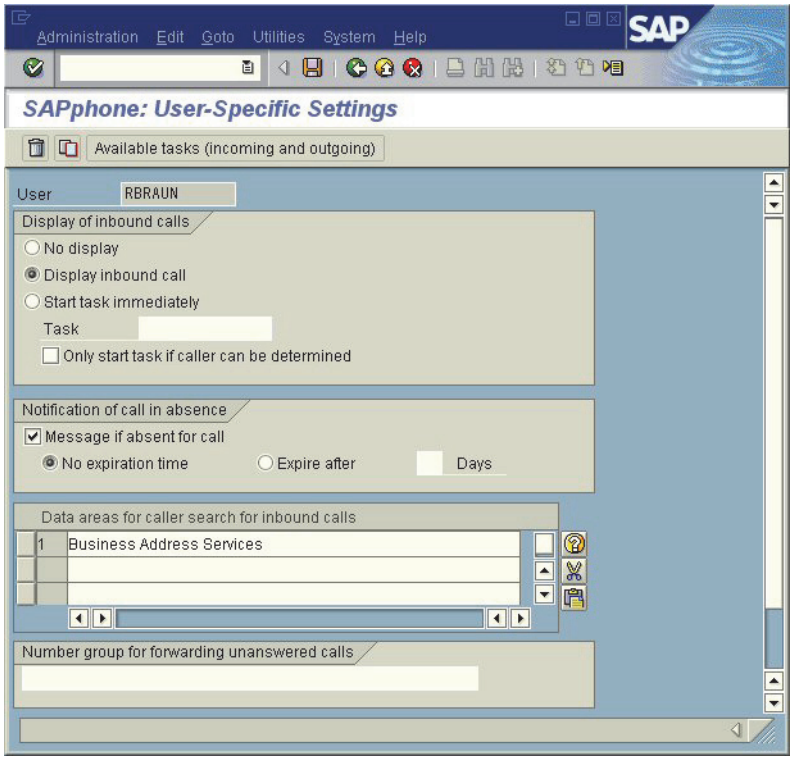


4. In the **1.Telephone no.** field enter the calling number of the SAP user's telephone terminal device.



5. Select the previously configured telephony server via the selector icon at the end of the **Telephony server** field.
6. Save the user settings with the **Save** icon in the toolbar.
7. Push the **Back** icon in the toolbar to return to the SAPphone interface administration (transaction code **/nSPHA**).
8. Push the **User settings** button.

9. In the *Display of inbound calls* section select the **Display inbound call** option.



10. In the *Notification of call in absence* section select the **Message if absent for call** and **No expiration time** settings.

11. In the *Data areas for caller search...* section select the **Business Address Services** option via the selector icon in the text field.

NOTE:
In the data area configured here the originator calling number is searched for when a phone call comes in (cf. Section 3.2.1, “Address Formats and ANI Hits”, on page 39).

---

12. Save the settings performed with the **Save** icon in the toolbar.

The configuration of the CTI solution is thus accomplished. Continue with Section 4.7.5, “Conclusive CTI Test”, on page 262.

4.7.4.2 Adjustments under SAP R/3 Version 4.6C

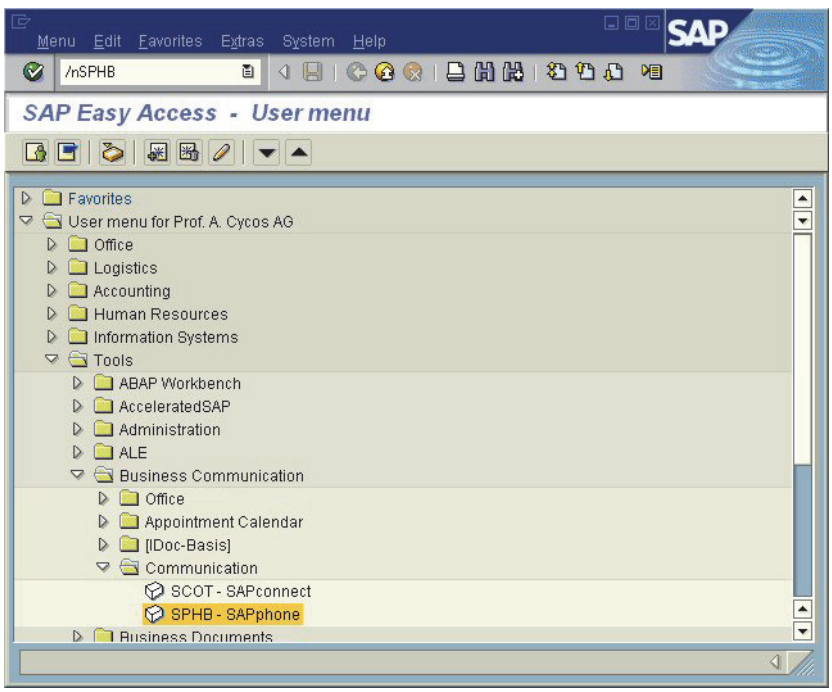
In the following we will describe the configuration steps for the system adjustments under SAP R/3 version 4.6C.

Configuring a site object

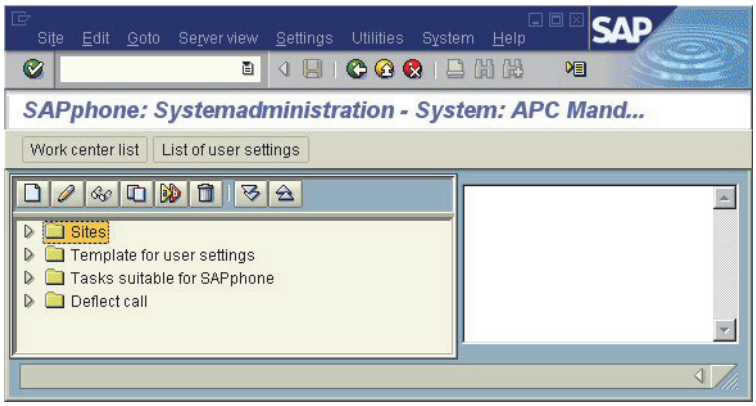
SAP R/3 needs some specifications to automatically perform site-dependent adjustments. For example, the calling number normalization requires the calling number structure or the time shift evaluation requires the time zone.

To provide the SAP system with this information, a so-called site object must be defined. Proceed as follows.

1. Select the **SAP menu** icon the toolbar to return to the *SAP Easy Access Extended Relationship Management*.
2. Enter the transaction code **/nSPHB** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Tools > Business Communication > Communication > SPHB–SAPphone** with a doubleclick.



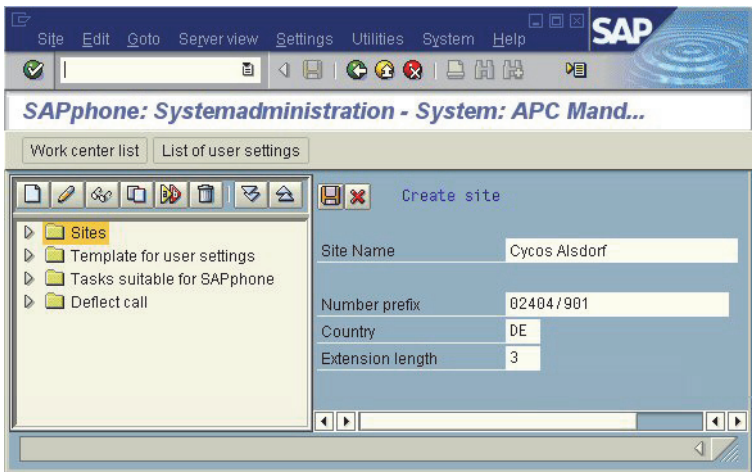
3. In the new menu select the **Site** menu option.



NOTE:
If a suitable site has already been defined on the SAP system, you can use it for further configurations. In this case continue with Section 4.7.4.2, “Configuring a telephony server object”, on page 251.

4. Push the **Create** icon in the toolbar to define a new site.

5. In the **Site name, Number prefix, Country** and **Extension length** fields enter the applicable information for this site. Some of these fields offer the option to select values from a logically restricted value range via a selector icon at the end of the respective field.



IMPORTANT:
When you specify the **Number prefix**, separate the area code from the trunk side connection by a '/'. All other separators or none at all are not permissible.

NOTE:
If various configuration options apply for one site, we recommend defining several sites under SAP R/3.
For example, if a site has two number prefixes, define an individual site for each number prefix.

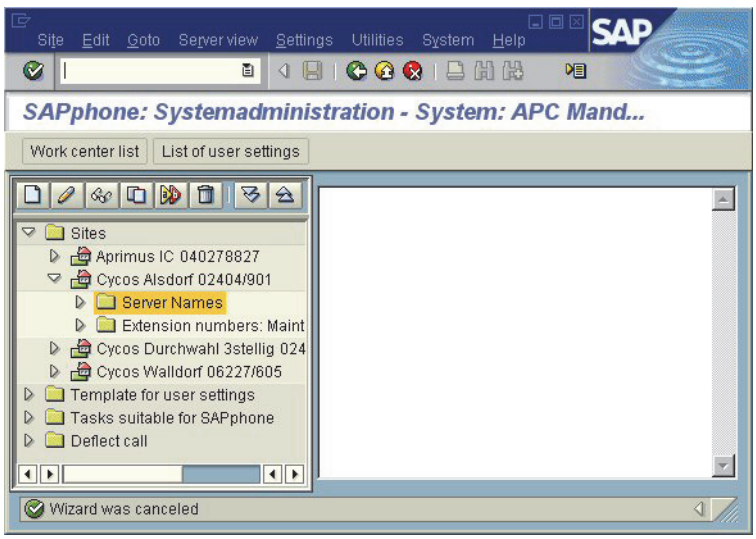
6. Save the new site with the **Save** button in the toolbar.

You have thus defined a new site in SAP R/3.

Configuring a telephony server object

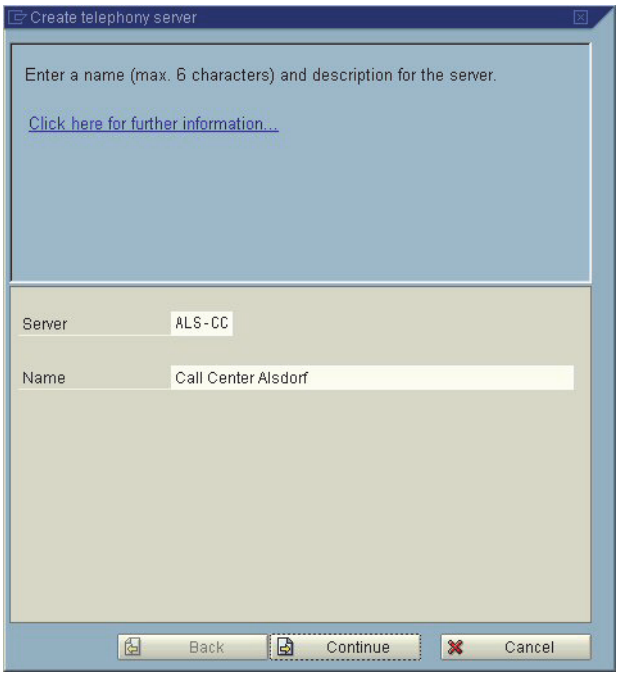
The SAP system is to communicate via the SAPphone interface with an external telephone service – the XPR server. To configure its parameters on the SAP R/3 side, we define a logical telephony server.

7. In the **Sites** menu select the **Server Names** menu option under your site just configured.



8. Push the **Create** icon in the toolbar to define a new telephony server.
9. Enter a name for the new telephony server in the **Server** field. The name must not exceed 6 characters.

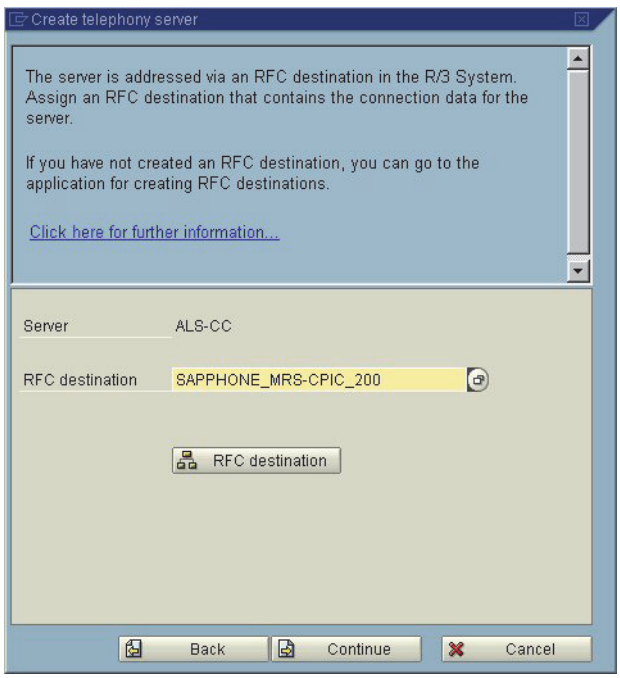
10. In the **Name** field enter a short description of the server. This specification will later simplify the assignment.



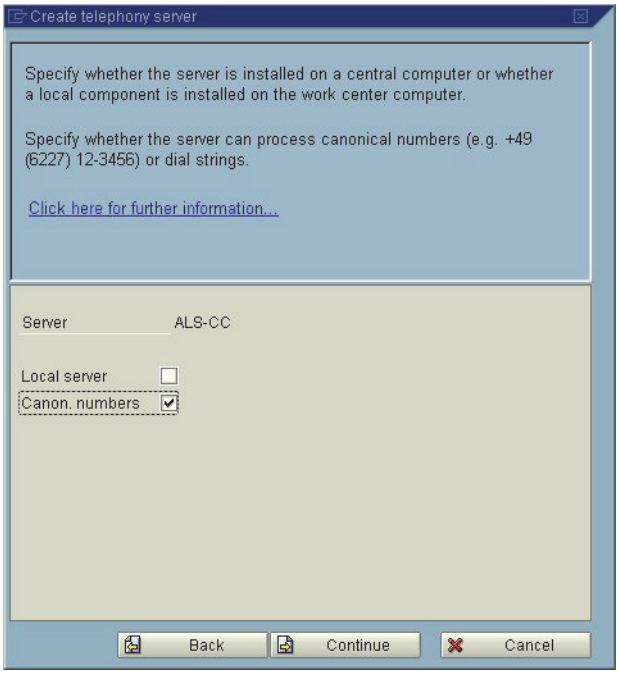
11. Push **Continue**.

12. In the **RFC destination** field enter the previously configured RFC destination and push **Continue**.

NOTE:
The selector displayed at the end of the **RFC destination** has no function. Therefore you need to enter the name via keyboard.
If you do not remember the name of your RFC destination any more, push the **RFC destination** button. You are then taken to a list of all RFC destinations defined. After you have found the right one, note down the name and return to the original entry form via the **F3** function key.



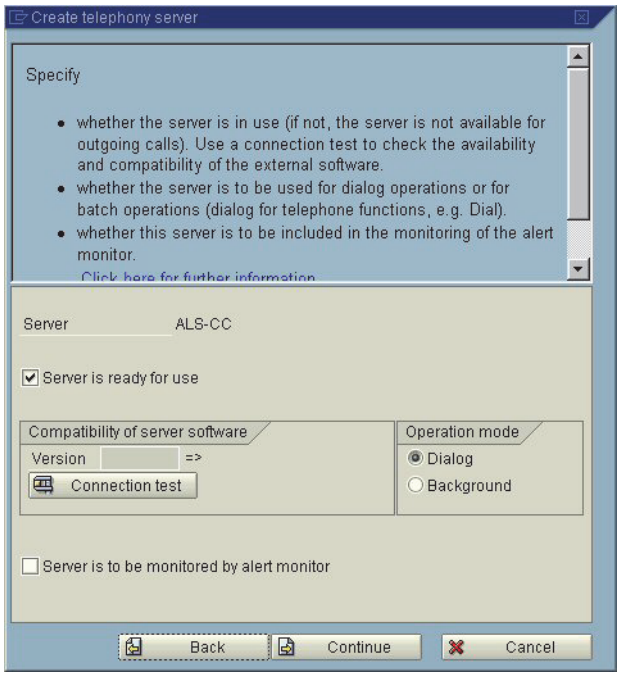
13. Select the **Canon. numbers** option (cf. Section 3.2.1, “Address Formats and ANI Hits”, on page 39).



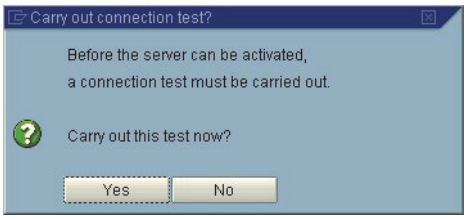
14. Push **Continue**.

