Combined

Upgrade&Unicode Conversion

Guide

Unicode Conversion SAP Basis 4.6C → SAP NetWeaver 7.0 ABAP SP14 and lower

Target Audience

■ System administrators

■ Technology consultants

Last update:

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Documentation on SAP Service Marketplace

You can find this documentation at the following address:
http://service.sap.com/Unicode@sap

Typographic Conventions

Example	Description
<>	Angle brackets indicate that you replace these words or characters with appropriate entries to make entries in the system, for example, "Enter your `<User Name>`".
→	Arrows separating the parts of a navigation path, for example, menu options
Example	Emphasized words or expressions
`Example`	Words or characters that you enter in the system exactly as they appear in the documentation
Example	Textual cross-references to a URL, for example, www.sap.com
/example	Shortcuts added to the URL of a homepage to enable quick access to specific content on the Web
123456	Hyperlink to an SAP Note, for example, SAP Note 123456
Example	■ Words or characters quoted from the screen. These include field labels, screen titles, pushbutton labels, menu names, and menu options. ■ Cross-references to other documentation or published works
Example	■ Output on the screen following a user action, for example, messages ■ Source code or syntax quoted directly from a program ■ File and directory names and their paths, names of variables and parameters, and names of installation, upgrade, and database tools
EXAMPLE	Technical names of system objects. These include report names, program names, transaction codes, database table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE
EXAMPLE	Keys on the keyboard

Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Background

Combined Upgrade & Unicode Conversion Guide

About this Document

Target Audience

The information in this document is intended for SAP system administrators with operating system, database, SAP NetWeaver Application Server, and Unicode Conversion knowledge.

Purpose

This documentation details the steps necessary to upgrade to all SAP products based on SAP NetWeaver 7.0 SP 14 and lower Unicode from source release SAP Basis 4.6C.

Note:

For upgrades to SAP NetWeaver 7.0 SP15 and higher there is a separate CU&UC Guide available on www.service.sap.com/unicode@sap.

This document is valid for Single Code Page systems, MDMP systems and Blended Code Page configurations. For Ambiguous Blended Code Page systems there are some additional requirements. See SAP Note 818374 for details.

For more information on non-Unicode code page solutions, see SAP Service Marketplace at www.service.sap.com/i18n and SAP Note 73606.

Constraints

This documentation should not be used to convert an MDMP system without involvement of a certified SAP Technical Consultant.

See SAP Note 928729 for more information.

Statement on Data Consistency in Unicode Conversions

Information about data consistency and SOX-compliance are available on SAP Service Marketplace Quick Link /unicode → *Unicode Media Library* → SAP Statement: Data consistency in a Unicode Conversion.

Before You Start

Naming Conventions

The complete name of this project is "Combined Upgrade & Unicode Conversion SAP Basis 4.6C → SAP NetWeaver 7.0 SR1 and higher. In this document, the short form **"Combined Upgrade & Unicode Conversion"** and the abbreviation **"CU&UC"** are used.

The target release in this project is SAP NetWeaver 7.0 and all future support releases. In this document, the short form **"SAP NW 7.0"** is used for all support releases.

Documentation

The following additional documentation is required for the Combined Upgrade & Unicode Conversion:

Component Upgrade Guide: http://www.service.sap.com/upgrade. Choose the applicable Solution/Upgrade Guide according to your platform/database combination.

Homogeneous and Heterogeneous System Copy for SAP Systems based on SAP NetWeaver 7.0: http://www.service.sap.com/installNW70 → *Installation* → Sys*tem Copy for SAP Systems based on NW7.0 ABAP SR1* or *SR2*. If you want to build in the Java AddIn

SAP Notes for the Combined Upgrade & Unicode Conversion

To prepare and perform the Combined Upgrade & Unicode Conversion of your SAP System, you require some additional information that is not included in this document. This information is in a range of SAP Notes on SAP Service Marketplace, some of which you must read before you prepare the Combined Upgrade & Unicode Conversion. The general Upgrade & Unicode Conversion Note contains the current status of the project and information about new features. There a separate SAP Notes for the Upgrade part of the project. These SAP Notes are listed in the applicable Component Upgrade Guide. When you actually perform the Combined Upgrade & Unicode Conversion, you need information from some additional SAP Notes. These SAP Notes are mentioned in the appropriate section of this document.

SAP Note Number	Description	SAP Note Type
928729	Combined Upgrade & Unicode Conversion FAQ	General Upgrade & Unicode Conversion Note
818374	Unicode Conversion of a Blended Code Page System	Release restrictions, SP and Kernel patch levels, required transports and parameter settings for Ambiguous Blended Code Page CU&UC
867193	ABAP and Kernel Patches for Upgrade and Conversion in 4.6C	Current information about: 1. corrections in the ABAP part of the Unicode Preconversion transaction 2. required kernel patches
548016	Conversion to Unicode	Application specific supplementary information to the Combined Upgrade & Unicode Conversion Guide
765475	Unicode Conversion: Troubleshooting	Troubleshooting Guide for Unicode Conversions

Software Download

You can find all available Support Packages on SAP Service Marketplace at:
www.service.sap.com/swdc.

Restrictions and Requirements

Upgrade Specific Restrictions

Make sure you use the correct SAPup 7.00 version. Check SAP Note 821032 for details and download information.

Use Fixbuffer with date 28-09-2006 or later! Check SAP Note 813658 for details and download information.

Note:

For SR1, use SAPup version 7.00/2, build 24.065 or higher!

Application Specific Restrictions

See SAP Note **79991** for recent information about Unicode-enabled SAP components and mySAP solutions.

See SAP Note 540911 for component-specific restrictions.

General Restrictions

1. You can not install a Unicode system with a non-Unicode system in one database (MCOD).

    DB2-z/OS: Read SAP Note 1068215 for information about MCOD with Unicode and non-Unicode systems on DB2-z/OS.

2. SAP Systems which deploy one or more EBCDIC code pages (= code pages with SAP internal numbers < 1000) cannot be converted to Unicode:

    a. Run transaction SE11 and check if database table TCPDB contains entries < 1000.

    b. If yes, the system must be converted to ASCII first.

3. SAP Unicode systems are not released for Informix. See chapter Unicode Conversion Phase for details about database change and simultaneous Unicode conversion.

4. Conversion from Unicode to non-Unicode is not possible.

5. Note the restrictions for Unicode Solution Manager monitoring non-Unicode systems with MaxDB database (SAP Note 924650).

Requirements

Component-specific Requirements

2008-09-19

1. The Unicode conversion of a BW 3.5 System is subject to certain release-specific restrictions which are described in SAP Note 588480. It also requires additional steps concerning the System Copy. Please see SAP Note 543715 and 771209 for detailed information, and visit http://service.sap.com/bi → *Services & Implementation* → *System Copy and Migration* for information about lower BW releases.

    ⚠️ Caution

    > Make sure that you perform the preparation steps described in the note as early as possible.

6. If you use HR functionality in your SAP system, you have to perform additional steps which are described in SAP Notes 573044 and 543680.