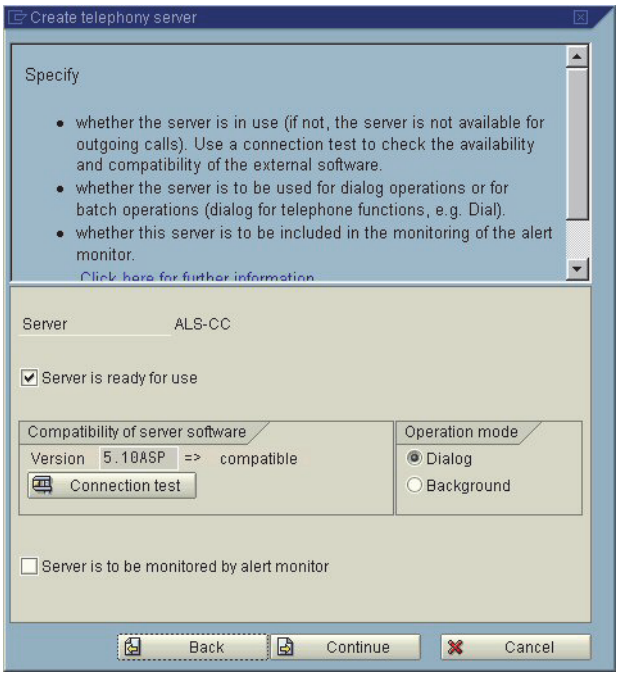
15. Skip the next dialog with **Continue**, since we do not configure a calling number replacement there.

16. Select the **Server is ready for use** option to immediately start the new telephony server.

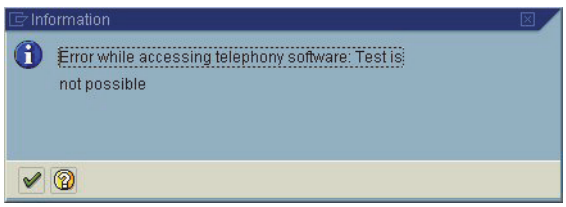


17. SAP R/3 activates the server after a successful system test only. Start this test with **Yes**.





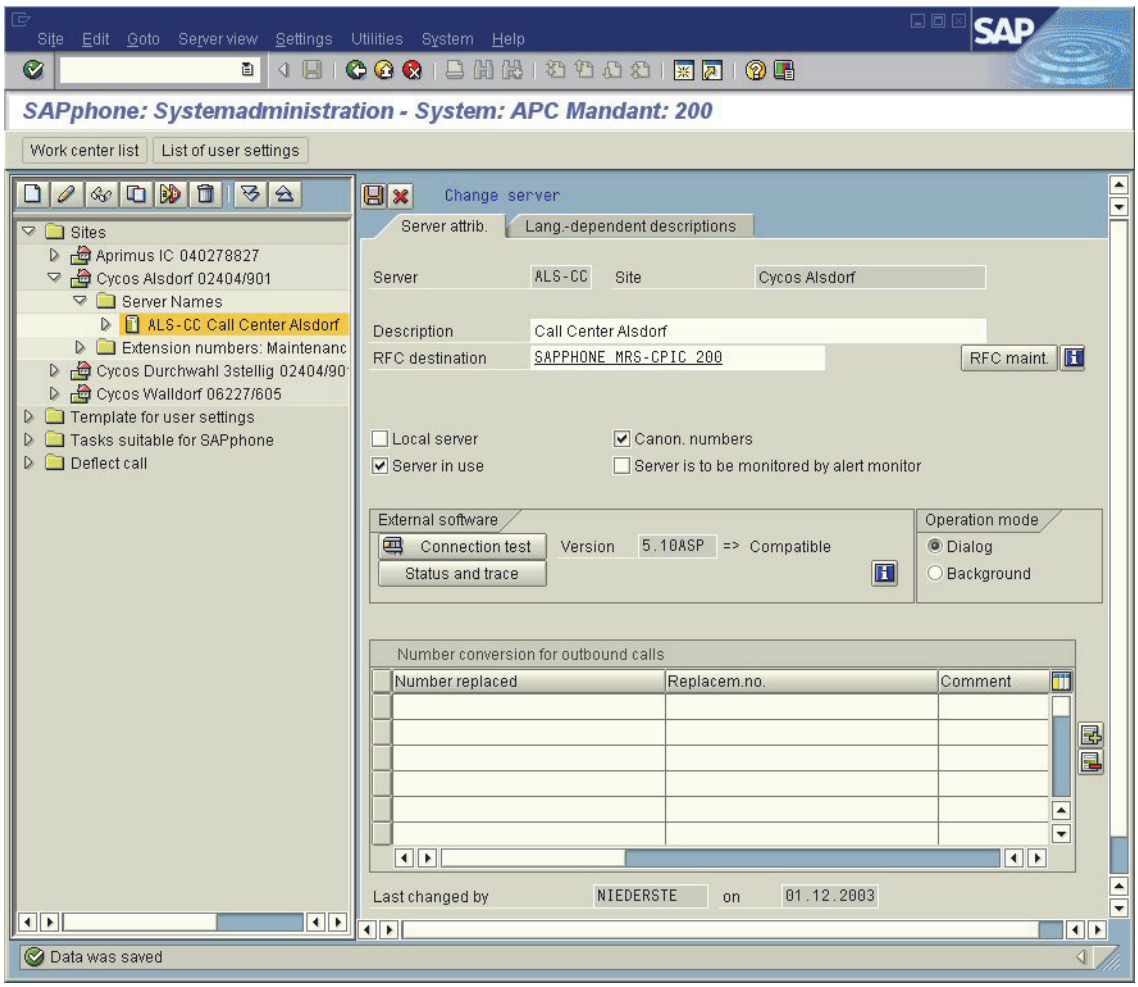
In case of an error the SAP system reports the termination of the connection test with the following message:



18. After a successful test push **Continue**.

19. Save the settings performed with the **Save** icon in the toolbar.

This window displays all information on the telephony server just configured. Furthermore, you can check all settings made and modify them if required.



NOTE:
You reach this dialog via **User menu > Tools > Administration > Business Communication > Communication > SPHB–SAPphone** (**/nSPHB**) under the menu option **Sites > Server Names**. Select the desired server from those listed there.

The required telephony server is thus defined. Now you need to adapt the SAP user profile for the application of CTI functions.

Configuration of the work center and user settings

In the following paragraphs we will configure CTI functions under SAP R/3 for the example user Joe Brown. We have previously defined this SAP user under SAP R/3 so that we can now access his profile. Since these settings are saved in the registry of the user workstation by default, the following configurations must be performed on the PC of the relevant user.

To enable Joe Brown using the CTI functions under SAP R/3, we will configure his profile in the following way.

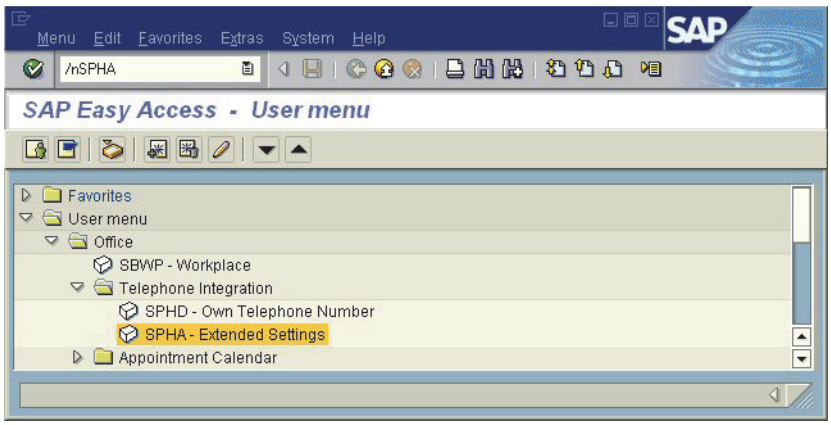
IMPORTANT:
The following settings are administered in the registry of the PC on which you perform settings. You can thus make configurations for only one user on any workstation.

NOTE:
The following manual way of configuration is sufficient for our scenario. In solutions with a large number of CTI users under SAP R/3 it may however be useful not to configure users individually.
In this case the SAP administrator can define so-called sample profiles. The desired SAP users can then be assigned to such a sample profile. A sample profile is also created under the transaction code **/nSPHB**
. You find more information on this in the SAP R/3 product documentation.

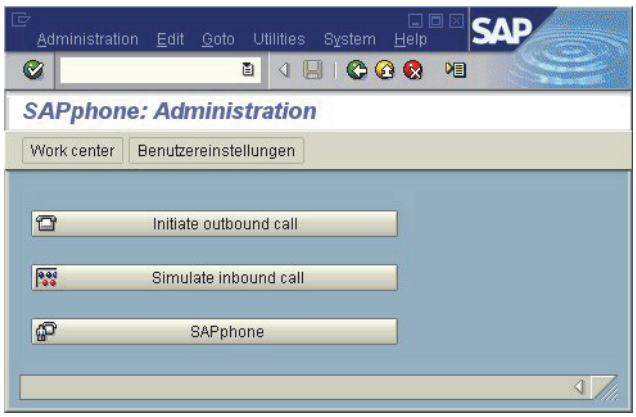
---

1. Log in to the SAP R/3 system via the SAPGUI under the user to be defined.

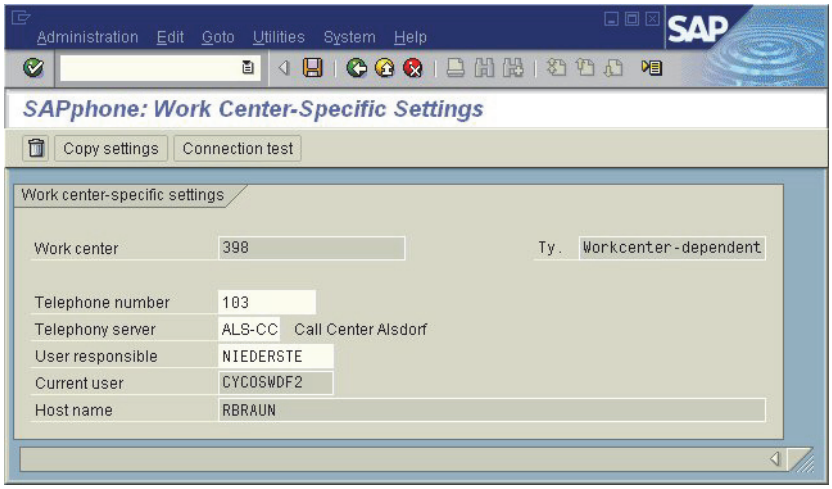
2. Enter the transaction code **/nSPHA** in the SAPGUI command line and confirm the entry. Or select from the directory tree the menu option **User menu > Office > Telephone Integration > SPHA–Extended Settings** with a doubleclick.



3. Push the **Work center** button.

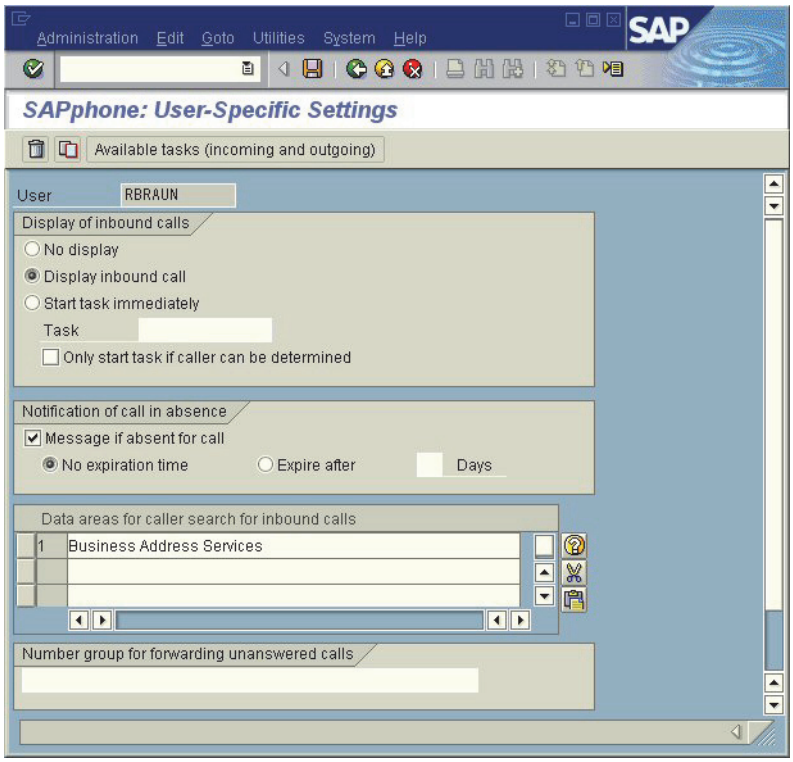


4. In the **Telephone number** field enter the calling number of the SAP user's telephone terminal device.



5. Select the previously configured telephony server via the selector icon at the end of the **Telephony server** field.
6. Save the user settings with the **Save** icon in the toolbar.
7. Push the **Back** icon in the toolbar to return to the SAPphone interface administration (transaction code **/nSPHA**).
8. Push the **User settings** button.

9. In the *Display of inbound calls* section select the **Display inbound call** option.



10. In the *Notification of call in absence* section select the **Message if absent for call** and **No expiration time** settings.

11. In the *Data areas for caller search...* section select the **Business Address Services** option via the selector icon in the text field.

NOTE:
In the data area configured here the originator calling number is searched for when a phone call comes in (cf. Section 3.2.1, “Address Formats and ANI Hits”, on page 39).

---

12. Save the settings performed with the **Save** icon in the toolbar.

The configuration of the CTI solution is thus accomplished. In the following section we will check the system for trouble-free operation.

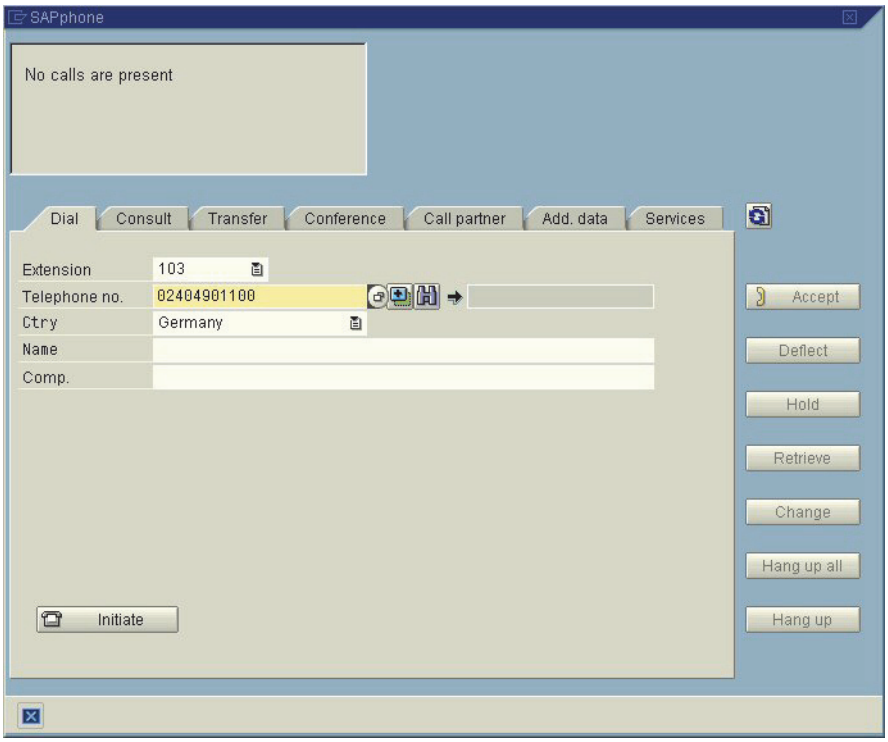
4.7.5 Conclusive CTI Test

To perform a short CTI function test for the previously defined user Joe Brown we use a test interface by SAP R/3 in which, for example, the processing of Call Attached Data (CAD) can be handled.

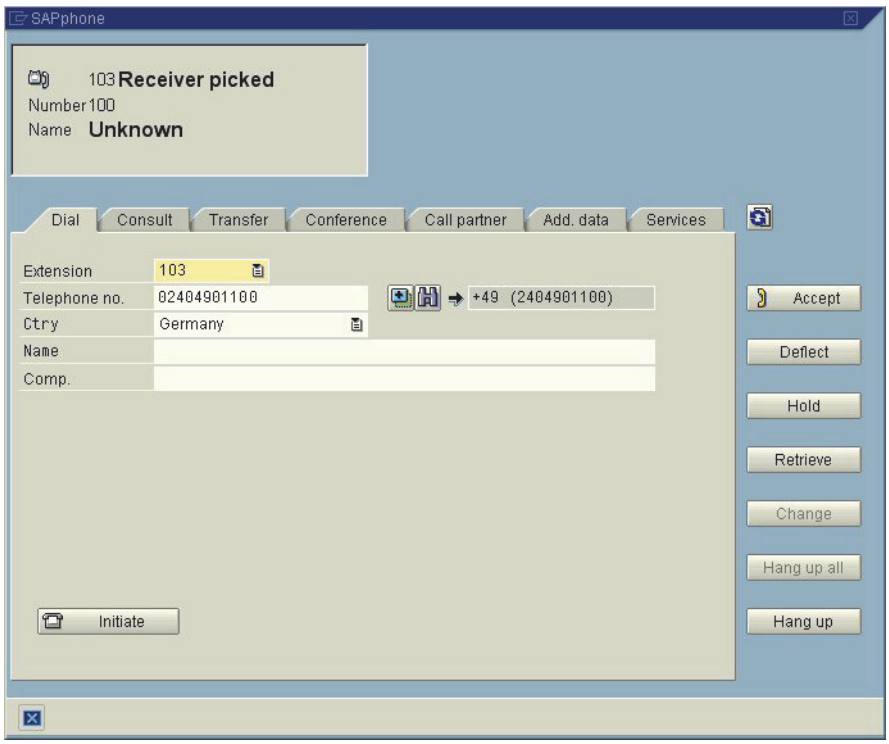
Proceed as follows:

1. Log in under the example user – in our example under user *JBROWN*.
2. Enter the **/nSPHT** transaction code in the SAPGUI command line.
3. Push the **Call** button to open SAPphone for a call.

4. In the **Telephone no.** field enter an external calling number to test the CTI functions at the work center. Push the **Initiate** button.



The call information is passed on to the PBX, which sets up a connection to the called subscriber. Therefore, the telephone of the example user should now signal an outgoing call.



Our CTI environment works perfectly.

5 Function Reference

In this chapter you find detailed reference information about the following XPR and SAP components that are important in the XPR-SAP integration context.

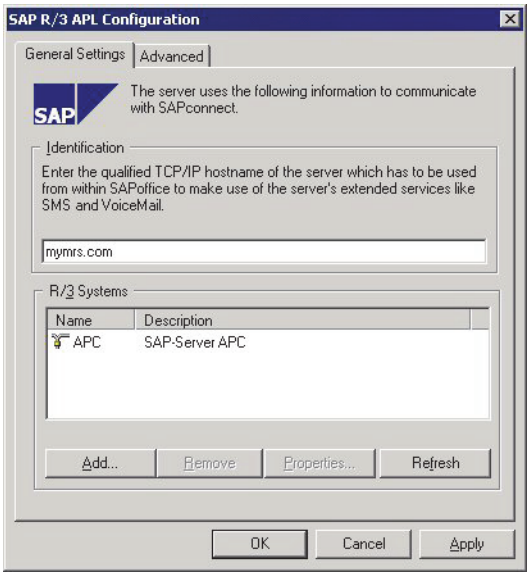
- SAPR3 APL
- SMTP APL
- SAPPHONE APL
- XML APL
- saprfc.ini
- SAP R/3 Client SAPphone
- mySAP CRM Interaction WebClient (IC WebClient)
- CyViewer

5.1 SAPR3 APL

In this section we describe the following configuration settings for the XPR server's SAPR3 APL:

- Settings – General Settings
- Settings – Advanced Settings
- System Properties – System
- System Properties – Server
- System Properties – Client

5.1.1 Settings – General Settings



Identification

Defines a host name that can be addressed with an INT address from within SAP for using XPR services that are actually not directly addressable under SAP.

Example:
From within SAP a short message with the INT address `SMS/01702542323@company.com` is passed on to the XPR server via the *SAPconnect* interface. The identifier *company.com* defined under **Identification** indicates that the message is not to be sent as e-mail but to an internal XPR service. On grounds of the additionally given address `SMS/010702542323` the XPR server identifies the message as short message to be sent to the calling number specified.

R/3 System

The list shows the connections that are configured in the SAPR3 APL and via which the APL can communicate with SAP R/3 systems. The SAPR3 APL and the SAP R/3 systems communicate via the *SAPconnect* interface.
If several clients of an SAP R/3 system are to be connected via the SAPR3 APL, you should configure an individual connection to the relevant SAP R/3 system for each client.

Add

Opens the configuration dialog which you can configure a new connection to an SAP R/3 system.

Remove

Removes the selected connection from the connection list and thus the associated connection information from the SAPR3 APL configuration.

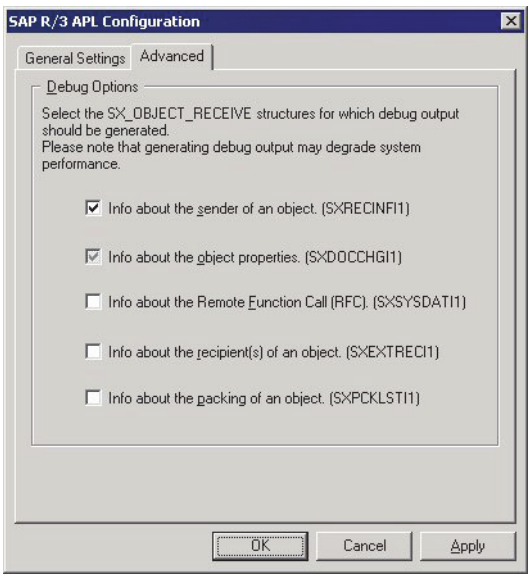
Properties

Shows the configuration of the connection selected in the connection list. Corresponds to a **double-click** on the desired list entry.

Refresh

Updates the displayed SAP R/3 connection list.

5.1.2 Settings – Advanced Settings



Info about the sender of an object

Configures the object structure SXRECINFI1 for the debug output.
The following setting options apply:

- black check mark: Output in detailed scope
- gray check mark: Output in normal scope
- no check mark: Disabled

Info about the object properties

Configures the object structure SXDOCCHGI1 for the debug output.
The same setting options apply as described under the SXRECINFI1 structure (see above).

Info about the Remote Function Call

Configures the object structure SXSYSDATI1 for the debug output.
The same setting options apply as described under the SXRECINFI1 structure (see above).

Info about the recipient(s) of an object

Configures the object structure SXEXTRECI1 for the debug output.
The same setting options apply as described under the SXRECINFI1 structure (see above).

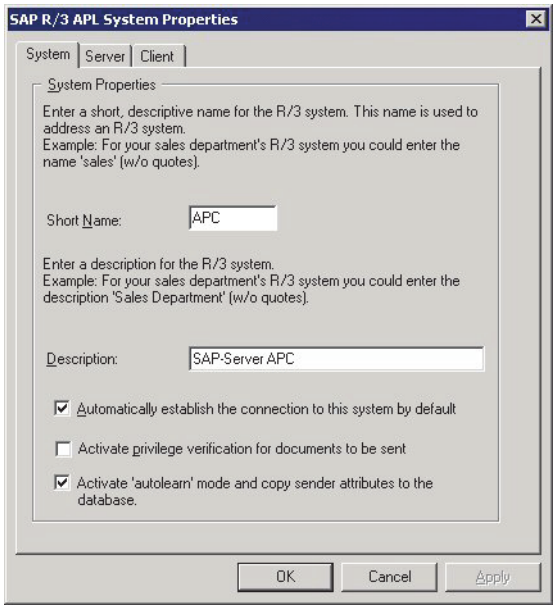
Info about the packing of an object

Configures the object structure SXPCKLSTI1 for the debug output.
The same setting options apply as described under the SXRECINFI1 structure (see above).

Info about the sender of an object

Configures the object structure SXRECINFI1 for the debug output.
The following setting options apply:

5.1.3 System Properties – System



Short Name

In combination with the APL name ’SAPR3’ this name defines the description for a logical line to the relevant SAP system. In case of the above setting the associated logical line carries, for example, the name ’SAPR3APC’.
The name must not exceed eight characters and must be **unique**. For improved clarity in the XPR log we recommend selecting a short name – for example the three letters of the SAP system name.

Attention:
In this context the SAPR3 APL does not check whether the specified name may have already been allocated for another connection.

Description

Defines an optional, short description for the relevant SAP R/3 system.

Automatically establish the connection to this system by default

Activates an automatic setup of the connection to the relevant SAP R/3 system after starting the APL.

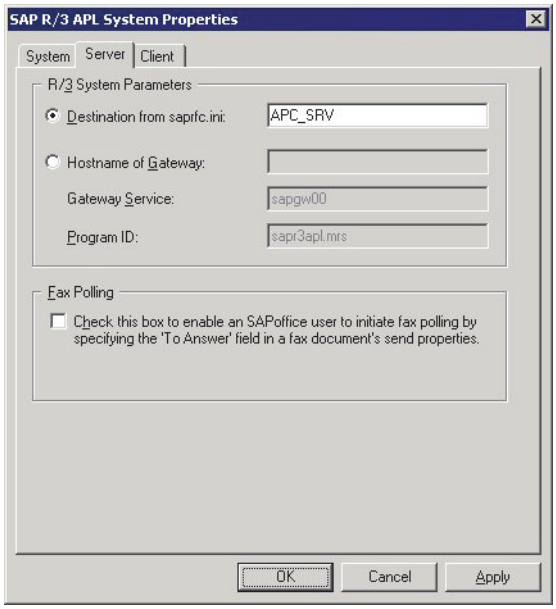
Activate privilege verification for documents to be sent

Activates for the relevant SAP R/3 system a check as to whether an SAP user is entered in the XPR user database and has in addition the send privilege upon sending a message.
If this option is set and the originator is not entered in the XPR user database or does not have the send privilege, he/she cannot send messages.
Exception:
If a default user whose XPR mailbox is used by an SAP R/3 user for sending messages is specified in the XPR server configuration of the SAP R/3 connection though, the send privilege of this default user is checked (cf. Section 6.1.4, “DefaultUser [REG_SZ]”, on page 297).

Activate ’autolearn’ mode and copy sender attributes to the database

Activates the ’autolearn’ mode for the relevant SAP R/3 system (cf. Section 3.2.2.4, “XPR Server ’AutoLearn’Mode”, on page 44).

5.1.4 System Properties – Server



Destination from saprfc.ini

Activates the RFC configuration by the `saprfc.ini` (cf. Section 3.1.3.3, “Saprfc.ini – the RFC Configuration File”, on page 32).
If the RFC parameter configuration for the relevant SAP R/3 system is activated via the `saprfc.ini`, the referencing identifier, under which the associated settings are defined, is specified within the `saprfc.ini`.
This identifier must be **unique** within the `saprfc.ini`.

Hostname of Gateway

Activates the manual configuration of the RFC parameters without using the `saprfc.ini` and defines the router connect string for the SAP system on which the desired gateway service is configured (cf. **GWHOST** under Section 3.1.3.3, “Saprfc.ini – the RFC Configuration File”, on page 32).
This entry field is only active when the **Hostname of Gateway** option is selected.

Gateway service

Defines the gateway service of the SAP system specified under **Hostname of Gateway** (cf. **GWSERV** in Section 3.1.3.3, “Saprfc.ini – the RFC Configuration File”, on page 32).
The entry always starts with **sapgw**, followed by two numbers (00-99) – called system number. This number specifies among other things the last two digits of the TCP port for which the corresponding gateway was configured and represents mostly value **00**. In case of doubt consult your SAP administrator for the correct system number.
This entry field is only active when the **Hostname of Gateway** option is selected.

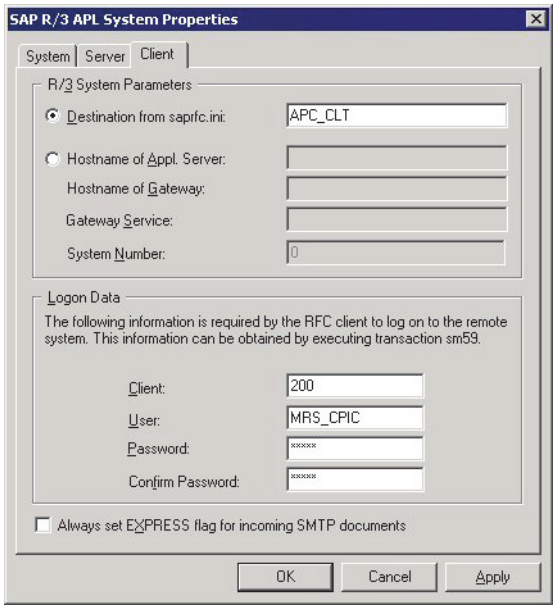
Program ID

Defines the program ID for RFC connections to the SAP system specified under **Hostname of Gateway** (cf. **PROGID** under Section 3.1.3.3, “Saprfc.ini – the RFC Configuration File”, on page 32).
The program ID must be configured on the SAP application server and on the XPR server in the same way. Respect **upper and lower case**. Furthermore the ID must be **unique**.
This entry field is only active when the **Hostname of Gateway** option is selected.

Fax Polling

Activates the option to interpret a ’To Answer’ send attribute set in an SAP fax send job as fax polling job for the relevant SAP R/3 system.

5.1.5 System Properties – Client



Destination from saprfc.ini

Activates the RFC configuration by the `saprfc.ini` (cf. Section 3.1.3.3, “Saprfc.ini – the RFC Configuration File”, on page 32).
If the RFC parameter configuration for the relevant SAP R/3 system is activated via the `saprfc.ini`, the referencing identifier, under which the associated settings are defined, is specified within the `saprfc.ini` (cf. **DEST** in Section 5.5, “saprfc.ini”, on page 283).
This identifier must be **`unique`** within the **saprfc.ini**.

Hostname of Appl. Server

Activates the manual configuration of the RFC parameters without using the `saprfc.ini` and defines the router connect string for the SAP application server (cf. **ASHOST** in Section 5.5, “saprfc.ini”, on page 283).
This entry field is only active when the **Hostname of Appl. Server** option is selected.

Hostname of Gateway

Defines the router connect string for the SAP system on which the desired gateway service is configured (cf. **GWHOST** in Section 5.5, “saprfc.ini”, on page 283).
This entry field is only active when the **Hostname of Appl. Server** option is selected.

Gateway service

Defines the gateway service of the SAP system specified under **Hostname of Gateway** (cf. **GWSERV** in Section 5.5, “saprfc.ini”, on page 283).
The entry always starts with **sapgw**, followed by two numbers (00-99) – called system number. This number specifies among other things the last two digits of the TCP port for which the corresponding gateway was configured and represents mostly value **00**. In case of doubt consult your SAP administrator for the correct system number.
This entry field is only active when the **Hostname of Appl. Server** option is selected.

System Number

Defines the system number of the SAP system specified under **Hostname of Gateway** (cf. **SYSNR** in Section 5.5, “saprfc.ini”, on page 283).
The system number specifies the last two digits of the TCP port for which the corresponding gateway service was configured and represents mostly value **00**. In case of doubt consult your SAP administrator for the correct system number.
This entry field is only active when the **Hostname of Appl. Server** option is selected.

Client

Specifies the client number under which the RFC client of the SAPR3 APL communicates with the SAP R/3 system.

User	Specifies the user ID under which the RFC client of the SAPR3 APL communicates with the SAP R/3 system.
Password	Specifies the password for the above user under which the RFC client of the SAPR3 APL communicates with the SAP R/3 system. The entry in this field is hidden.
Confirm Password	The above password needs to be re-entered here to avoid typing errors.
Always set EXPRESS flag for incoming SMTP documents	Activates the generation of EXPRESS messages under SAP in case of an incoming SMTP message. Via the automatic display of such an EXPRESS message in the SAPGUI, SAP users are informed about a newly arrived e-mail.

5.2 SMTP APL

You find reference information about the SMTP APL in the *OpenScape Xpressions Server Administration* manual.

5.3 SAPPHONE APL

In this section we describe the following configuration settings for the XPR server's SAPphone APL:

- Automated Configuration of the saprfc.ini
- Settings – SAPphone
- Settings – Special Phone Device Settings
- System Properties – General
- System Properties – RFC Server
- System Properties – RFC Client
- System Properties – RFC Login

5.3.1 Automated Configuration of the *saprfc.ini*

The SAPphone APL has an automated mechanism to

- store RFC connection settings in the `saprfc.ini`
- read RFC connection settings from the `saprfc.ini`.

Storing settings in the *saprfc.ini*

In SAPphone APL configuration dialogs you can define all information required for the configuration of an RFC connection. Of this information only those items are stored in the SAPphone APL configuration that do not belong to the `saprfc.ini` parameters. All other information is automatically stored by the SAPphone APL in the `saprfc.ini` as soon as you select the **Apply** or **OK** button in the **SAPphone APL settings** configuration dialog.