7. If you have installed Add-On **CCIS 100_46C** (Russian/UA/KZ), note that an additional migration process is required **before SPUM4 and the Upgrade Procedure are started**. Read SAP Note 947554 for a detailed description.

    ⚠️

    > If you perform the standard procedure without the additional steps, data loss will be the result. **SAP does not take any responsibility in this case!**

8. If you use SAP Office functionality in your SAP system, read SAP Notes 691407 and 690074 for further information on Unicode conversion.

9. If you use the Credit Card Encryption function, note that all encrypted card numbers are decrypted **before** the Unicode Conversion. Follow the instructions in SAP Note 766703.

10. If you use SAP Easy Document Management (EasyDMS), follow the instructions in SAP Note 1056170.

11. If you use Common Programming Interface Communication (CPIC), read SAP Notes 600560 and 938911 for more information.

For detailed information about SAP Unicode systems see:
www.service.sap.com/unicode@sap.

Hardware Requirements

Before the 4.6C system can be prepared you must ensure that all your programs and any SAP programs you modified – including customer exits that you use - are ABAP 6.10 compliant. Customer-defined (printer) code pages must be converted to comply with the new, Unicode-based code page structures. The tools for both preparation procedures are only utilizable on a Unicode-enabled release. As Web AS 6.10 is the first Unicode-enabled release, CU&UC on release 4.6C requires an additional system on Web AS 6.10 or higher.

More information on how to perform the preparation procedures are described in chapter 1.1 Steps in ABAP Preparation System.

General information about hardware requirements in Unicode Systems is available at https://service.sap.com/unicode@sap → Unicode Overview Library.

Software Requirements

For the Combined Upgrade & Unicode Conversion the following media are required:

1. The applicable Upgrade Package (go to http://www.service.sap.com/upgradeNW70→ *Media List for SAP NetWeaver 7.0*)

2. The Unicode Installation Package (go to http://www.service.sap.com/installNW70→ *Media List for SAP NetWeaver 7.0*)

    a. a non-Unicode CD containing the SAPinst tools for the export of the database

      You can download the non-Unicode-CDs from SAP Service Marketplace: service.sap.com/swdc.

    b. a SAP NetWeaver 7.0 Kernel 7.00 DVD for the import of the database

3. Import 4.6D Kernel patch 2326 from SAP Service Marketplace according to SAP Note 19466:

Make sure you include all required (target release) Support Packages into the upgrade. Avoid applying Support Packages after the upgrade has been finished and before the Unicode Conversion is started. See section **1.2.3 Phase BIND_PATCH (Module Extension)**.

Frontend Requirements

Requirements:	SAP recommends installation of the newest SAP GUI Patch Level. The minimum SAPGUI for Windows 6.20 Patch level is **56.**
Documentation:	"SAPGUI for Windows: I18N User Guide": You can download this documentation from SAP Service Marketplace at www.service.sap.com/i18n → I18N Media Library or from SAP Note 508854 SAP Note 710720 (SAPGUI for Windows 6.40)

SAP GUI for Windows 6.20 is compatible with products based on SAP Web Application Server 6.20/6.40 and SAP NetWeaver Application Server 7.00.

SAP GUI for Windows 6.40 is compatible with products based on SAP Web Application Server 6.20/6.40 and all SAP NetWeaver Application Server 7.00.

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For full support of languages with multi-byte system locales (Japanese, Traditional Chinese, Simplified Chinese and Korean) SAPGUI 6.40 is required.

Note that SAP GUI 6.40 currently supports only Windows 2000 and Windows XP/Windows 2003 Server (see SAP Note 147519 for details).

Private Use Area in Unicode Systems

Customers with Asian system code pages (Japanese, Korean, Simplified Chinese, and Traditional Chinese) that have been using the user definable areas are advised to read SAP Note 726954 to check the mapping of the user defined characters to Unicode.

General Description

SAP provides support for Unicode at all three levels of the three-tier architecture starting with Web AS Release 6.20. Major DB manufacturers support Unicode, and SAP offers Unicode as a system code page on the application server. SAP Note 379940 lists supported hardware configurations. All derivates of SAP GUI support Unicode in addition to all other non-Unicode encodings and languages SAP supports on non-Unicode systems (see SAP Note 73606). Thus only a single GUI is required to access both Unicode and non-Unicode systems. More information about Unicode and SAP's Unicode implementation is available in the Unicode Technology Media Center on SAP Service Marketplace www.service.sap.com/unicode@sap

Database Conversion

To convert a non-Unicode system to Unicode, all character data in the non-Unicode database must be converted to Unicode. The default conversion method is to export the entire database using SAPinst, create a new Unicode database (system copy), and then import the database using SAPinst again. The actual data conversion to Unicode is done during the export. For further information about system copy optimization, go to www.service.sap.com/systemcopy -> optimization.

Downtime Estimation

When planning a Unicode conversion a rough estimation of the expected downtime can be done by using a calculation formula attached to SAP Note 857081. This SAP Note also provides an overview of different system copy optimization tools and methods.

Incremental conversion (IMIG) for large systems is not available in combination with the CU&UC.

SAP Blended Code Page Conversion

This documentation is valid for Single Code Page systems, MDMP systems and SAP Blended Code Page systems. For the conversion of a Standard Single Code Page system, the conversion tool will use only one code page (the Global Fallback Code Page) for converting the character data.

However, a Single Code Page system can also use a Blended Code Page. Blended code pages can be either unambiguous or ambiguous. Unambiguous Blended Code Page systems are converted like Standard Single Code Page systems.

For Ambiguous Blended Code Page systems (i.e. using SAP Code Pages 6100, 6200 or 6500) there are a number of prerequisites described in SAP Note 818374.

Note:
Read SAP Note 818374.

MDMP Conversion

In an MDMP system, the code pages used on the application server are selected dynamically, according to the user's logon language. For tables with a language field, the

value of the field is evaluated whenever character data is processed. This ensures that the character data is processed correctly, regardless of the logon language. If a table has no language field, the application server always uses the code page of the logon language whenever character data is processed: because such data can be processed with different code pages, character data in tables without a language field should only contain 7-bit ASCII characters (see SAP Note 73606). This ensures that the data is always processed correctly.

For an MDMP system, the conversion tools must also use the language field information to correctly convert character data to Unicode. It is however possible that non-7 bit ASCII characters were entered into tables without a language field. This data must be processed in the MDMP Preconversion Phase to ensure that they are converted using the correct code page.

Combined Upgrade & Unicode Conversion

Tools

Upgrade Tools	PREPARE	Upgrade preparation program: executes preparatory checks, copies required upgrade tools to the database and programs and data to the upgrade directory. PREPARE runs in sequential phases, which are grouped in modules. You can reset and repeat PREPARE as often as required.
Upgrade Tools	SAPup	Central upgrade coordination program. The upgrade runs in sequential phases.You can upgrade a system with SAPup only after you have executed the mandatory PREPARE modules successfully. **Note:** Make sure you use the correct version of SAPup 7.00. We recommed you to download and use the latest SAPup from SAP Service Marketplace. Check SAP Note 821032 for details.
Upgrade Tools	Upgrade Assistant	Upgrade support tool which provides one or more GUI for the upgrade control program.
Unicode Conversion Tools	SPUM4 (before Upgrade) SPUMG (after Upgrade)	Unicode conversion preparation transaction.

		Provides several database scans for checking the consistency of the non-Unicode database and for preparing the database tables for the export and conversion. These scans must be executed manually. **Note**: The transaction is named SPUM4 in SAP Basis 4.6C and SPUMG in SAP NW 7.0. In SAP Basis 4.6C systems transaction SPUMG is only valid for BIDI conversion!
Unicode Conversion Tools	R3load	Unicode conversion program. Performs the export of the prepared non-Unicode database, the data conversion during the export and finally the import of the database.
Unicode Conversion Tools	SUMG (only required for MDMP systems)	Unicode conversion completion transaction. Provides several methods for repairing wrongly converted data in the Unicode system.

Step by Step
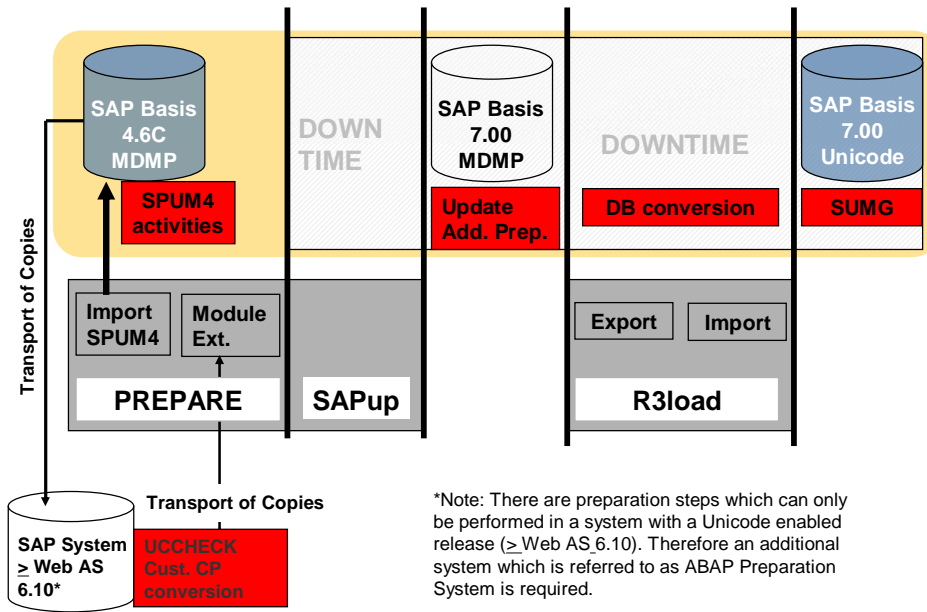
Step	Unicode Conversion Action	Parallel Upgrade Action (see Upgrade Guide)	Upgrade Phase only relevant for CU&UC
Steps in ABAP Preparation System **>Web AS 6.10**	1. Create transport including all customer ABAP programs and modified SAP ABAP programs and import into additional **non-Unicode** system on release Web AS 6.10 or higher. If you use a Unicode system, consider section **Note** below. Conduct Unicode enabling of the ABAP programs according to the documentation available from www.service.sap.com/unicode@sap → *ABAP and Unicode Library*. Convert customer code pages to Unicode-based code page structure. 2. Create transport of copies including all modified objects, programs and code pages for later import in target system during Upgrade procedure.	PREPARE (uptime)	

	Note:		
	If you use a Unicode ABAP Preparation System, the import of transport of copies must not be done during the Upgrade but after the Unicode conversion is finished.		
Upgrade: PREPARE and Tool Import **SAP Basis 4.6C**	Perform steps in chap. 1.3 Data Maintenance	PREPARE (uptime)	PREPARE Phase UCMIG_DECISION (module initialization)
	Tool Import (SPUM4) in SAP Basis 4.6C system from Upgrade Media		PREPARE Phase TOOLIMP4_UCMIG (module import)
			PREPARE Phase BIND_PATCH (module extension)
	Import of transport of copies from ABAP Preparation System in target system SAP NW 7.0 non-Unicode during Upgrade procedure.		PREPARE Phase UCMIG_REQINC (module extension)
Unicode Preconversion **SAP Basis 4.6C**	Use SPUM4 to prepare the database tables for the system conversion.	PREPARE (uptime)	
Database check **SAP Basis 4.6C**	Use SPUM4 to check the consistency of the database.	PREPARE (uptime)	
	Note: Resetting PREPARE does not affect SPUM4 data. Whenever you reset and rerun PREPARE, you do not have to run SPUM4 again.	PREPARE finished	
Upgrade	Perform UPGRADE as described in the Component Upgrade Guide.	UPGRADE SAPup (uptime/downtime)	
Additional Preparation Steps in SAP NW 7.0 non-UC **SAP NW 7.0**	Run final reports, update database statistics, convert translation workbench data and run report UM4_FINISH_ PREPARATION to finish Unicode conversion preparation.		
Unicode Conversion Phase	Use R3load to export and import the database. The actual conversion is being processed during the export.		

Unicode Conversion Completion **SAP NW 7.0**	Use SUMG to maintain any data in the Unicode system that has not been converted correctly.			

Note:

The authorization profile required for the entire system conversion process is SAP_ALL.

If transaction SE16N exists in your system, you can use it in combination with SAP Note 584434 for cross-client table display.

1. Preparation

The preparation of the CU&UC consists of two parts which can be performed in parallel while the source system is in production operation (uptime):

Planning and preparing the Upgrade	Steps in the ABAP Preparation System, database check and Unicode preconversion steps in SAP Basis 4.6C system

1.1 Steps in ABAP Preparation System

Before you can start preparing your SAP Basis 4.6C system there are a couple of steps which cannot be performed in an SAP Basis 4.6C system. The preparation steps described in this chapter can only be performed in an additional system on release 6.10 or higher which is referred to as 'ABAP Preparation System' in this documentation.

There are two options:

1. Recommended option: You copy and upgrade your SAP Basis 4.6C production system to at least Web AS 6.10 (non-Unicode) or higher. Perform the preparation steps in this system as described in the following chapters.

2. You can also create a sandbox system at least on release 6.10 (non-Unicode) or higher.

    Note: If you choose this option, you must make sure that the sandbox system contains all DDIC objects (structures, tables, etc…) that are used in your own programs or in modified SAP programs.

    Then create a transport with your own programs and modified SAP programs in your SAP Basis 4.6C system and import them into the sandbox system. Perform the preparation steps in this system as described in the following chapters.

After having finished the preparation steps make a copy of all changed or modified objects and programs, create a transport of copies and import them in the target system (SAP NW

7.0 non-Unicode) during the Upgrade as described in section **1.2.4. Phase UCMIG_REQINC (Module Extension)**.