NOTE:
The SAPphone APL only stores settings for the server or client destination of a newly created connection in the `saprfc.ini` if the relevant server or client destination does not exist in the `saprfc.ini` yet.

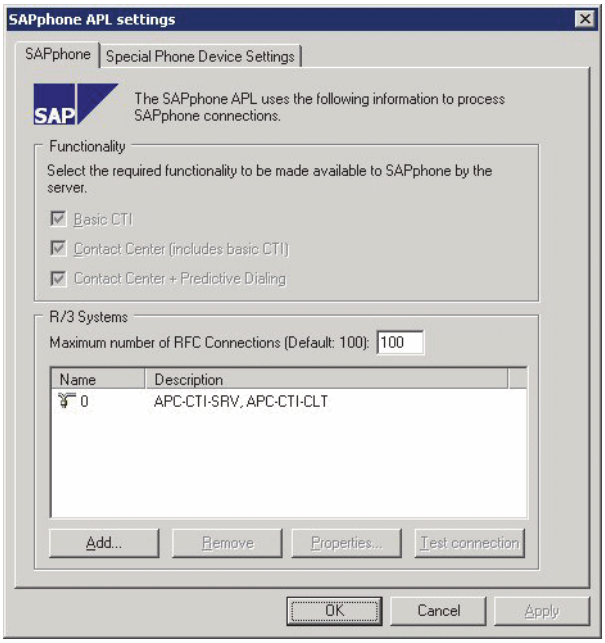
Reading settings from the *saprfc.ini*

The SAPphone APL can load RFC connection information from the `saprfc.ini`. The requires at least the configuration of the following settings in the SAPphone APL and their storage in the **SAPphone APL settings** dialog via **Apply** or **OK** for the connection to be loaded.

- Server Destination on the *RFC Server* configuration tab
- Client Destination on the *RFC Client* configuration tab
- Client, User and Password on the *RFC Login* configuration tab.

So that the SAPphone APL can load information from the `saprfc.ini`, appropriate entries must exist in the `saprfc.ini` for the specified server and client destination. If the server and/or client destination does not exist in the `saprfc.ini`, the APL creates the specified server and/or client destination in the `saprfc.ini`.

5.3.2 Settings – *SAPphone*



Functionality

The options listed are currently without function and can therefore not be configured individually. For the time being the SAPphone APL generally accepts from SAP R/3 all RFC commands defined in the SAPphone interface.

R/3 Systems

The list shows the connections that are configured in the SAPphone APL and via which the APL can communicate with SAP R/3 systems. The SAPphone APL and the SAP R/3 systems communicate via the *SAPphone* interface.
If several clients of an SAP R/3 system are to be connected via the SAPR3 APL, you should configure an individual connection to the relevant SAP R/3 system for each client.

Maximum number of RFC Connections

The `LibRFC32.dll` by SAP limits the number of parallel RFC connections to value 100 by default (cf. Section 3.1.3, “RFC Protocol”, on page 29).
With this setting this limitation can be customized for the individual APL.

Add

Opens the configuration dialog which you can configure a new connection to an SAP R/3 system.

Remove

Removes the selected connection from the connection list and thus the associated connection information from the SAPphone APL configuration.

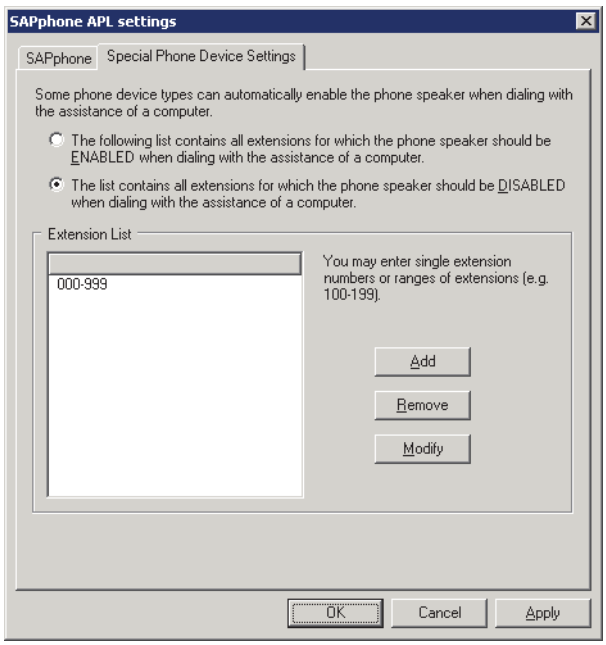
Properties

Shows the configuration of the connection selected in the connection list. Corresponds to a **double-click** on the desired list entry.

Test connection

Starts a connection test for the connection selected in the connection list.

5.3.3 Settings – Special Phone Device Settings



…phone speaker should be ENABLED when dialing...
Defines all entries of the following list as extensions of telephone terminal devices for which the phone speaker is to be *enabled* when a call is set up from within the associating CTI application.
For a correct functionality this CTI feature must be supported by the PBX. Furthermore, additional settings must be performed at the PBX if required.

…phone speaker should be DISABLED when dialing...
Defines all entries of the following list as extensions of telephone terminal devices for which the phone speaker is to be *disabled* when a call is set up from within the associating CTI application.
For a correct functionality this CTI feature must be supported by the PBX. Furthermore, additional settings must be performed at the PBX if required.

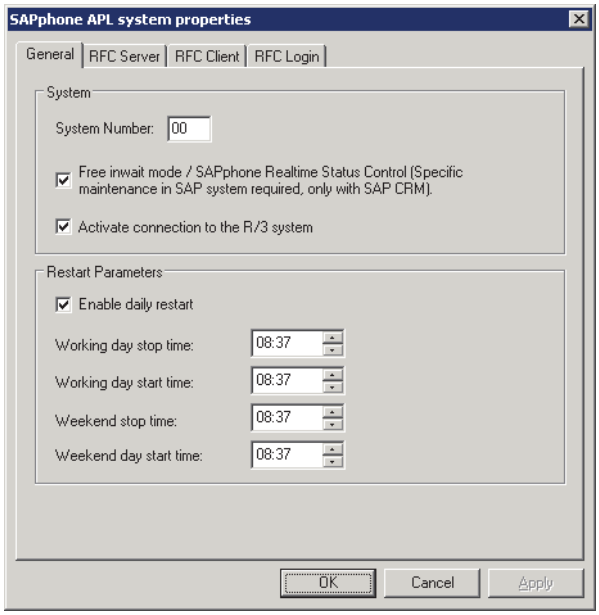
Extension List
The list displays the extensions of the telephones for which the above speaker option is to apply.

Add
Adds a new entry to the extension list. Single extensions as well as entire extension ranges may be entered. The latter ones are entered with a '–' character (for example 100–200).
Entries in an invalid format will not be copied.

Remove
Removes the currently selected entry from the extension list. If no entry is selected, this button is inactive.

Change
Enables the modification of the currently selected entry in the extension list. If no entry is selected, this button is inactive.

5.3.4 System Properties – General



System Number — Defines the system number of the SAP R/3 system.
The system number specifies the last two digits of the TCP port for which the corresponding gateway service was configured and represents mostly value **00**. In case of doubt consult your SAP administrator for the correct system number.
This setting is automatically loaded from the `saprfc.ini` after the initial storing of the connection (cf. Section 5.3.1, “Automated Configuration of the saprfc.ini”, on page 274).

Free inwait mode/ … — Activates the free inwait mode. This mode is not supported anymore.

Activate connection to the R/3 system — Specifies whether the relevant connection is automatically booted upon the SAPphone APL start.

Enable daily restart — Activates a daily restart for the relevant connection to terminate the RFC connections no longer required for this connection.

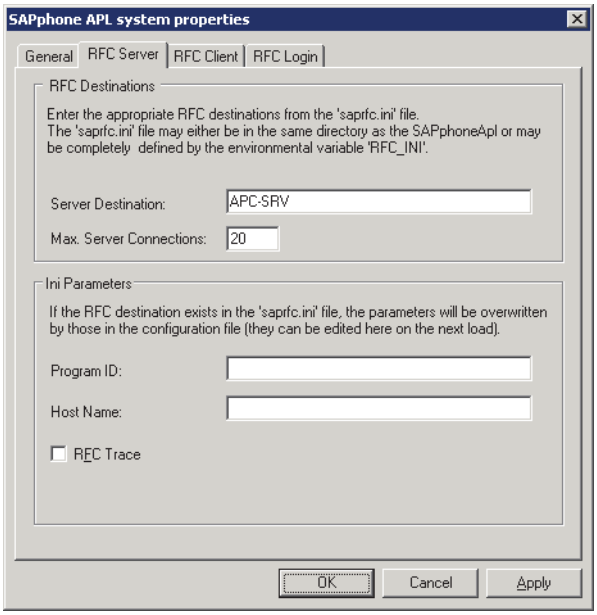
Working day stop time — Specifies the time at which the relevant connection is stopped on working days.

Working day start time — Specifies the time at which the relevant connection is started on working days.

Weekend stop time — Specifies the time at which the relevant connection is stopped on weekend days.

Weekend start time — Specifies the time at which the relevant connection is started on weekend days.

5.3.5 System Properties – RFC Server



Server Destination
Specifies the identifier under which the server configuration files for the relevant connection are to be stored or are stored in the `saprfc.ini`.

Max. Server Connections
Specifies the maximum number of RFC server connections for the relevant connection (cf. Section 3.1.3, “Number of RFC connections via SAPphone”, on page 31).

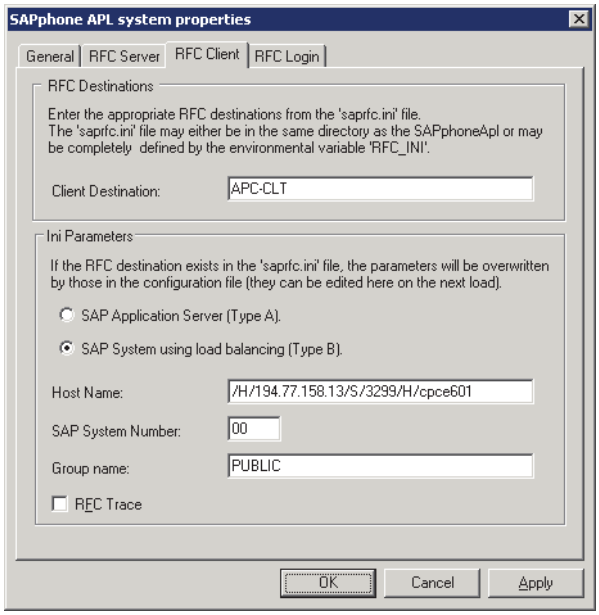
Program ID
Specifies the program ID for the relevant connection (cf. **PROGID** in Section 3.1.3.3, “Saprfc.ini – the RFC Configuration File”, on page 32).
The program ID must be configured on the SAP application server and on the XPR server in the same way. Respect **upper and lower case**. Furthermore the ID must be **unique**.
This setting is automatically loaded from the `saprfc.ini` after the initial storing of the connection (cf. Section 5.3.1, “Automated Configuration of the saprfc.ini”, on page 274).

Host
Defines the router connect string for the SAP system on which the desired gateway service is configured (cf. **GWHOST** in Section 5.5, “saprfc.ini”, on page 283).
This setting is automatically loaded from the `saprfc.ini` after the initial storing of the connection (cf. Section 5.3.1, “Automated Configuration of the saprfc.ini”, on page 274).

RFC Trace
Activates monitoring of the RFC communication between XPR server and SAP R/3 system.
This setting is automatically loaded from the `saprfc.ini` after the initial storing of the connection (cf. Section 5.3.1, “Automated Configuration of the saprfc.ini”, on page 274).

Attention:
This setting may be activated for test purposes only!
If the RFC communication logging is activated, the system load may reach a level that negatively affects 'real-life' operation.

5.3.6 System Properties – RFC Client



Client Destination

Specifies the identifier under which the client configuration files for the relevant connection are to be stored or are stored in the `saprfc.ini`.

SAP Application Server

If this option is activated, the SAPphone APL RFC client service starts only if required and does not prematurely register with the SAP application server.
This configuration corresponds in the `saprfc.ini` to the setting: `Type=A`.
This setting is automatically loaded from the `saprfc.ini` after the initial storing of the connection (cf. Section 5.3.1, “Automated Configuration of the saprfc.ini”, on page 274).
This entry field is only displayed if the **SAP System using load balancing** option is selected.

SAP System using load balancing

If this option is activated, the SAPphone APL RFC client service supports the load balancing feature.
This configuration corresponds in the `saprfc.ini` to the setting: `Type=B`.
This setting is automatically loaded from the `saprfc.ini` after the initial storing of the connection (cf. Section 5.3.1, “Automated Configuration of the saprfc.ini”, on page 274).
This entry field is only displayed if the **SAP System using load balancing** option is selected.

Host

Defines the router connect string for the SAP application server (cf. **ASHOST** in Section 5.5, “saprfc.ini”, on page 283).
This setting is automatically loaded from the `saprfc.ini` after the initial storing of the connection (cf. Section 5.3.1, “Automated Configuration of the saprfc.ini”, on page 274).

SAP System Number

Defines the system number of the SAP R/3 systems.
The system number specifies the last two digits of the TCP port for which the corresponding gateway service was configured and represents mostly value **00**. In case of doubt consult your SAP administrator for the correct system number.
This entry field is only displayed if the **SAP System using load balancing** option is selected.

Group name

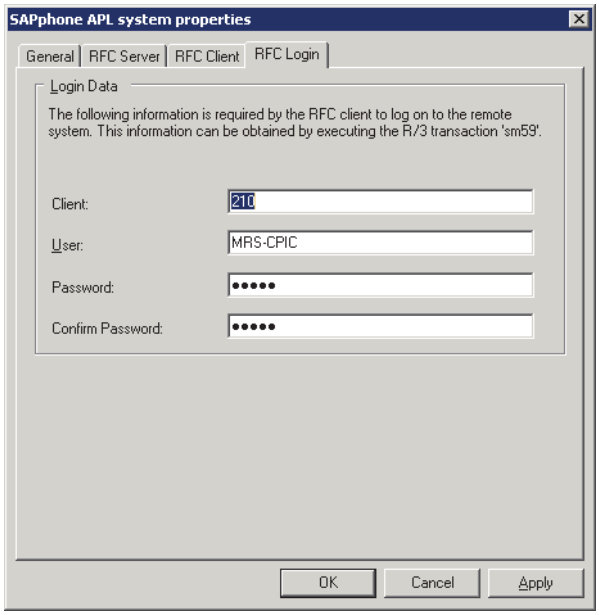
Defines the name of the group in which the SAP R/3 systems to be used for load balancing are compiled.
This entry field is only displayed if the **SAP System using load balancing** option is selected.

RFC Trace

Activates monitoring of the RFC communication between XPR server and SAP R/3 system.
This setting is automatically loaded from the `saprfc.ini` after the initial storing of the connection (cf. Section 5.3.1, “Automated Configuration of the saprfc.ini”, on page 274).

Attention:
This setting may be activated for test purposes only!
If the RFC communication logging is activated, the system load may reach a level that negatively affects 'real-life' operation.

5.3.7 System Properties – RFC Login



Client — Specifies the client number under which the RFC client of the SAPPHONE APL communicates with the SAP R/3 system.

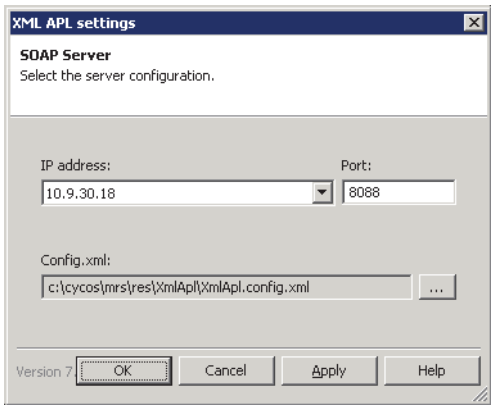
User — Specifies the user ID under which the RFC client of the SAPPHONE APL communicates with the SAP R/3 system.

Password — Specifies the password for the above user under which the RFC client of the SAPPHONE APL communicates with the SAP R/3 system.
The entry in this field is hidden.

Confirm Password — The above password needs to be re-entered here to avoid typing errors.

5.4 XML APL

This section describes all XPR server XML APL configuration settings.



IP-Address Defines the network card IP address used for the HTTP server of the XPR server. Via this interface the SOAP/HTTP communication of the ICI interface is lead to the SAP R/3 system.

Port Defines the TCP port used for the HTTP communication of the HTTP server.