1.1.1 Making ABAP programs Unicode-enabled

System:	ABAP preparation system on release Web AS 6.10 or higher
Programs:	transactions UCCHECK and SCOV
Documentation:	ABAPHELP, keyword "Unicode" service.sap.com/unicode@sap System Documentation in UCCHECK and SCOV SAP Notes: 367676; 549143
	Asian (especially Korean) customers: SAP Note 1007073
Status:	mandatory.

Only 6.10 compliant programs that comply with the stricter ABAP 6.10 syntax and semantics will run in a Unicode system, so you must ensure that all your programs are ABAP 6.10 compliant before the SAP Basis 4.6C system can be prepared. This also applies for any SAP programs you modified – including customer exits that you use (see SAP Note 549143 for more information). To determine which SAP programs you modified, run transaction SE95.

1. Run UCCHECK and enter the programs you want to check: all objects in the customer namespace, **all** objects of type FUGS and the SAP programs you modified.

After you have completed the check, and modified any code that was not ABAP 6.10 compliant, you should check the runtime behavior of your programs in a Unicode test system. UCCHECK issues errors or warnings for static errors, or where potential errors are possible, but some errors can only be detected at runtime. You can monitor your testing with SCOV.

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> There are some SAP programs that have not been Unicode-enabled, because they are not needed in a Unicode system or will be regenerated in a Unicode system. Do not run UCCHECK for all SAP programs, otherwise these programs will also be listed.

2. Make a copy of all changed objects and programs, create a transport of copies and import them in the target system during the Upgrade as described in section **1.2.4. Phase UCMIG_REQINC (Module Extension)**.

Unicode Enhanced Syntax Check

As of release Web AS 6.10 the system profile parameter `abap/unicode_check=on` can be used to enforce the enhanced syntax check for all objects in non-Unicode systems. When setting this parameter, only Unicode-enabled objects (objects with the Unicode flag) are executable. Note that after setting the Unicode flag, automatically generated programs might need to be regenerated. The mentioned parameter should be set to the value "on" only, if all customer programs have been enabled according to transaction UCCHECK.

Note:

If you have problems with generated objects which are not Unicode-enabled, check the following SAP Notes:

SAP Note	Short Text
652129	SAP BP: Business partner search
321714	PE03: Technical information on features
99507	LO-LIS: Update termination after upgrade/client copy
84023	Re-generating drilldown reports (gen. Reports in Package KC_GEN)
497850	Condition maintenance reports and Unicode
673066	LSMW: Upgrade to SAP Enterprise 4.7 (or Basis 6.20)
674882	Upgrade: Syntax error in program RKE5XXXX
708442	Incorrect generated programs in Unicode systems
563417	Unicode indicator for BOR object type programs

If you have problems with regeneration of reports RK31*, RK32*, RK33* or RK34*, create a customer message under component CO-PA.

Note

> If you use C/C++ programs, they must also be Unicode-enabled (see RFC-Documentation on SAP Service Marketplace). Go to service.sap.com/rfc-library. Select *Media Library* → RFC Library Guide.

1.1.2 Convert customer code pages

Customer-defined (printer) code pages, which begin with "9", must be converted to comply with the new, Unicode-based code page structures.

System:	ABAP preparation system on release Web AS 6.10 or higher
Programs:	RSCP0125; RSCP0126
Documentation:	SAP Notes 485455, 511732; online documentation in transaction SCP
Status:	mandatory.

1. Use report RSCP0126 to convert these code pages.

2. Use report RSCP0125 to check the roundtrip-capability of these code pages.

3. Finally create a transport of copies and import the converted code pages in the target system during the Upgrade as described in section **1.2.4. Phase UCMIG_REQINC (Module Extension)**.

1.1.3 Text Language for Customer Objects

As of release SAP_Basis 6.20 all fields of data type LANG in Data Dictionary (DDIC) objects which are delivered by SAP have an attribute *Text Lang.* (indicator for a language field). This indicator specifies that the language field determines the code page of the character data in that table. The handling for DDIC objects delivered by SAP in 4.6C is described in chap. 1.3.4 Maintenance of Language Flag [page 25].

System:	ABAP preparation system on release Web AS 6.10 or higher
Program:	RADNTLANG
Documentation:	SAP Note 480671
Single Code Page:	required. The flag is not used during the conversion to Unicode, but will be used for RFC communication.
MDMP:	required. If the flag is turned off, language fields are ignored.

To set this DDIC attribute for your own objects, run report RADNTLANG for all of your tables with one language field. This report should be run in the background, since it may take several hours.

 Caution

Make sure you run the most recent version of RADNTLANG. See SAP Note 480671 **for details.**

Transports into a system can cause the indicator to be overwritten. It is therefore necessary to (re)run RADNTLANG directly before beginning the Unicode preconversion in order to actualize the flags.

There are special cases when the flag should be turned off after RADNTLANG has run:

- The language field does not specify the code page of the character data in the table, but some other language property. In this case the *Text Lang.* flag must be turned off to ensure that the data is not converted with the wrong code page.

- When a table has more than one language field, **only one** may be set. For tables with more than one language field, there are two possible options:

  a. Either one of the language fields determines the code page of the data and the *Text Lang.* flag must be set for the correct field, or

  b. Neither of the language fields determines the code page of the data and the *Text Lang.* flag should not be set for either of the language fields.

1.2 Upgrade: Preparation and Tool (SPUM4) Import

Upgrade Tools: PREPARE and Upgrade Assistant

Follow the upgrade PREPARE procedure described in the Upgrade Guide for your hardware and component combination.

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The following PREPARE phases in the upgrade are only relevant for the Combined Upgrade
& Unicode Conversion Procedure:

1.2.1 Phase UCMIG_DECISION (Module Initialization)

In this PREPARE phase you will be asked if you want to perform a Combined Upgrade &
Unicode Conversion.
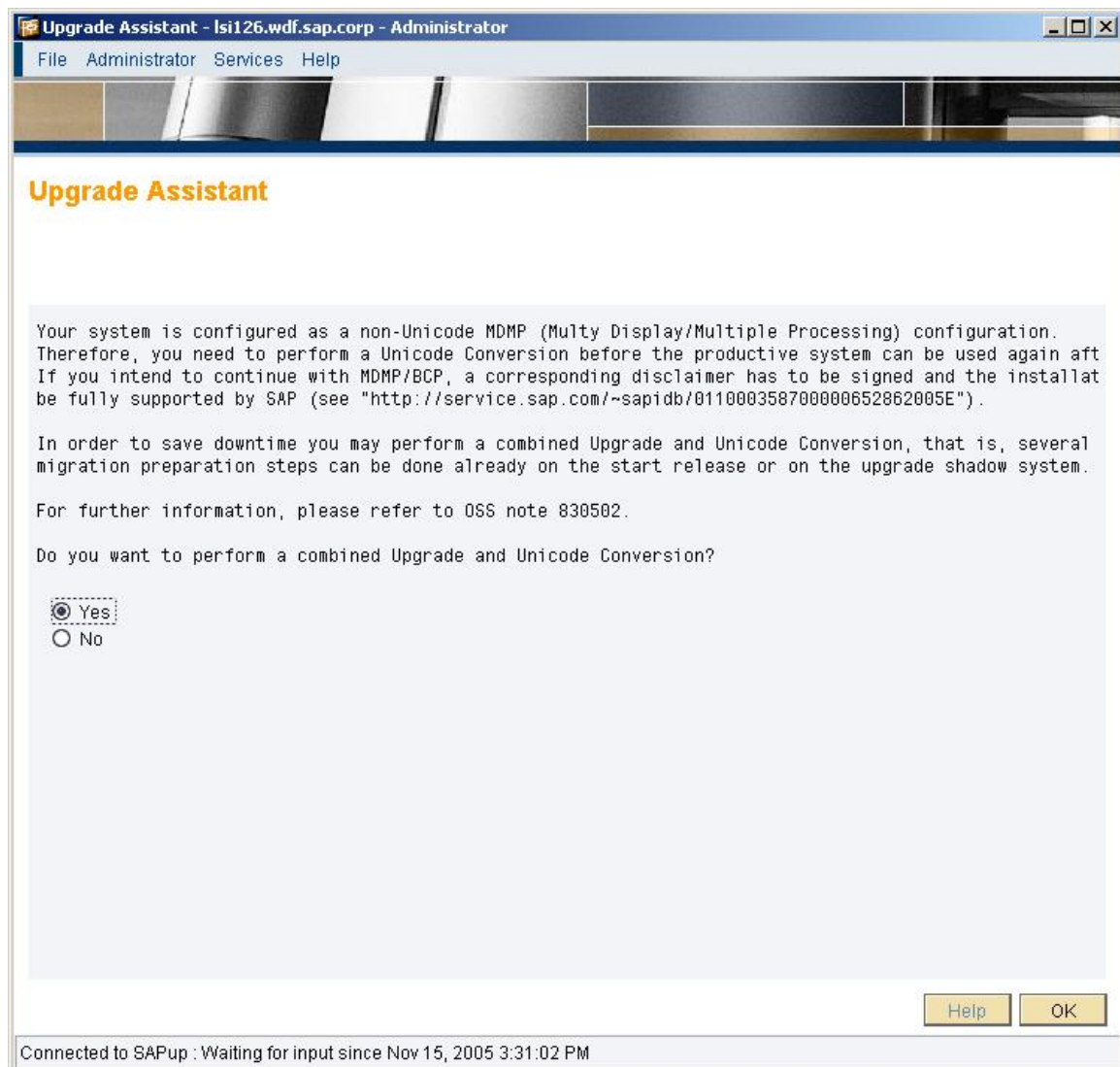
Choose 'yes'.

1.2.2 Phase TOOLIMP4_UCMIG (Module Import)

In this PREPARE phase the Unicode Preconversion Tool (transaction SPUM4) is imported.

⚠ **Note:**

After the import of transaction SPUM4 is finished and before SPUM4 is started, you must import the transport request from SAP Note 867193 via STMS

1.2.3 Phase BIND_PATCH (Module Extension)

Make sure you include all required target release Support Packages into the upgrade in this PREPARE phase. Avoid applying Support Packages after the upgrade has been finished and before the Unicode Conversion is started.

⚠ **Note: It is strongly recommended to apply at least SAPKB70011.**

1.2.4 Phase UCMIG_REQINC (Module Extension)

In this PREPARE phase you include the transport of copies containing your Unicode-enabled ABAP programs and converted customer code pages (see chap. **1.1 Steps in the ABAP Preparation System [page 17]**).

```
Upgrade Assistant - lsi126.wdf.sap.corp - Administrator          _ □ ×

 File   Administrator   Services   Help
```

Upgrade Assistant

```
Enter the name of the transport request:

REQUEST NAME = │
```

```
                                                    Help      OK
```

```
Connected to SAPup : Waiting for input since Nov 15, 2005 4:53:57 PM
```
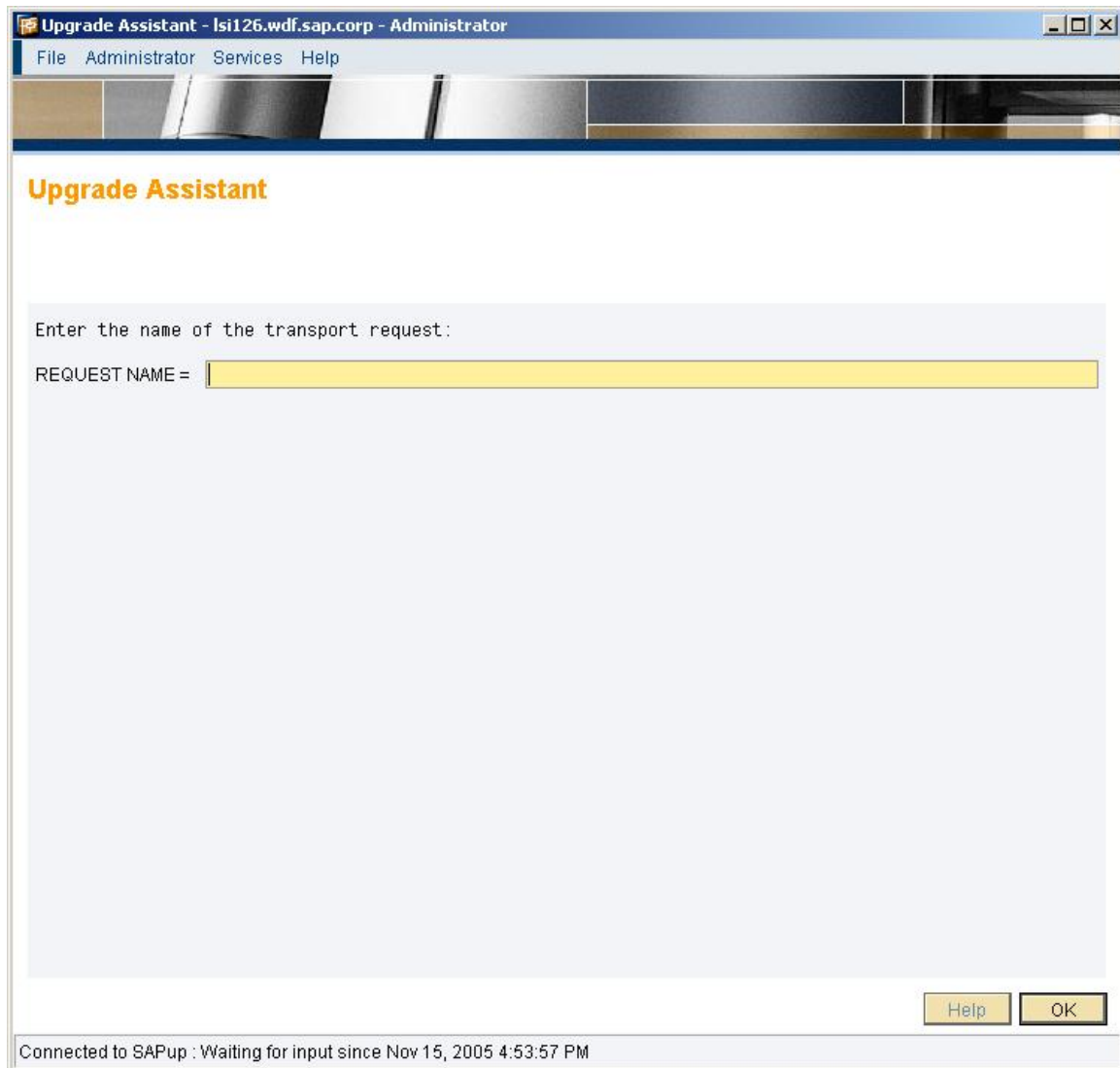
⚠ **Remember:**

After the import of transaction SPUM4 is finished and before SPUM4 is started, you must import the transport request from SAP Note 867193.