Config.xml Defines the path under which the configuration file for the HTTP server is stored. The configuration file `XmlApl.config.xml` is copied to the *<XPR Install>*`\res\XmlApl` directory during the XPR server installation by default.

5.5 *saprfc.ini*

The `saprfc.ini` file is a configuration file of the `LibRFC32.dll`. It is used to configure the interfaces *SAPconnect* and *SAPphone* of the XPR server for the RFC communication with an SAP application server.

The `saprfc.ini` must be stored in the <*XPR Install*>`\bin\` directory by default.

As alternative to such defaulted paths you can define an individual directory under the Windows environment variable *RFC_INI* for storing the `saprfc.ini`. To copy this optional modification of the system variable, you need to reboot the XPR server platform.

Example extract from the `saprfc.ini`:

```
[…]

[RFC-SERVER]
DEST=SRV
TYPE=R
PROGID=CE6_850_MMCC
GWHOST=/H/194.77.158.13/H/…/S/3297/H/cpce601
GWSERV=sapgw00
RFC_TRACE=0

[RFC-CLIENT]
DEST=CE6
TYPE=A
ASHOST=/H/194.77.158.13/H/…/S/3297/H/cpce601
SYSNR=00
RFC_TRACE=0
ABAP_DEBUG=0
USE_SAPGUI=0

[…]
```

List and description of the relevant entries:

[RFC SERVER] Specifies the beginning of the parameters for the server communication of a RFC connection (optional; see parameter DEST).

[RFC CLIENT] Specifies the beginning of the parameters for the client communication of a RFC connection (optional; see parameter DEST).

DEST

Identifier according to which the XPR server LibRFC.dll references the required entry in the `saprfc.ini`. Owing to its referencing character this parameter must be **unique** each!
The entries for the next SAP system begin with this parameter by definition. For this reason the DEST entry must be present in the first line for the entries of the associating SAP system.
The values specified here must correspond to the entries in the following places:

SAPR3 APL
Corresponds to the configuration entry in the "Destination from `saprfc.ini`" field under the client's system properties.
Corresponds to the configuration entry in the "Server destination" field under the system properties of the RFC configuration.

SAPphone APL
Corresponds to the configuration entry in the "Client destination" field under the system properties of the RFC configuration.
Corresponds to the configuration entry in the "Server destination" field under the system properties of the RFC configuration.

TYPE

This entry defines the manner in which the XPR server accesses the SAP application server via the RFC protocol.
Common parameters for an XPR-SAP integration are:

R – Registering
May be configured for the RFC server of the XPR server. In this way the RFC server of the SAPR3 or SAPPHONE APL registers with the SAP gateway host as available service and waits for queries by the RFC client.

A – Starting up
May be configured for the RFC client of the XPR server. The RFC client service of the SAPR3 respectively SAPphone APL is in this configuration only started when needed and not prematurely registered with the SAP application server as is the case with type R.

B – Load Balancing
May be configured for the RFC client of the XPR server. The RFC client service of the SAPR3 respectively SAPphone APL supports in case of this type the load balancing feature.

PROGID

The program ID serves for authenticating an RFC communication.
It must be configured on the SAP application server and on the XPR server in the same way. Respect upper and lower case.

GWHOST

This parameter of the RFC server contains the router connect string to the host on which the desired gateway server is configured. Make sure that the expression specified ends in the host name or the IP address of the SAP destination system.

GWSERV

Here the name of the desired gateway service is specified. This name always begins with **sapgw**, followed by two numbers – called system number. This number specifies among other things the last two digits of the TCP port for which the corresponding gateway service was configured and represents mostly value **00.**
SAP gateway servers operate with a TCP port within the range of 3300 to 3399. With the parallel operation of further SAP services (for example dispatcher) on an application server, all services must be configured for different TCP ports. For the SAP gateway service, TCP port 3300 is used by default.

RFC_TRACE

Activates monitoring of the RFC communication between XPR server and SAP R/3 system.
Possible values for this setting are:

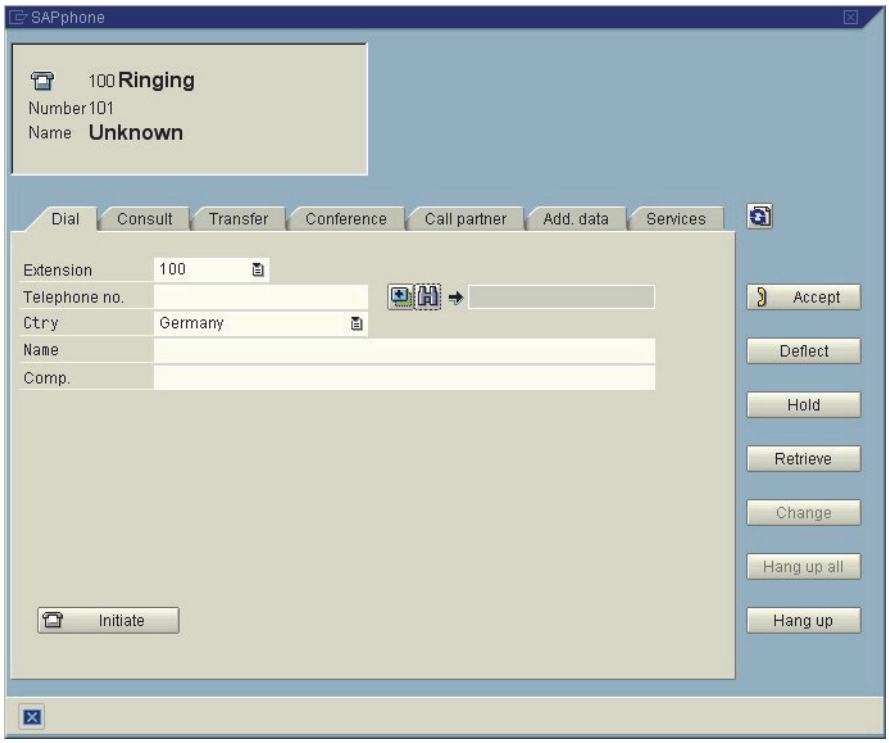
RFC_TRACE=0: RFC tracing deactivated
RFC_TRACE=1: RFC tracing activated

ASHOST	This RFC client parameter contains the router connect string to the host that is configured as application server. Make sure that the expression specified ends in the host name or the IP address of the SAP destination system.
SYSNR	The system number corresponds to the system number displayed in the SAPGUI under the application server properties (cf. parameter **GWSERV**). It is mostly **00.**

5.6 SAP R/3 Client *SAPphone*

The *SAPphone* is the SAP R/3 Softphone application. In this function it provides all elements for simple telephone operation.

The following illustration provides an overview of the *SAPphone* user interface elements.



In the upper portion a field informs about the current telephone connection. Thereunder, seven tabs provide displays and functions for various call situations. On the right hand side you will find buttons for basic functions.

The following table describes the most important interface areas.

Call status portion	This field provides information on the SAPphone status – thus on the assigned telephone terminal device. Here a current call is displayed and basic information on the caller and the individual telephone is given. The field format varies according to the number of connected callers. While up to two connections are displayed in individual windows, connections to more than two subscribers are indicated in a list.
'Dial' tab	Provides displays and functions for the establishment of single telephone connections.
'Consult' tab	Provides displays and functions for setting up a consultation. After establishing the connection you can continue in three different ways: Connecting the original caller with the consulted subscriber Setting up a three-party conference with both subscribers Terminating the consultation to return to the original subscriber

'Transfer' tab	Provides displays and functions for call forwarding. The subscriber can be forwarded with or without consultation.
'Conference' tab	Provides displays and functions for setting up and administering conferences.
'Call partner' tab	Provides information on the conversational partner. Prerequisite is an ANI-Hit in the configured SAP R/3 data range (cf. Section 3.2.1, "Address Formats and ANI Hits", on page 39).

The following table describes the most important operating elements.

Hang up all	Clears the connection to all currently connected subscribers. If only one conversation is going on, this connection is cleared. If several connections have been set up (e.g. in a self-established conference or consultation), all connections are cleared.
Accept	Answers an incoming call.
Hang up	Clears the connection to a single subscriber. If only one conversation is going on, this connection is cleared. If several connections have been set up (e.g. in a conference or a consultation), one needs to be selected for termination.
Initiate	Initiates a new call.
Hold	Switches the current call to status *Hold* and enables in this way a subsequent consultation.
Deflect	Enables rerouting of incoming calls.
Change	Enables toggling between several existing telephone calls.
Retrieve	Terminates a consultation and connects to the original subscriber.

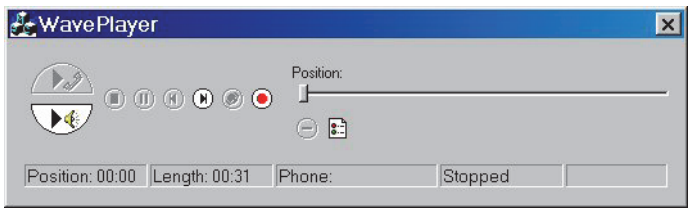
5.7 mySAP CRM Interaction WebClient (IC WebClient)

The IC WebClient is used as SAP user interface if an SAP R/3 system is connected to the XPR server via the *ICI* interface.

5.8 *CyViewer*

The CyViewer is an XPR client that enables the display of fax messages and the output of audio files (for example voice mails) on a telephone. It works on the basis of the MSP.

The following figure provides an overview of the CyViewer Wave Player elements.



The following table introduces the Wave Player operating elements.

Starts sound file playback via the speakers of the respective PC.

Starts sound file playback via the telephone terminal device that is assigned to the corresponding PC by CTI.
This option is only available when the PlayWave protocol has been installed in the relevant XPR server Telematic APL.

If an audio file playback was started before selecting this icon, the output is stopped in the current position. Another playback starts where the message begins.
If an audio file recording was started before selecting this icon, the recording is stopped and terminated.

Skips to the beginning of the message of which the output was previously started via PC or telephone terminal device.

Skips to the end of the message of which the output was previously started via PC or telephone terminal device (for example to attach an annotation).

Starts message recording via the telephone terminal device without the receiver having to be picked up. When this option is selected, the CTI work center telephone signalizes the recording request with a ringing tone.
This option is only available when the PlayWave protocol has been installed in the relevant XPR server Telematic APL.

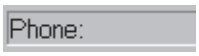
Starts recording a message via the microphone of the PC on which the SAP Voice Player was started.

Opens the configuration dialog for the system settings of the SAP Voice Player (cf. Section 5.8, “Configuration dialog”, on page 290).

Displays the relative time position within a played file via a position slide.
Through moving the position slide with the mouse you can head for a specific position in the voice message.

Displays the absolute time position during the playback or recording of a sound file.

Displays the entire sound file length. During a recording this display contains the same value as in **Position**, since the file length grows continuously in this case.

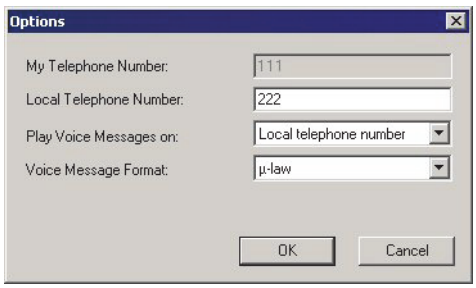


Displays the calling number of the telephone terminal device on which a sound file is put out.

Displays the current SAP Voice Player status.
Possible values are:
- Stopped
- Playing
- Recording
- Paused

Configuration dialog

The configuration dialog enables the definition of some SAP Voice Player properties.



The following table describes the available operating elements.

Local Telephone Number — Displays the calling number of the telephone terminal device on which sound files are put out.

Voice Message Format — Specifies the coding method with which the SAP Voice Player records or plays sound files. Possible values are:
- A-Law (common in Europe)
- µ-Law (common in the US and Asia)

You find further information on the CyViewer – for example on fax message display – in the *Client Applications* XPR documentation.

6 Registry Values

The registry information contained in this chapter is divided into the following sections:

- SAPR3 APL Registry Keys
- Registry Values of the SMTP APL
- Registry Values of the SAPphone APL
- Registry Values of the XML APL
- Registry Values of the MSPTSP

6.1 SAPR3 APL Registry Keys

In the following we describe the keys of the SAPR3 APL with their respective values in the Windows Registry. This information is structured as follows:

- SAPR3 APL Registry Keys
- Registry Values of the Converter
- Registry Values of the StructHandler
- Registry Values of the SAP R/3 Systems
- Registry Values of the RFC Client
- Registry Values of the RFC Server

6.1.1 SAPR3 APL Registry Keys

The following values are found under the key

`HKLM\SOFTWARE\Wow6432Node\PP-COM\MRS\Sapr3Apl`

Formats [REG_SZ]

Default:	PMF,ASC,TXT,WAV,AS7,PS,TIF,BIN,TIF_MUL
Possible values:	AS7, ASC, BIN, PMF, PS, TG3, TG4, TIF, TIF_BMP, TIF_MUL, TXT, WAV, WAV_16, WAV_A, WAV_MU

Defines the global list of valid document and file formats supported by *all* logical lines of the SAPR/3 APL. Per system, an additional definition can be made in the appropriate place that overrides this global setting for the respective line. The formats are described in detail in the *OpenScape Xpressions Server Administration* manual.

OverwriteUserData [REG_DWORD]

Default:	0
Possible values:	0 – Available user data cannot be overridden 1 – Available user data can be overridden

Defines whether user data already available in the user database may be overridden with deviating user data from SAP.

QualifiedMrsHostname [REG_SZ]

Default:	<empty string>
Possible values:	<*host name*>

Defines the XPR server host name that can be addressed with an INT address from within SAP R/3 to use XPR services that cannot be directly addressed under SAP R/3.

Cf. Section 5.1.1, “Settings – General Settings”, on page 267.

SystemStartWaitTime [REG_DWORD]

Default:	5000 [milliseconds]
Possible values:	<*number*> [milliseconds]
Remark:	**This value must not be changed since an alteration may cause connection problems with the `LibRFC32.dll`.**

Defines the waiting time in *ms* until the first or next RFC client or RFC server connection to an SAP system defined in the SAPR3 APL is set up.

6.1.2 Registry Values of the Converter

The following values are found under the key

`HKLM\SOFTWARE\Wow6432Node\PP-COM\MRS\Sapr3Apl\Converter`

EmptyFaxOriginator [REG_SZ]

Default:	*XXX*
Possible values:	*<fax address>*

Defines a fax address to which messages without originator address destined for SAP R/3 are automatically assigned. This assignment is based on the fact that SAP R/3 does not accept messages without originator address.

RemoveRawFileExtension [REG_DWORD]

Default:	0
Possible values:	0 – Original file name extension is maintained 1 – Original file name extension is removed

If a file is sent via the SAPR/3 APL as e-mail attachment, the APL adds the appropriate file extension (e.g. `.AUF`) to the file name.

The registry value **RemoveRawFileExtension** defines whether an already existing file extension is cut off of the original file name before the new extension is attached by the APL.

SetOriginatorFaxG3IdProperty [REG_DWORD]

Default:	1
Possible values:	0 – Copy values from the XPR user database 1 – Copy values from SAP R/3

Defines which information are copied to the fax ID and fax header of a fax message by the XPR server.

There is the option to insert the values (fax ID and originator number) transferred by SAP R/3 to the XPR server or to copy the corresponding values from the XPR user database.

6.1.3 Registry Values of the StructHandler

The following values are found under the key

```
HKLM\SOFTWARE\Wow6432Node\PP-
COM\MRS\Sapr3Apl\StructHandler
```

DumpModeSXDOCCHGI1 [REG_DWORD]

Default:	0
Possible values:	0 – Off 1 – Detailed scope 2 – Normal scope

Defines the form in which debug information about the object properties is put out.

DumpModeSXEXTRECI1 [REG_DWORD]

Default:	0
Possible values:	0 – Off 1 – Detailed scope 2 – Normal scope

Defines in which form debug information about the recipient(s) of an object is put out.

DumpModeSXPCKLSTI1 [REG_DWORD]

Default:	0
Possible values:	0 – Off 1 – Detailed scope 2 – Normal scope

Defines in which form debug information about the content lists of an object is put out.

DumpModeSXRECINFI1 [REG_DWORD]

Default:	0
Possible values:	0 – Off 1 – Detailed scope 2 – Normal scope

Defines the form in which debug information about the object sender is put out.

DumpModeSXSYSDATI1 [REG_DWORD]

Default:	0
Possible values:	0 – Off 1 – Detailed scope 2 – Normal scope

Defines the form in which debug information about the RFC calls is put out.

InfoLevel [REG_DWORD]

Default:	1
Possible values:	*<1…4>*

Defines under which debug level of the XPR monitor the SAPR3 APL sends special debug objects to the monitor. To display the messages thus transmitted to the XPR server in the monitor, the corresponding debug level must be active in the XPR monitor.

6.1.4 Registry Values of the SAP R/3 Systems

The following values are found under the key

`HKLM\SOFTWARE\Wow6432Node\PP-COM\MRS\Sapr3Apl\System[x]`

Active [REG_DWORD]

Default:	1
Possible values:	0 – Automatic system start inactive 1 – Automatic system start active

Defines whether or not the connection to the relevant system with number ’x’ is active.

If the connection is indicated as active at the SAPR3 APL start, the communication to the associated SAP R/3 system is automatically set up.

AutoLearn [REG_DWORD]

Default:	0
Possible values:	0 – 'Autolearn' mode not active. 1 – 'Autolearn' mode active.
Remarks:	By default, the XPR server does not override address information already entered in the XPR database. If this behavior is desired, the *OverwriteUserData [REG_DWORD]* registry value must be set. This value can be set globally for all SAP R/3 systems as well as individually for each system.

Defines whether the 'Autolearn' mode is switched on or off.

The 'AutoLearn' mode creates a new XPR user profile for those users who send a message via the XPR server but are not yet known as XPR users. Besides creating such new XPR user profiles, 'AutoLearn' also extends existing profiles with additional address information of the relevant user (cf. Section 3.2.2.4, "XPR Server 'AutoLearn'Mode", on page 44).

To determine whether an XPR profile that belongs to the sending user already exists, a search is performed via the respective address type (fax, pager etc.) and name (first and second name) transferred by the SAP R/3 system.

AutoLearnEntries [REG_MULTI_SZ]

Default:	<Empty>
Possible values:	Each single line in the format <*database field*>=<*content*>

Defines the database fields that, with active 'AutoLearn' mode, are automatically assigned to the XPR database if they do not yet exist for the relevant user or are empty. This behavior also applies for creating users who are still unknown.

The listed assignments thus serve as definition for default values in user profiles allocated by the 'AutoLearn' mode (cf. Section 3.2.2.4, "XPR Server 'AutoLearn'Mode", on page 44).

DefaultUser [REG_SZ]

Default:	<empty string>
Possible values:	*<user ID>*

If the XPR server cannot find a sending SAP user in its user database while the 'AutoLearn' mode is inactive, the message is sent from the user profile defined here. This user profile must be defined in the XPR database for this purpose.

If no default user is named in this registry value, messages of unknown SAP users are in case on an inactive 'AutoLearn' mode merely sent with anonymous originator address.

DeliverToSAPAsEmail [REG_DWORD]

Default:	0
Possible values:	0 – General e-mail delivery inactive 1 – General e-mail delivery active

Defines whether messages of all types are generally delivered as e-mail under SAP R/3.

Description [REG_SZ]

Default:	<empty string>
Possible values:	*<string with a maximum of 128 characters>*

Defines a description that is displayed in the XPR monitor for the relevant logical line or for the SAP system that can be reached via this line.

FaxG3Headline [REG_SZ]

Default:	<empty string>
Possible values:	*<string>*
Remark:	Is used in combination with *UsePerSystemFaxIds [REG_DWORD]*.

Defines a Fax G3 fax header line deployed for all users of the relevant system if the line is activated via *UsePerSystemFaxIds [REG_DWORD]*.

FaxG3Id [REG_SZ]

Default:	<empty string>
Possible values:	*<fax ID>*
Remark:	Is used in combination with *UsePerSystemFaxIds [REG_DWORD]*.

Defines a Fax G3 ID deployed for all users of the relevant system if the ID is activated via *UsePerSystemFaxIds [REG_DWORD]*.

FaxG3Nr [REG_SZ]

Default:	<empty string>
Possible values:	*<calling number>*
Remark:	Is used in combination with *UsePerSystemFaxIds [REG_DWORD]*.

Defines a fax number deployed for Fax G3 messages of all users of the relevant system if the number is activated via *UsePerSystemFaxIds [REG_DWORD]*.

FaxG4Id [REG_SZ]

Default:	<empty string>
Possible values:	*<fax ID>*
Remark:	Is used in combination with *UsePerSystemFaxIds [REG_DWORD]*.

Defines a Fax G4 ID deployed for all users of the relevant system if the ID is activated via *UsePerSystemFaxIds [REG_DWORD]*.

FaxG4Nr [REG_SZ]

Default:	<empty string>
Possible values:	*<calling number>*
Remark:	Is used in combination with *UsePerSystemFaxIds [REG_DWORD]*.

Defines a fax number deployed for Fax G4 messages of all users of the relevant system if the number is activated via *UsePerSystemFaxIds [REG_DWORD]*.

Formats [REG_SZ]

Default:	<empty string>
Possible values:	<*string with a maximum of 128 characters*>

Defines a list of valid document and file formats for this logical line. See also the global entry *Formats [REG_SZ]*.

Name [REG_SZ]

Default:	<empty string>
Possible values:	<*string with a maximum of 8 characters*>
Remark:	**Must be a unique name.**

Defines a name that forms in combination with 'SAPR3' the name of the logical line: SAPR3<name>.

Example: Name='APC' => Name of the logical line='SAPR3APC'

OverwriteUserData [REG_DWORD]

Default:	0
Possible values:	0 – Available user data cannot be overridden 1 – Available user data can be overridden

Defines whether user data already available in the user database may be overridden with deviating user data from SAP.

If this system-related registry value is not active, value *OverwriteUserData [REG_DWORD]*, which is globally defined under <*XPR Install*>`\Sapr3Apl`, is used.

PrivCheck [REG_DWORD]

Default:	0
Possible values:	0 – Originator check inactive 1 - Originator check active

Activates for the relevant SAP system a check as to whether an SAP user is entered in the XPR user database and has in addition the send privilege upon sending a message.

If this option is set and the originator is not entered in the XPR user database or does not have the send privilege, he/she cannot send messages.

Exception:
If a default user whose XPR mailbox is used by an SAP R/3 user for sending messages is specified in the XPR server configuration of the SAP R/3 connection though, the send privilege of this default user is checked (cf. DefaultUser [REG_SZ]). The requirement is here that the actually sending user is not entered in the XPR database.

UsePerSystemFaxIds [REG_DWORD]

Default:	0
Possible values:	0 – System-individual fax IDs are not used 1 – System-individual fax IDs are used
Remark:	Is used together with the following values: • *FaxG3Headline [REG_SZ]* • *FaxG3Id [REG_SZ]* • *FaxG3Nr [REG_SZ]* • *FaxG4Id [REG_SZ]* • *FaxG4Nr [REG_SZ]*

Activates system-individual fax IDs for all users of the relevant SAP system.

6.1.5 Registry Values of the RFC Client

The following values are found under the key

`HKLM\SOFTWARE\Wow6432Node\PP-COM\MRS\Sapr3Apl\System[x]\Client`

ApplicationServerHost [REG_SZ]

Default:	<empty string>
Possible values:	<*host name*> or <*IP address*>

Defines the TCP/IP host name or the IP address of the SAP R/3 application server.

This registry has no effect if through the setting in the client registry value *UseDestination [REG_DWORD]* the corresponding RFC parameter is configured via the `saprfc.ini` .

ConnectRetryDelay [REG_DWORD]

Default:	10 [Seconds]
Possible values:	<*1…600*> [seconds]

Defines the time in seconds after which a failed connection setup to an SAP system is initiated again.

Destination [REG_SZ]

Default:	<empty string>
Possible values:	<*string*>
Remark:	**Must be a unique name.**

Defines the referencing string for the RFC connection data of the RFC client in the `saprfc.ini`.

GatewayHost [REG_SZ]

Default:	<empty string>
Possible values:	<*host name*> or <*IP address*>

Defines the host name or the IP address of an SAP gateway server.

This registry has no effect if through the setting in the client registry value *UseDestination [REG_DWORD]* the corresponding RFC parameter is configured via the `saprfc.ini` .

GatewayService [REG_SZ]

Default:	sapgw00
Possible values:	sapgw<*xx*>; *xx = 00…99*

Defines a gateway service on an SAP application server. Wildcard 'xx' defines the system number of the relevant service.

This registry has no effect if through the setting in the client registry value *UseDestination [REG_DWORD]* the corresponding RFC parameter is configured via the `saprfc.ini` .

PendingReport [REG_BINARY]

Default:	<Empty>
Possible values:	Binary information
Remark:	**Modifications may lead to system errors.**

If the SAPR3 APL is shut down, such APL reports can be buffered here that were due before the APL stop but could not be sent in time.

RfcClient [REG_SZ]

Default:	100
Possible values:	<*SAP tenant number*>

Defines the SAP tenant number used by the RFC client.

RfcLanguage [REG_SZ]

Default:	<empty string>
Possible values:	<*SAP language token*>

Specifies the login language under SAP R/3. Only specifications configured on the relevant SAP system are useful.

Example: d, e

RfcPassword [REG_SZ]

Default:	<Default password>
Possible values:	<*Password*>
Remark:	Is administered in the registry in encrypted format and should therefore be modified via the XPR GUI only.

Defines the user password with which the RFC client logs on to the SAP system deploying the associated CPI-C user.

RfcTrace [REG_DWORD]

Default:	0
Possible values:	0 – Deactivated 1 – Activated
Remark:	This switch has nothing to do with the debug outputs of the SAPR3 APL via the XPR monitor.

Defines whether the RFC logging is switched on or off.

The created log files (*.trc) are defined by the `LibRFC32.dll` and can be found in its setup directory or under the path that was defined in the *RFC_TRACE_DIR* environment variable.

RfcUser [REG_SZ]

Default:	MRSC
Possible values:	<*user ID*>
Remark:	**Entry required.**

Defines the user ID with which the RFC client logs on to the SAP system deploying the associated CPI-C user.

SmtpExpress [REG_DWORD]

Default:	0
Possible values:	0 – No express message delivery 1 – Express message delivery

Defines whether or not an SAP user receives an express message that notifies him/her about a newly arrived e-mail.

SystemNumber [REG_SZ]

Default:	0
Possible values:	<*SAP system number*>

Defines the system number of the gateway service on an SAP application server.

This registry has no effect if through the setting in the client registry value *UseDestination [REG_DWORD]* the corresponding RFC parameter is configured via the `saprfc.ini` .

UseDestination [REG_DWORD]

Default:	1
Possible values:	0 – Does not use the `saprfc.ini` 1 – Uses the `saprfc.ini`
Remark:	**Setting '1' recommended**

Defines whether the configuration data required for the RFC connection are read out of the `saprfc.ini` or XPR registry.

6.1.6 Registry Values of the RFC Server

The following values are found under the key

`HKLM\SOFTWARE\Wow6432Node\PP-COM\MRS\Sapr3Apl\System[x]\Server`

ConnectRetryDelay [REG_DWORD]

Default:	10 [Seconds]
Possible values:	<*1…600*> [seconds]

Defines the time in seconds after which a failed connection setup is initiated again.

Destination [REG_SZ]

Default:	<empty string>
Possible values:	<*string*>
Remark:	**Must be a unique name.**

Defines the referencing string for the RFC connection data of the RFC server in the `saprfc.ini`.

FaxPollByToAnswer [REG_DWORD]

Default:	0
Possible values:	0 – Does not interpret the send attribute as fax polling job 1 – Interprets the send attribute as fax polling job

Defines whether a set ’Answer required’ send attribute in an SAP fax send job is interpreted as fax polling job.

GatewayHost [REG_SZ]

Default:	<empty string>
Possible values:	<*hostname*> or <*IP address*>

Defines the host name or the IP address of an SAP gateway server.

This registry value has no effect if through the setting in the server registry value *UseDestination [REG_DWORD]* the corresponding RFC parameter is configured via the `saprfc.ini` .

GatewayService [REG_SZ]

Default:	sapgw00
Possible values:	sapgw<*xx*>; *xx = 00…99*

Defines a gateway service on an SAP application server. Wildcard 'xx' defines the system number of the relevant service.

This registry value has no effect if through the setting in the server registry value *UseDestination [REG_DWORD]* the corresponding RFC parameter is configured via the `saprfc.ini` .

ProgramId [REG_SZ]

Default:	<empty string>
Possible values:	<*program ID*>
Remark:	**Must be a unique name. Furthermore, heed case sensitivity.**

Defines the program ID required for the authentication of an RFC connection.

This registry value has no effect if through the setting in the server registry value *UseDestination [REG_DWORD]* the corresponding RFC parameter is configured via the `saprfc.ini` .

RfcTrace [REG_DWORD]

Default:	0
Possible values:	0 – RFC logging inactive 1 – RFC logging active

Defines whether the RFC logging is switched on or off.
The created log files (*.trc) are defined by the `LibRFC32.dll` and can be found in its setup directory or under the path that was defined in the *RFC_TRACE_DIR* environment variable.

This switch has nothing to do with the debug outputs of the SAPR/3 APL via the XPR monitor.

StrictStatusReporting [REG_DWORD]

Default:	0
Possible values:	0 – No strict reporting 1 – Strict reporting

Defines whether status reports are strictly only sent if this was expressly defined in the SAP structure *SXEXTRECI1*.

Non-strict behavior is useful when status reports for transmitted fax messages are desired in SAP R/3. The background is that SAP R/3 does normally not request status reports for a fax message. Consequently, the originator does not know whether or not the document was successfully transmitted.

If strict reporting is activated, the send attributes `NOTIF_DEL`, `NOTIF_READ` and `NOTIF_NDEL` of the `SXEXTRECI1` structure define whether or not the respective status reports are transmitted.

UseDestination [REG_DWORD]

Default:	1
Possible values:	0 – Does not use the `saprfc.ini` 1 – Uses the `saprfc.ini`
Remark:	**Setting '1' recommended**

Defines whether the configuration data required for the RFC connection are read out of the `saprfc.ini` or registry.

6.2 Registry Values of the SMTP APL

In the following we describe the registry values of the SMTP APL used for the SMTP interface with SAP. You find information about further registry values of the SMTP APL in the *OpenScape Xpressions Server Administration* manual.

DefaultSapUsers [REG_MULTI_SZ]

Default:	–
Possible values:	One pair of values <*user*>;<*domain*> per line

If a message is sent via the SMTP interface of the SMTP APL the originator of which is unknown in the XPR server, the SMTP APL can deploy the settings of a default user to send the message. Such settings may be e.g.: fax stationery or send privileges.

Each line of the registry value **DefaultSapUsers [REG_MULTI_SZ]** specifies the default user for a selected domain.

SAP_Enable [REG_DWORD]

Default:	1
Possible values:	0 – Deactivates the SMTP interface for the SAP connection 1 – Activates the SMTP interface for the SAP connection

Defines whether the SMTP interface for SAP is activated in the SMTP APL.

6.3 Registry Values of the SAPphone APL

In the following we describe the keys of the SAPphone APL with their respective values in the Windows Registry. This information is structured as follows:

- Registry Values of the SAPphone APL
- Registry Values of the SAP R/3 Systems
- Registry Values of the SAP R/3 System Location

6.3.1 Registry Values of the SAPphone APL

The following values are found under the key

`HKLM\SOFTWARE\Wow6432Node\PP-COM\MRS\SapPhoneApl`

CADOwners [REG_MULTI_SZ]

Default:	–
Possible values:	VOGUE
Remark:	This registry value must be added to the registry manually if required.

The XPR server components that support CAD transfer their CAD information to the CTI APL. There, the CAD information is administered call-related.

Besides the productive data of a CAD information the CTI APL stores a name that defines in which context the information was filed. This name is the so-called CAD-Owner.

CADOwners [REG_MULTI_SZ] contains a list of all CAD-Owners of which the SAPphone APL processes CAD information to transfer it to the connected SAP R/3 system. Each line of this list contains precisely one CAD owner.

NOTE:
CAD information that was created by the SAPphone APL itself is processed by the SAPphone APL without further configuration. The CAD-Owner of the SAPphone APL thus need not be defined in this registry value.

Ext_List [REG_SZ]

Default:	<empty string>
Possible values:	*<telephone extension>*

List of the telephone extensions for which the registry value *Ext_Speaker [REG_DWORD]* is used.

The entries are either separated with '–' (<*DW1*>–<*DW2*> for an extension range) or ',' (<*DW1*>,<*DW2*> for a simple list). Any combination of these enumeration characters is also possible.

Ext_Speaker [REG_DWORD]

Default:	0
Possible values:	0 – Deactivated 1 – Activated

Defines whether the speakers of the telephones listed in the registry value *Ext_List [REG_SZ]* are automatically activated or remain inactive upon the selection via the SAPphone APL.

MrsAddress [REG_SZ]

Default:	NVS:SAPPHONE
Possible values:	<*qualified XPR address*>
Remark:	**We recommend to keep the defaulted settings.**

Defines the logical line name used by the SAPphone APL to log on to the server.