1.3 Data Maintenance

If not described differently in the relevant SAP Notes, you can carry out all the steps in this chapter during system uptime.

1.3.1 Reducing Data Volume

This section provides information about tables which show the largest growth in data volume. The content of this section relates to data gathered in systems with SAP R/3 Release 4.0 and later. Before starting the Unicode preconversion SAP recommends deleting and/or archiving obsolete data from these tables in order to improve the system performance during the conversion procedure.

Documentation:	SAP Note 679456; Data Management Guide; SAP Note 638258
	You can download the **Data Management Guide** from the SAP Service Marketplace: http://service.sap.com/ilm → Data Archiving.
	See also SAP Note 71930 for detailed information about data archiving.
Status:	strongly recommended

Read SAP Note 679456 for information on how to maintain the tables. Download the attached document in which all the tables are listed.

Read the "Data Management Guide" for detailed information on how to maintain tables with large data volume.

Additional recommendation:

If you have carried out a project of the SAP System Landscape Optimization, you have imported objects of the Conversion Workbench into your SAP system. SAP recommends deleting these objects according to SAP Note 638258 before starting the conversion procedure.

1.3.2 Pre- Conversion Correction of Table Data

Before starting the Unicode conversion you need to maintain data with value "SODI" in field PERS_GROUP in table ADRP according to the SAP Note mentioned below.

Table:	ADRP with field PERS_GROUP
Documentation:	SAP Note 712619
Status:	mandatory

Delete QCM tables from the source system as described in SAP Note 9385.

Tables:	QCM <table_name>
Documentation:	System Copy Guide, section 2.2 Technical Preparations";
	SAP Note 9385
Status:	recommended

1.3.3 Maintenance of Language Flag

As described in chap. 1.1.3 Text Language for Customer Objects [page 19] the *Text Lang.* flag specifies that the language field determines the code page of the character data in a DDIC table. In SAP Basis 4.6C the *Text Lang*. flag information is not available.

If you have created your own objects run report UM4_DEFINE_LANG_TABLES.

1.3.4 Consistency Check for Cluster Tables

SAP recommends checking inconsistencies in cluster tables prior to the SPUM4 preparation steps.

Programs:	program R3check
Documentation:	SAP Note 89384
Status:	recommended.

Run R3check on database level as described in SAP Note 89384.

1.3.5 Archived Data after Unicode Conversion

For information about reading data in the Unicode system which were archived before the conversion refer to SAP Note 449918 and 1059413.

1.3.6 Printing Old Spool Requests after Unicode Conversion

After the conversion it will be problematic to print out spool requests which have been created before the conversion. Read SAP Note 842767 for detailed information on how to handle such spool requests before beginning the conversion procedure.

1.3.7 Translation Environment

If you are using the SAP translation environment (transaction SE63), you must export the Proposal Pool in SAP Basis 4.6C. After the Unicode Conversion is finished you must import the Proposal Pool in SAP NW 7.0 (see chap. 5.1 First Steps).

Follow the instructions in SAP Note 1055820, scenario 3.

2. Unicode Preconversion Phase in SAP Basis 4.6C

Transaction SPUM4

Transaction SPUM4 is used for preparing the database tables of a non-Unicode system for the conversion to Unicode. All steps in the Unicode Preconversion Phase are designed to be run at system uptime (i.e. when users are logged on to the system). The actual data conversion is carried out by the separate tool R3load (see chap. Tools) when SPUM4 has been finished. The character data stored in the database tables that have been prepared before in SPUM4 will be converted as part of a System Copy during the export phase. R3load uses the results of SPUM4 which are stored in the Export Control Table, the Vocabulary and the Language Lists.

Note: It is only possible to perform the conversion during the export phase!

Requirements:	SPUM4 import finished
Tool:	transaction SPUM4
Logon Language:	**Note that SPUM4 can only be used with logon language EN!**
Documentation:	this document
Status:	required

2.1 SPUM4

The major part of SPUM4 consists of a number of database scans which are listed below. All database tables must be processed by the scans as described in chapters Database Check and Code Page Determination:

Before a user is permitted to start the SPUM4 scans, the following user profile must be maintained in transaction SU01:

Object: S_ADMI_FCD
Field: S_ADMI_FCD
ID: SCP1

Scan required for both Single Code Page systems and MDMP systems (Database Check)

1. Consistency Check Checks the consistency of all database tables in the Data Dictionary of the source system. Classifies the tables into tables with language information (TABCAT1) and tables without language information (TABCAT2). Inserts TABCAT1 tables into worklists of the scans Tables with Ambiguous Language Information and Tables with Language Information. Inserts TABCAT2 tables into worklist of Tables without Language Information.

Scans required for MDMP systems only (Code Page Determination)

2. Tables without Language Information Checks all TABCAT 2 tables and writes words into Vocabulary.

3. Tables with Ambiguous Language Information Checks TABCAT1 tables (if Ambiguous Language List is edited) and writes words into Vocabulary.

4. INDX Analysis Checks INDX-type tables and writes words into Vocabulary.

5. Tables with Language Information Checks TABCAT1 tables and assigns code page information to TABCAT2 tables in Vocabulary.

6. Reprocess Searches Vocabulary for words which contain non-7-bit ASCII characters and which are outside the Common Character Set (see SPUM4 Settings). This scan simulates the data conversion and writes log entries for words which run into errors. Words in this Reprocess log must be assigned code page information in the non-Unicode system. After the conversion this information will be used for repairing the data.

7. INDX Repair Assigns code page information to words from INDX-type tables. Writes log entries for words which will run into errors during the data conversion. Words in this INDX log can be assigned code page information in the non-Unicode system or later in the Unicode system. INDX table data are not converted during the export. They will be converted when being processed in the Unicode system.

Note: The three scans which populate the Vocabulary can be run in parallel:

• Tables without Language Information

• Tables with Ambiguous Language Information

- INDX Analysis

2.2 Database Check

2.2.1 Restart SPUM4

You must delete all data completely before starting the database check! Go to *Scanner →*
Restart SPUM4.