6.3.2 Registry Values of the SAP R/3 Systems

The following values are found under the key

`HKLM\SOFTWARE\Wow6432Node\PP-COM\MRS\SapPhoneApl\System[x]`

CliActive [REG_DWORD]

Default:	1
Possible values:	0 – System reports are not transmitted via the system link 1 – System reports are transmitted via the system link

Defines whether system reports are transmitted to the relevant system with number 'x'.

If the system reports are deactivated, e.g. no monitor information of telephones or connection statuses are transmitted to the relevant system. In this way the information flow can be controlled in an XPR-SAP environment with different application servers.

CliDest [REG_SZ]

Default:	<empty string>
Possible values:	<*string*>
Remark:	**Must be a unique name.**

Defines the referencing string for the RFC connection data of the RFC client in the `saprfc.ini`.

Client [REG_SZ]

Default:	<empty string>
Possible values:	<*SAP tenant number*>

Defines the SAP tenant number used by the RFC client.

LastCallHandle [REG_DWORD]

Default:	<empty string>
Possible values:	<*Call Handle*>
Remark:	**Modifications may lead to system errors.**

Defines the last call handle used for SAP calls.

This entry is automatically written by the SAPphone APL; a manual definition is therefore not useful.

MaxServerConnections [REG_DWORD]

Default:	20
Possible values:	<*0…100*>

Defines the maximum number of parallel RFC server connections that the XPR server can operate via the SAPphone APL to connected SAP systems. See also Section 3.1.3.6, “Numerical Restriction of RFC Connections”, on page 35.

Online [REG_DWORD]

Default:	1
Possible values:	0 – Inactive 1 – Active/automatic system start

Defines whether or not the connection to the relevant system with number ’x’ is active.

If the connection is indicated as active at the SAPphone APL start, the communication to the associated SAP R/3 system is automatically set up.

Password [REG_SZ]

Default:	<empty string>
Possible values:	<*encrypted password*>

Defines the user password with which the RFC client logs on to the SAP system deploying the associated CPI-C user.

ServerId [REG_SZ]

Default:	<empty string>
Possible values:	<*string*>
Remark:	**Modifications may lead to system errors.**

Defines the SAP telephone server ID returned to the XPR server by the SAP R/3 after a corresponding connection test and buffered here. This ID can only be determined by a connection test.

ServerMode [REG_SZ]

Default:	<empty string>
Possible values:	0 – No MSPTSP use for ’free waiting’ 1 – MSPTSP use for ’free waiting’

Is used in the SPControl and MSPTSP context. If setting ’1’ is configured here, the SAP system is informed that the server concerned is a TAPI one.

This setting is used for the "free waiting" feature.

SrvDest [REG_SZ]

Default:	<empty string>
Possible values:	<*string*>
Remark:	**Must be a unique name.**

Defines the referencing string for the RFC connection data of the RFC client in the `saprfc.ini`.

User [REG_SZ]

Default:	<empty string>
Possible values:	<*user ID*>

Defines the user ID with which the RFC client logs on to the SAP system deploying the associated CPI-C user.

6.3.3 Registry Values of the SAP R/3 System Location

The following values are found under the key

`HKLM\SOFTWARE\Wow6432Node\PP-COM\MRS\SapPhoneApl\System[x]\Location`

AccessCode [REG_SZ]

Default:	Value is copied from the corresponding registry value under the key `MRS\MRS Globals\Location`.
Possible values:	*<calling number>*

Defines the XPR server's access code. This entry is used for normalizing phone numbers.

AreaCode [REG_SZ]

Default:	Value is copied from the corresponding registry value under the key `MRS\MRS Globals\Location`.
Possible values:	*<area code without leading zero>*

Defines the XPR server's area code. This entry is used for normalizing phone numbers.

AreaCodeEscape [REG_SZ]

Default:	Value is copied from the corresponding registry value under the key `MRS\MRS Globals\Location`.
Possible values:	*<number sequence>*

Defines a digit string as escape sequence that must be dialed for calls with a different area code. In Germany this is e.g. 0. This entry is used for normalizing phone numbers.

CountryCode [REG_SZ]

Default:	Value is copied from the corresponding registry value under the key `MRS\MRS Globals\Location`.
Possible values:	*<country code without leading zeros>*

Defines the XPR server's country code. This entry is used for normalizing phone numbers.

CountryCodeEscape

Default:	Value is copied from the corresponding registry value under the key `MRS\MRS Globals\Location`.
Possible values:	<*number sequence*>

Defines the escape sequence that must be dialed for calls with a different country code. In Germany this is e.g. 00. This entry is used for normalizing phone numbers.

DialAlwaysArea [REG_DWORD]

Default:	Value is copied from the corresponding registry value under the key `MRS\MRS Globals\Location`.
Possible values:	0 – Area code is only dialed when necessary 1 – Area code is always dialed – even in the same area network

Defines whether the area code is also dialed in the same area network. This is required e.g. in Switzerland.

ExternalLinePrefix [REG_SZ]

Default:	Value is copied from the corresponding registry value under the key `MRS\MRS Globals\Location`.
Possible values:	<*number sequence*>

Defines a digit string as escape sequence required as ’external line prefix’ at a PBX. This entry is used for normalizing phone numbers.

LocPrefixExtensions_ [REG_MULTI_SZ]

Default:	<empty string>
Possible values:	<*phone number*>; one phone number entry per line

Defines a list with phone numbers or phone number portions that are not to be normalized by the XPR server.

Every phone number that exceeds the length defined in the registry value ’MaxInternalLength’ is usually normalized as external phone number. This may lead to problems in particular in complex voice networks, since in such an environment multi-digit selection codes are often used for routing to different locations. To avoid this problem, such selection digits can be defined in this registry value so that they are not normalized.

MaxInternalLength [REG_DWORD]

Default:	Value is copied from the corresponding registry value under the key `MRS\MRS Globals\Location`.
Possible values:	<*number*>

Defines a phone number length up to which the relevant phone number is not normalized. Phone numbers that exceed the length defined here are normalized.

PbxCode [REG_SZ]

Default:	Value is copied from the corresponding registry value under the key `MRS\MRS Globals\Location`.
Possible values:	*<trunk code>*

Defines the trunk code via which the connected PBX can be reached by the XPR server.

6.4 Registry Values of the XML APL

The XML APL keys are documented in the *OpenScape Xpressions Server Administration* manual.

6.5 Registry Values of the MSPTSP

In the following we describe the keys of the MSPTSP with their respective values in the Windows Registry. In doing so we only consider the keys that are important for the solutions of this manual.

The following values are found under the key

```
HKLM\Software/Cycos AG/msptsp/5.0/
```

WaitForSapPhoneCallHandle [REG_SZ]

Default:	1
Possible values:	0 – Call Handle is always copied 1 – Call Handle is only copied if CAD is available.

Controls the update behavior of the CIC when the ’free waiting’ mode is used for the SAPGUI.

By default, the application-specific Call Handle is only copied via SAPphone when Call Attached Data (CAD) is available in the SAPphone APL. As alternative the Call Handle can also be copied when no CAD is available.

If updating in the ’free waiting’ mode is problematic, set this value to **0**.

7 Important SAP Transaction Codes

In combination with the SAPGUI command field, transaction codes serve for reaching specific SAP transactions quickly.

The following table lists the most important transaction codes that are of interest in the scope of this manual:

Transaction code	Description
/nSCOA	*SAPconnect* background job
/nSCON	*SAPconnect* (SAP-R/3 versions 3.x)
/nSCOT	*SAPconnect* (as of SAP-R/3 version 4.0)
/nSE37	Configuring conversion rules
/nSM59	Creating / maintaining / testing RFC destination
/nSO28	Inbound routing (configuring a postmaster)
/nSPHA	Proprietary *SAPphone* user and workstation settings
/nSPHB	Creating / maintaining *SAPphone* location and telephony servers
/nSPHT	Test transactions for CTI
/nSPRO	Customizing/maintaining IMGs
/nSU01	Creating / maintaining foreign user profiles
/nSU1	Maintaining proprietary user profiles

Table 6 SAP transaction codes

8 Document Formats in SAP R/3

The following table provides an overview of the document formats used in SAP R/3:

Format identifier	Description
BIN	Unstructured binary data
GRA	Binary graphics data
HTM	HTML-formatted data
IDC	Text data (SAP-IDoc format)
OTF	Text data (SAP-OTF format)
PDF	Text data (PDF format)
PS	Text data (corresponds to the POSTSCRIPT format)
RAW	Text data
RTF	Binary data (Rich-Text format)
SCR	Text data (SAPScript format)
TIF	Binary data (Fax-Multipage-TIFF format)

Table 7 SAP Document Formats

9 Scope of Services of the *SAPphone* Interface

The following table lists the features realized in the *SAPphone* interface of the respective SAPR/3 versions:

SAP version (where applicable with SAP application)	Scope of services
R/3 versions 3.1G to 4.0B	• Connection setup • Call acceptance • Connection clearing • Automatic start of SAP workflows
R/3 version 4.5B and later	In addition to the previously mentioned features: • Consultation • Initiating conferences • Logging out of/terminating a conference • Forwarding (with and without consultation) • Call Attached Data (CAD) • Generating missed-call e-mails (callback from e-mail) • Compatibility test on both sides • Tracing of RFC connections

Table 8 Scope of Services of the SAPphone Interface under SAP

10 Troubleshooting

The following table provides basic assistance in solving errors frequently occurring during the XPR-SAP integration configuration.

If system failures occur in connection with an XPR-SAP integration that cannot be solved by the suggestions made in this chapter, we refer to additional system documentation (for example release notes etc.) and subsequently to your contractual partner if required.

The assistance contained in this chapter is divided into the following sections:

- General Trouble Shooting
- Trouble Shooting in the RFC Communication
- Trouble Shooting in a UM Solution
- Trouble Shooting in a CTI Solution

10.1 General Trouble Shooting

This section contains information about the following problems:

- The SAPR3, SAPphone and SAProute APL are not offered in the XPR setup for selection.
- The SAPGUI cannot connect to the SAP server..

Error Description	Possible Cause	Solution
The SAPR3, SAPphone and SAProute APL are not offered in the XPR setup for selection.	No SAP client is installed on the XPR system.	Install the SAPGUI on the XPR server. See Section 4.2, “Installing the SAPGUI”, on page 56.
The SAPGUI cannot connect to the SAP server.	The SAP system with its parameters is not yet entered in the SAPGUI.	In the SAPGUI define a new SAP system with its associated communication parameters. See Section 4.3, “Configuring a Connection to an SAP Application Server”, on page 59.
	The relevant connection information is not correctly entered in the SAPGUI.	Check the settings of the relevant SAP system in the SAPGUI and correct the faulty parameter. See Section 4.3, “Configuring a Connection to an SAP Application Server”, on page 59.
	The SAP password has not been entered correctly.	When logging in to the SAP system enter the SAP password in exact spelling (the SAP system differentiates between upper and lower case). See Section 4.3, “Configuring a Connection to an SAP Application Server”, on page 59.

10.2 Trouble Shooting in the RFC Communication

This section contains information about the following problems:

- The RFC connection test fails..

Error Description	Possible Cause	Solution
The RFC connection test fails.	No RFC interface is installed on the XPR server.	Install the SAPGUI on the XPR server. See Section 4.2, “Installing the SAPGUI”, on page 56.
	The XPR server does not find the `saprfc.ini` file.	Create the `saprfc.ini` file. See for example Section 5.5, “saprfc.ini”, on page 283.
		Copy the `saprfc.ini` file to the *<XPR Install>*`\bin\` directory.
	The XPR server does not find the required parameters in the `saprfc.ini`.	Enter the correct connection parameters in the `saprfc.ini`. See for example Section 5.5, “saprfc.ini”, on page 283.
	The virtual user configured for the connection has not the privileges required for setting up a connection.	Assign at least the S_A.SCON privileges to the virtual SAP user. See for example Section 4.5.3.2, “Creating a virtual CPI-C user in SAP R/3”, on page 80.
	Authenticating the program ID fails.	Configure the program ID on the XPR and SAP side in consistent writing. See for example Section 4.5.3.2, “Defining an RFC destination in SAP R/3”, on page 85.
	Router connect string is not correctly specified in the `saprfc.ini`.	Check the router connect string entry in the `saprfc.ini`.
		The last entry of the router connect string must be the IP address of the SAP destination system. The SAP system host name is not permitted.
	The virtual CPI-C user is locked in SAP R/3 (occurs for example automatically after several connection attempts with wrong password).	Unlock the CPI-C user in the user maintenance under SAP R/3.

10.3 Trouble Shooting in a UM Solution

This section contains information about the following problems:

- Message attachments are not correctly transmitted from within SAP R/3.
- An SAP user does not receive any/all messages via the XPR server.
- An SAP user does not receive any/all messages via the XPR server.
- An SAP user cannot send any/all messages via the XPR server..

Error Description	Possible Cause	Solution
Message attachments are not correctly transmitted from within SAP R/3.	The logical node defined under SAP R/3 for the XPR server has not been configured correctly for the file conversion.	Configure the formats for document formatting in the required manner. See Section 4.5.4.2, “Setting the node”, on page 142.
An SAP user does not receive any/all messages via the XPR server.	The SAP user is not present in the XPR server user database, since he/she has not been defined in the XPR server ’AutoLearn’.	Activate the ’AutoLearn’ mode in the settings of the XPR server SAPR3 APL. As an alternative the XPR administrator can also make the user entries in the XPR server manually.
	’AutoLearn’ is active. The SAP user however has not yet sent a message of the relevant type. Therefore ’AutoLearn’ could not enter the corresponding address of this service in the XPR user database.	The SAP user must first send a message of the type that he/she wants to receive via the XPR server. See Section 3.2.2.4, “XPR Server ’AutoLearn’Mode”, on page 44. As an alternative the XPR administrator can also make the user entries in the XPR server manually.
	’AutoLearn’ is active but does not define the learned users as user but as contact.	Enter in the registry value *AutoLearnEntries [REG_MULTI_SZ]* the XPR database fields GROUP and PASSWORD correctly. See Section 3.2.2.4, “Default Values for new User Profiles”, on page 50.
	’AutoLearn’ is active, the relevant users however have already been present in the XPR database. Therefore ’AutoLearn’ maintains the new addresses but not the **PREFERRED** field upon message transmission.	Configure the **PREFERRED** XPR database field of the relevant users for message reception via the SAPR3 APL. See Section 3.2.2.4, “Outgoing messages of a user already known”, on page 46.

Error Description	Possible Cause	Solution
An SAP user cannot send any/all messages via the XPR server.	The relevant message type has not been configured for the *SAPconnect* method under the SAP communication method.	Under the SAP communication methods configure the *SAPconnect* method for the relevant message type. See Section 4.5.4.1, “Setting the communication methods”, on page 105.
	In the SAP system no logical node has been defined for the XPR server.	In the SAP system define a logical node for the XPR server. See Section 4.5.4.2, “Setting the node”, on page 142.
	The logical node defined under SAP R/3 for the XPR server has not been configured for the relevant service.	Configure the respective service for the XPR server in its logical node. See Section 4.5.4.2, “Setting the node”, on page 142.
	The logical node defined under SAP R/3 for the XPR server has only been configured for a restricted address area.	Configure the address area of the logical node in a way that all desired messages are passed on to the XPR server by the SAP system. See Section 4.5.4.2, “Setting the node”, on page 142.

10.4 Trouble Shooting in a CTI Solution

This section contains information about the following problems:

- The SAPR3 and SAPphone APL are not offered in the XPR setup for selection.
- Incoming telephone calls are not displayed on the PC workstation..

Error Description	Possible Cause	Solution
The SAPR3 and SAPphone APL are not offered in the XPR setup for selection.	No SAP client is installed on the XPR system.	Install the SAPGUI on the XPR server. See Section 4.2, “Installing the SAPGUI”, on page 56.
Incoming telephone calls are not displayed on the PC workstation.	SAP R/3 does not know an assignment between PC work center and telephone terminal device.	In SAP R/3 define the assignment of PC work center and telephone terminal device. See Section 4.7.4.1, “Configuration of the work center and user settings”, on page 244.

Glossary

A

AAA
General description of a security concept. The three letters represent the concept areas *Authentication*, *Authorization* and *Accounting*.

Authentication: Process in which the given identity of a user is uniquely established. One simple identification method is e.g. verification of a previously defined password.

Authorization: Process for assigning privileges to a uniquely identified user. Such privileges can be e.g. access rights for specific hardware components or user privileges for specific network services.

Accounting: Describes data collecting via resource utilization. These data may later serve for load analysis, cost assignment or billing.

Access Mode (Voicemail)
Voicemail protocols offer various options (modes) to gain access to a voicemail box. The types and functionality provided in the respective modes depend on the protocol used.

Access Protocol Layer
See *APL*.

ANI
Acronym for *Automatic Number Identification*.

Concept for identifying a message originator by his/her transmitted originator number. After the caller has been identified, automated processes can be executed based on this information. Such processes include among other things the display of stored caller data in a CTI environment.

ANI Hit
Describes the successful finding of information within a database on the basis of the ANI check of an originator number (cf. ANI).

APL
Acronym for *Access Protocol Layer*.

Group of software modules in the XPR server. Each APL enables an interface for communicating with external components.

Application Builder
XPR server client application.
This application is used for configuring the Automated Attendant of the Vogue script.

Application Server (SAP)
The SAP application server provides the SAP R/3 users with all required SAP applications. If an invoked application under SAP R/3 needs stored data, the application server communicates with the database server and retrieves all required information from there.
The SAP applications of a company can be distributed among various application servers and are thus highly scalable.

Authentication
See *AAA.*

AutoLearn
Mechanism for automatic integration of SAP users in the XPR user database in the scope of an XPR-SAP integration.

Automated Attendant
IVR system of the Vogue script that answers incoming calls and guides the caller by means of interactive voice menus. Possible is e.g. automatic forwarding for leaving a voice mail.

Automated Call Distribution (ACD)
See *ACD.*

Automated Message Distribution (AMD)
See *AMD.*

Automatic Number Identification
See *ANI.*

Authorization
See *AAA.*

C

CALLEDID
Part of the connection request in the voice communication environment. This information unit contains the subscriber calling number to which a communication relationship is to be established.

CallerID
Part of the connection request in the voice communication environment.
This information unit contains the calling number of the subscriber that wants to establish the communication relation.

Call Handle
Identifying denominator for a dedicated communication relationship. It is created, for example, in communications systems while communication is established and made known to the communications systems so that they can be uniquely identified in the course of the communication relationship.

Calling Number
See *CAD*.

Client Connection
Connection that ends on the contemplated communication system's client in case of a client/server interface.

Computer Telephony Integration
See *CTI*.

CN
Acronym for *Call Attached Data.*

Concept that enables the display and forwarding of call-related data. For example, when a call is forwarded to another agent, already available information can be attached to this call.

CRM
Acronym for *Customer Relationship Management.*

Sales application of the company SAP. CRM provides modules required for the management of customer relations.

CTI
Acronym for *Computer Telephony Integration.*

Describes the connection of PBXs and computer systems via a special interface (CTI interface).
With CTI the user can, for example, control a telephone from the workstation or see the automatic display of significant caller information (such as name, address and contact history) on the computer screen.

CTI APL
XPR server APL for providing a CTI interface to communicate with a PBX.

CTI Queue (SAP)
See *Queue*.

Customer Relationship Management (SAP)
See *CRM*.

D

Database Server (SAP)
The database server acts as central administrator of all data stored in an SAP R/3 landscape.

Direct Access Mode (Voicemail)
Access mode in a voicemail solution, often also called *Control Mode*.
In the control mode individual mailbox options can be set, messages edited, re-recorded or sent.

DTMF
Acronym for *Dual Tone Multi Frequency.*

Telephony technology for generating tones by pressing keys on a telephone terminal device. For each key an individual tone is generated which results from combining two frequencies.

E

E
Script language used with enabling functionalities in the XPR environment. E's structure is strongly related to the C/C++ programing language.

Ergo
Voicemail protocol in the XPR environment. Besides accessing his/her mailbox it enables the user to perform multifarious settings by means of telephone keys. Moreover, the system is not bound to a specific type of PBX.

E-script
Program written in script language *E*. Serves for enabling different system features of the XPR communications server.

F

Folders on Remote Server

Server system that provides a communications solution.
A communications server is often an element of a comprehensive solution in which it is in charge of message routing (telephone, fax, SMS etc.). In this scope, continuative services (e.g. contact center functionalities) can be provided.
The XPR server represents a communications server.

Forwarding Access Mode (Voicemail)

Access mode in a voicemail solution, often also called *Forwarding Mode*.
The Forwarding Mode is the answering function that allows leaving a message when incoming phone calls are rerouted to the individual mailbox. The corresponding mailbox is assigned via the redirected number.

G

Gateway Service (SAP)

One SAP service among various others, which are configured on a SAP application server. It provides external connections for the entire SAP server system. In this function it is responsible for processing outgoing Remote Function Calls (RFC).
An SAP server carrying a gateway service is also called SAP Gateway Host.

GSM

Acronym for *Global System Mobile.*

GSM is a European standard for digital mobile phone systems. As services GSM offers a number of basic services and additional services. Among these services you find Voice and the Short Message Service (SMS).

Guest Access Mode (Voicemail)

Access mode in a voicemail solution, often also called *Answering Machine Mode*.
In this mode the mailbox of an arbitrary subscriber can be directly called. Depending on the operation mode either a message can be left or an info box greeting played.

I

ICI (SAP)

Acronym for *Integrated Communication Interface*.

New SAP interface for integrating external applications in an SAP landscape. This interface was implemented based on the specifications for XML/SOAP of the W3C consortium and works with a progressive, web-oriented technology. It thus forms the further development of the *SAPconnect* and *SAPphone* interface. ICI is supported in the XPR server by the XML APL.

IEEE

Acronym for *Institute of Electric and Electronic Engineers*.

Founded in 1963, the IEEE is an institute of electrical and electronically engineers for the definition of norms in the network area, in particular for standardizing bus topologies, transmission protocols, data transmission speed and wiring.

IM

Acronym for *Integrated Messaging*.

Integrated Messaging is an extension of Unified Messaging. It describes the coupling of different messaging systems by synchronizing user data and messages to offer the user the advantages of both systems.
In case of Integrated Messaging the synchronized information is managed on all involved systems in parallel.

Integrated Communication Interface (SAP)

See *ICI*.

Integrated Messaging

See *IM*.

Integrated Voice Response

See *IVR*.

IP

Acronym for *Internet Protocol*.

IP belongs to the TCP/IP protocol family, an approved industry standard for communication between communications systems. The transmission protocol defines the rules and arrangements that control the flow of information in a communication system. Main task of the IP is network-spanning addressing.
The protocol does not work line- but packet-switched and belongs thus to the connectionless communications protocols. So-called datagrams are transported to their recipients via the most convenient connections by an intelligent network infrastructure. This intelligently selecting a way is also called *routing*.

IP APL

XPR server APL for providing an IP interface to communicate with an external, IP-based PBX (soft switch).
The IP APL belongs to the family of telematics APLs that also comprises e.g. the ISDN APL.

IP Telephony

Acronym for *Internet Protocol Telephony*.

In case of IP Telephony - generally also known as Voice-over-IP or VoIP - voice information is not transmitted via classic voice circuits but routed via the internet protocol (IP) and a data infrastructure.

ISDN

Acronym for *Integrated Services Digital Network*.

ISDN is a digital, service integrating communications network, which was created as further development of the analog public telephone network. ISDN integrates various services in one transmission network. In the ISDN network, telephone, fax, teletex, Datex-J, viewphone and data transmission are combined.

ISDN APL

XPR server APL for providing an ISDN interface to communicate with an external PBX.
The ISDN APL offers furthermore the option to execute additional E-scripts for e.g. enabling complex voicemail systems.

IVR

Acronym for *Integrated Voice Response*.

Voice-controlled algorithm that evaluates voice- or DTMF-based entries during telephone communication and reacts to these entries according to preset rules.
IVR is particularly used in the voice-controlled routing of incoming calls as is implemented e.g. in the XPR server by the Vogue.e script.

K

Kernel
Central computer program component.
The kernel is loaded into the computer's main memory at a program's start. The kernel's task is to start, manage and eventually smoothly end all further required system routines.

L

LAN
Acronym for *Local Area Network*.

Local Area Networks are systems that enable equal network users to perform a group-oriented message exchange in a locally restricted area.
Typical LAN technologies are e.g. Ethernet or Token Ring.

Link (SAP)
Logical communication relation between a remote server and an SAP application server set up per SAP client.

M

Message Transfer Agent
See *MTA*.

Monitor Point
CTI functionality within a PBX that enables a continuous status monitoring of selected telephones.

MTA
Acronym for *Message Transfer Agent*.
Takes on the central routing of messages in the XPR server. Incoming messages are transferred by the receiving APL to the MTA, which determines the target APL based on the configured routing rules and forwards the message to this APL.

MSPTSP
Acronym for *MRS Service Provider TAPI Service Provider*.

The MSP (MRS Service Provider) is a software module via which the XPR server can communicate with an XPR client application.
The MSPTSP is an additional TSP extension, which provides a TSP-conformable interface. This enables applications from other manufacturers to access the XPR server.

N

Nodes (SAP)
Logical view of an externally connected system within SAP R/3.
SAP R/3 administers externally activated systems in logical format as so-called nodes. With configuring such a node, specifications are made as regards e.g. for which address area the active system is in charge, or which data formats are supported by it.

O

OSI Reference Model
Acronym for *Open System Interconnection* or *Open Systems Interconnect* reference model.

OSI is an open layer model that has been developed since the 70s and has become standard. It tries to organize computer-internal communication by introducing seven layers based on each other and communicating with each other. The advantage of such a structure is the definition of standardized communication interfaces between clearly defined communication units (the 7 layers).

P

Path Replacement
PBX feature – also known under the name Explicit Call Transfer (ECT).
Realizes the direct connection of two subscribers within a PBX after e.g. the XPR server has established the connection to the single communication partners.

PlayWave
Protocol in the XPR environment.
PlayWave enables the playback of voicemails via telephone. This protocol is used by the Outlook Forms, Notes Forms and Communications.

Postmaster
System user who receives undeliverable messages.

POTS (Plain Old Telephone System)
The normal analog telephone network as it has been existing for years. It is gradually being replaced by digitalization, thus ISDN or broadband networks.

Presentation Server (SAP)
The presentation server is in charge of the user-compatible representation of all SAP-related information on the SAP user system. It is part of the SAPGUI, the graphical PC user interface of an SAP user, or is addressed as X-Server by an X-Terminal.
The information to be represented is retrieved by the representation server from the application server.

Program ID
Logical ID for a communications relationship via the RFC protocol. It is used for authentication of the connected system.

PSTN (Public Switched Telephone Network)
Public telephone network with switching systems provided by the corresponding telecommunications providers.

Q

QoS
Acronym for *Quality-of-Service*.

QoS summarizes all facilities and mechanisms that ensure information to be transported via a communication network according to the required standards. QoS mechanisms include hardware-based facilities (such as queuing architectures in hardware components) but also protocol-based mechanisms (such as the DiffServ field in the IPv6 header).

Quality of Service
See *QoS*.

R

Redirected Number
Is in case of a call diversion attached to the rerouted communication setup as additional information. This information contains the phone number of the originally called subscriber who has diverted his/her extension. On basis of this information, voicemail systems can directly forward a call to the voicemail box of the actually called subscriber.

Registry
A database structure or a database entry in which the Windows operating system stores various program-significant presettings to access them later.
Manual modification of registry entries is possible but should only be carried out by experienced users.

Remote Function Call
See *RFC*.

RFC Destination
Basis for addressing an RFC communication. The RFC destination thus forms the logical view of an RFC connection to an external system.

RFC (SAP)
Acronym for *Remote Function Call*.

RFC is a TCP / IP-based client / server interface with symmetric communication character with the communication query always occurring from client to server. The RFC communication is based on the so-called Remote Function Calls (RFC) after which this interface is named.
RFC forms the communication basis between the SAP R/3 system and an external application with using the SAP interfaces *SAPconnect* and *SAPphone*.

Routing
Routing principle particularly used in IP data communication.
Based on their respective IP destination address, data packets are routed via a data network. At each intelligent network node (router) a decision is taken concerning the most convenient way to the destination point and the data packet routed accordingly.

S

SAPconnect
SAP interface for integrating external applications in an SAP landscape. The *SAPconnect* interface has been available since SAP-R/3 version 3.1G.
SAPconnect supports the message services Fax (with document attachment), E-mail and Pager (SMS). Based on this feature range it is used in Unified Messaging solutions.
The XPR server provides a *SAPconnect* interface with the SAPR3 APL.

SAPGUI
Graphic SAP user interface for SAP users.
The SAPGUI is installed on the computer system of the SAP user and enables the communication with the centralized services of the SAP environment.

SAPphone
SAP interface for integrating external applications in an SAP landscape. The *SAPphone* interface has been available since SAP-R/3 version 3.1G.
SAPphone supports CTI and contact center services, thus being used in the corresponding solutions.
The XPR server provides a *SAPphone* interface with the SAPPHONE APL.

SAPPHONE APL
XPR server APL for providing a *SAPphone* interface for the communication with an external SAP R/3 system. Via the *SAPphone* interface the systems involved can be provided with CTI and contact center functions.

SAP R/3
Integrated collection of standardized company applications that map and support a broad range of company processes.
SAP R/3 is a real-time system. All company-significant information is centrally consolidated in the SAP database and can thus be queried any time.

SAPR3 APL
XPR server APL for providing a *SAPconnect* interface for the communication with an external SAP R/3 system.
Via the SAPconnect interface, Unified Messaging messages can be exchanged between the systems involved.

SAPrfc.INI
Configuration file for RFC-based computer applications. This file is used in the scope of an XPR-SAP integration to configure the LibRFC.dll of the XPR server platform.
The `saprfc.ini` contains the required configuration parameters for the RFC communication via the SAP interfaces *SAPconnect* and *SAPphone*. These parameters comprise e.g. program ID, system number and the host name of the relevant SAP application server.

Server Connection
Connection that ends on the contemplated communication system's server in case of a client/server interface.

SMS APL
XPR server APL for sending SMS messages. The SMS APL provides the interface for connecting a cell phone via which the XPR server sends all SMS messages.

Switch Matrix
PBX element that performs central switching of voice circuits. Depending on the connection requirements it is dynamically configured by a control logic and represents the central switching unit of a PBX.

T

TAPI Service Provider
See *TSP*.

TCP
Acronym for *Transmission Control Protocol*.

TCP is a protocol for communication between computer systems. It is member of the TCP/IP protocol family to which further communication protocols belong (cf. UDP and IP).
On information sending TCP ensures safe transmission which is based on an additional communication relation between the sending and receiving computer system. This relation controls the actual data exchange. If e.g. transmitted payload is received faulty or not at all, the sender is accordingly informed by the recipient and can resend the respective information.
TCP works connection-oriented, thus establishes and cancels connections.

TCP APL
XPR server APL that enables the client/server communication in a Windows environment via a TCP / IP network.
The TCP APL is particularly used for the communication of XPR clients (ACD client etc.) with the XPR server.

Transaction Code
Serves in SAP systems for conveniently reaching SAP transactions.

TSP
Acronym for *TAPI Service Provider*.

Software module that manages the communication between the Microsoft Telephony API of a PC and a connected PBX. The PC serves the PBX as external, logical unit that controls communication relationship establishment.
For various PBXs optimized TSPs are used by the respective manufacturer.

U

UDP
Acronym for *Users Datagram Protocol*.

UDP is, like TCP, a member of the TCP/IP protocol family and an alternative to TCP, thus also a communication protocol between two computer systems. Like TCP, UDP works on the basis of the internet Protocol (IP) as well. It is however not as reliable in its transmission method. This is due to UDP not checking the transmitted data. But owing to its simple structure it enables faster information transmission compared to TCP.

UM
Acronym for *Unified Messaging*.

Unified Messaging describes the consolidation of various communication services on a common platform. Such services can be, for example, Voice (telephony), Fax, E-mail or SMS, which are administered in a Unified Messaging solution on a universal communication platform and, in the ideal case, are interconvertible.
In practical terms this means that a user can reach all of his/her incoming messages via a central system access.

Unified Messaging
See *UM*.

V

Voice Circuit
Transmission channel that is established on setting up a communication relationship between two or several telephone terminal devices. It remains as reserved transmission resource until the connection has been set up. Establishment and termination of the voice circuit occurs in the PBX by the switchmatrix upon request.

Vogue.e
VOice GUidE E-script of the XPR server.
Realizes IVR functions (Automated Attendant) for incoming calls in the XPR server.

W

Wave Driver
Software module that enables processing (recording and playback) of sound data on computer systems.

X

XML APL

XPR server APL that provides among other things an *ICI* interface (Integrated Communication Interface) for the communication with an external SAP R/3 system.
Via the ICI interface, Unified Messaging and CTI functions can be provided to the systems involved.

XPR

Acronym for *Xpressions*.

The Xpressions server is an efficient Advanced Unified Messaging Server by Unify Software and Solutions GmbH & C among other things, provides various communications services by means of LAN or ISDN interfaces. Such services comprise e.g. Fax, CTI, E-mail, SMS, call center call distribution or Fax-on-Demand.

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