After a restart, you will be displayed the entrance screen of SPUM4. All data which might
have been already entered or changed in SPUM4 are now deleted or set to default:

The Language Lists are empty, the SPUM4 settings are set to default, Hints and Conditions
are deleted, and tables which have been added manually to the Exception List are removed.
External vocabulary is deleted, the update of the exception tables. The SPUM4 Main log is
deleted apart from the first basic steps in the system like language installations and support
package imports.

Requirements:	SPUM4 import finished
Transaction:	SPUM4
Documentation:	this document
Status:	required.

2.2.2 Welcome to SPUM4

The entrance screen is divided into two sections. In the upper section you will find general
information and a couple of links to Unicode information websites on SAP Service
Marketplace

In the lower section there are three pushbuttons with additional *Info* buttons. Each
pushbutton triggers a mandatory action to be performed before the worklist for the
Consistency Check can be initialized. The checkbox *Would you like to replace code page
1100 with 1160 in the Language List* can be optionally selected in case the frontend code
page 1100 has been used with system code page 1100.

The last pushbutton *Continue with transaction SPUM4* will trigger the automatical initialization
of the Language List and lead to the Consistency Check screen.

2.2.3 Exception List

The Exception List contains SAP delivered tables which must be handled in a special way
during the SPUM4 analysis and during the Unicode conversion. For instance the exception
list contains tables

- which are obsolete and do not have to be analyzed by SPUM4, or

- Store data from only one language, for example tables with only Japanese or only
German data and therefore do not have to be analyzed by SPUM4. Those tables will
be exported and converted with the corresponding code page.

The exception list is provided as plain text file attached to SAP Note 996990. You must
download this file once (highly recommended: newest version of the Exception List). Select

Download Exception List from note 996990 and save the text file to your local PC.Then select *Update the SPUM4 exception tables* and upload the text file.

You can proceed after the confirmation message *Upload of exceptions successfully finished* is displayed.

2.2.4 Language List

Before running the Consistency check, you must make sure that the Language List and the Ambiguous Language Lists are correctly filled and edited. After the first start of transaction SPUM4 and after each restart, the Language List is initialized automatically.

All languages which are productively used in your system are now inserted in the Language List as **active** languages in conjunction with the system code page. All other languages (i.e. languages which are supported by SAP) are inserted as **inactive** languages. The reason is to ensure that R3load uses the correct code page for languages which are not installed in the system but nevertheless occur in tables with language information.

Only **active** languages can be used for language assignment. Select *Edit → Language List* from the SPUM4 menu, and check whether all productively used languages are marked as active languages. If you are not sure which languages are productively used in your system, do the following:

In transaction SE38, execute report RSCPINST and check the installed languages.

Restrictions

You cannot edit the lists during a running worker job.

You cannot add or delete languages from the lists.

Active languages can be maintained before the **Consistency Check** is started which means you can change the code page information for a language as described in the following sections.

Inactive languages can be maintained before the scan **Tables with Ambiguous Language Information** is started.

Systems with Code Page 8340

If you use code page 8340 (Traditional Chinese HKSCS Vers.1) in your system, you must perform additional preparation steps as described in the supplementary documentation "Conversion of HKSCS Systems to Unicode". Download the document from SAP Note 551344.

Systems with Code Page 8300

Depending on font and input method it is possible that HKSCS characters have been entered in systems with code page 8300 (Traditional Chinese Big5, based on MS CP950). If this is the case, proceed as described in section **Systems with Code Page 8340**.

Ambiguous Blended Code Pages:

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In systems which use an ambiguous blended code page (SAP code page 6100, 6200 or 6500), the languages are inserted in conjunction with the original code pages the ambiguous blended code page consists of.

Example

System code page = SAP Asian Unification (6200) → language Japanese (JA) is inserted in conjunction with the Japanese code page 8000

In such cases, language EN is not inserted in this list, but must be added to the Ambiguous Language List.

2.2.4.1 Edit Language List

Reasons

You may have to change the code page information for a language.

Select *Edit → Language Lists* from the SPUM4 menu.

You can now change the settings for each language. Select a language and choose .

2.2.4.2 Edit Ambiguous Language List

If your system contains tables with ambiguous language information, those languages must be moved to the Ambiguous Language List. Afterwards they can be processed by the additional scan Tables with Ambiguous Language Information.

Select *Edit → Language Lists* from the SPUM4 menu*.

1. In MDMP systems SPACE is inserted automatically into the Ambiguous Language List.
2. In Ambiguous Blended Code Page systems SPACE and Englisch (EN) are inserted automatically.

The language key SPACE is used for tables which have a LANG field and *Text Lang.* flag but which have not been assigned a language yet.

Remember that languages may only occur in one of the two lists. You cannot add or delete languages from the lists, but you can move them from one list to the other. Place your cursor on the ALV Grid field which contains the language key and drag the entry to the other list and drop it directly on an existing entry.

2.2.5 SPUM4 Settings

Depending on the system type the settings for the database check have different default values. **These default values are described in the F1 help documentation of each input field**. In general, you should not delete the default values. **If you want to change one of the**

values, read the F1 help carefully before doing so. Read this chapter for additional information about some of the settings.

Select *Scanner → Settings*.

You cannot change the SPUM4 settings any more after the worklist for the *Consistency Check* has been initialized (see chap. Initialize Worklist [page 34])!

Exceptions:

You can change *Check Point* settings anytime, unless no worker job is running.

You can change the value *Code Page for INDX-type Tables* only **after** the Consistency Check has been initialized.

Code Page

Whenever there is no information to determine the correct code page, R3load uses the **Global Fallback Code Page** (GFBCP) for the conversion. Its default value is the code page which corresponds to the logon language EN, or else 1100. This is a **global setting for all** tables.

In Single Code Page systems the default value is the system code page (retrieved from table TCPDB). The Global Fallback Code Page is automatically entered as character set for all entries in the Export Control Table (see chap. 2.2.4.1 Export Control Table [page 35].

In MDMP systems the default value for GFBCP is one of the system code pages (retrieved from table TCPDB).

The SAP ambiguous blended code pages cannot be set as GFBCP. The following code pages are set as GFBCP instead:

- 6100 SAP Unification   →   GFBCP = 1100
- 6200 SAP Asian Unification →   GFBCP = 8000
- 6500 SAP Diocletian   →   GFBCP = 1100

It is possible to change the default value for the Global Fallback Code Page. For example, if EN is not installed in your system, or EN was never or seldom used as a logon language, the Global Fallback Code Page should correspond to the language you use most in your system.

Note

All code pages which are used for the conversion must be roundtrip-compatible!

Example: 1160 → Unicode → 1160.

If you enter a new value here, a check for round-trip compatibility is executed automatically.

You can also use report RSCP0125 to check if your code page(s) are roundtrip-compatible. You can access this report directly via transaction SE38 or via transaction I18N → *SAP Code Pages → Check → Round Trip Measurement*.

It is also possible to set the code page manually for selected tables (**table-specific Fallback Code Page**):

a. You must set a table-specific Fallback Code Page for each table entered in the Exception List.

b. You can set a table-specific Fallback Code Page for selected tables in the Export Control Table.

For more information on maintaining tables in the Exception List see chap. Exception List [page 35].

Check Point

The checkpoint mode can be used to process tables in predefined portions (see section *Frequency*). It is optional and therefore the default value is "inactive". SAP recommends setting the value to "active" for processing **large** tables only (approx. 30 million entries or more) because using the checkpoint mode increases the runtime of the scans.

Mode

Determines what happens if a job is cancelled while a table is being processed. With the mode set to "inactive" a new worker job must reprocess the entire table. In such cases you will get error messages (see transaction ST22) like:

"ORA-01652: unable to extend temp segment by 256 in tablespace PSAPTEMP" (Oracle)

"ORA-01555: snapshot too old" (Oracle)

"SQL0289N Unable to allocate new pages in table space PSAPTEMP" (DB6)

"SQL0964C The transaction log for the database is full" (DB6)

"SQL0968C The file system is full. SQLSTATE=57011" (DB6)

"INF-458: Long transaction aborted." (Informix)

With the mode set to "active", a log is written and a new job can begin reprocessing at that point where the first job ended.

Frequency

This value specifies the number of rows that are processed. Setting the number too low will result in a downgrade in performance. The default is currently 2 million, but this can be increased.

Oracle only: In addition to the Checkpoint Mode SAP recommends using the *Automatic UNDO Management* as described in SAP Note 600141 in order to avoid the following error:

Database type:	Oracle
Release:	Oracle9i
Error:	"ORA-01555: snapshot too old"
Feature:	Automatic UNDO Management

Documentation:	SAP Note 600141

Vocabulary

Minimum Word Length

The minimum word length settings specify the byte length of a word for the SPUMG Vocabulary (described below). With the default settings a word is 1 byte long and contains one non-7 bit ASCII character.

Word separator

Word separators are used to extract words from text data.The code pages from which the word separators are determined are stored on the database to ensure that upcoming changes made in the Language List can be checked.

Common Character Set

This option can be used to reduce the number of words in the vocabulary. It works only in systems which do **not** have a double-byte code page (e.g. 8000) installed.

The Common Character Set can be explained as an enhancement of the 7bit ASCII area specifically created for SPUM4. It is the sum of all alphanumeric characters which are represented by the same byte sequence in every code page that is installed in the non-Unicode system.

Example

In SAP code page 1100 the character <ü> is represented by byte 0xC3. In SAP code page 1401 the character <ü> is also represented by byte 0xC3. This means that <ü> is part of the common character set of 1100 and 1401.

Now, if the common character set is set to "7-bit ASCII", the German name <Müller> will be inserted into the vocabulary because the name contains the non-7bit ASCII character <ü>.

If the Common Character Set is set to "Intersection of active languages", it will not be inserted into the vocabulary because the character <ü> has the same byte value in code page 1100 and 1401. Therefore both code pages can be used to convert <Müller> to Unicode.

Collision Resolution

The Collision Resolution determines the behavior of the Reprocess scan (i.e. it specifies whether Collisions should be marked before the conversion). More details see chapter Resolving Collisions [page 62].

Example

 A data record contains two words which have been maintained with German (code page 1100) and Hungarian (code page 1401) in the vocabulary.

If the default value "Character based (fine)" is set, a check is made for both words. If the first word maintained in German contains only characters which are also included in code page 1401, no log is written. It is therefore recommended using the default value to keep the number of entries in the Reprocess Log at a minimum.

If the value is set to "Code page based (coarse)" a log entry is written in the Reprocess log for this record because code pages 1100 and 1401 are not compatible.

Special Options

Scan previously repaired INDX records

You want to repeat the scan INDX Analysis. Per default the checkbox is not selected, and INDX type tables are not scanned anymore by the scan *INDX Analysis* when they have been already scanned by the scan *INDX Repair*.

☑ Data records from INDX type tables are scanned once more by the scan *INDX Analysis* even they have been repaired already by the scan *INDX Repair*.

You can change this setting anytime when no worker job is running.

R3trans Language and Code Page Settings

Here you can determine the language – code page mapping which R3trans shall use to handle transport requests between systems.

Code Page for INDX-type Tables

Ambiguous Blended Code Page systems only: If your system uses one of the SAP ambiguous blended code pages 6100, 6200 or 6500, it determines the code page which is stored in data records of INDX type tables.

Follow the additional instructions for this option described in SAP Note 818374!

Save the settings!

> If you have changed the default settings, make sure you save them. Otherwise the default settings for the scans will be used.

If you receive errors when saving, such as "wrong fallback code page", make sure that the Language Lists have been completely initialized. Then maintain the settings again.

2.2.6 Initialize Worklist

A worklist contains all tables of a system that have to be prepared by SPUM4 for the Unicode conversion. In SPUM4, the tables have to run through several scan levels, each of which has its own worklist.

The worklists must be generated as follows:

1. Select *Scanner → Initialize → Worklist* (F2). Depending on the data volume the initialization job may take several minutes. Select. You have generated the worklist for the first scan (*Consistency Check*).

2. During the *Consistency Check*, the tables are divided into three categories (TABCAT1, 2, and 3). According to these table categories, the *Consistency Check* generates the worklists for the subsequent scans.

You should be now on the first scan level *Consistency Check*.

The worklist of the Consistency Check (CC worklist) contains a list of all tables taken from the database's nametab. By default, only 100 entries are displayed. To increase the number of entries that are visible in the ALV Grid, select 🖼️*Selection* from the toolbar and increase the number of lines.

The Status icon indicates whether the initialization was completed or shows an error; in the message field of a selected entry select F4 help to see the error message. To view all errors, select *Scanner → Main Log* from the SPUM4menu. The SPUM4 Main Log indicates what steps are needed to repair the table.

⚠️

Tables added to the database (Transports, Support Packages, etc.) are not automatically inserted into the CC worklist. **Update the CC worklist regularly**. You can find more information in section **Update Worklist**.
Select *Scanner → Update Worklist.*

2.2.7.1 Export Control Table

During the *Consistency Check*, the tables which shall be exported are entered in the Export Control Table. Each subsequent scan updates the table information.The Export Control Table contains the table name, table category (TABCAT), name and position of the LANG field (TABCAT 1 tables only), the Global Fallback Code Page (set in SPUM4 settings), and information about existing entries in the Vocabulary (*Voc.exist.*).

You can:

- Add tables manually to the Export Control Table. Select 📄.

- Change table information in the Export Control Table. Mark a table and select ✏️.

You cannot:

- Remove tables from the Export Control Table.

Character set for all entries: You can set a default code page here. R3load will then use this code page for the conversion no matter if an additional table-specific Fallback Code Page is set.

> **Single Code Page Systems only:** The Global Fallback Code Page is automatically entered as character set for all entries.

Table-specific Fallback Codepage: You can replace the Global Fallback Codepage by a table-specific Fallback Codepage here. This code page is only used if there is no other information available for the conversion of this table. **The table-specific Fallback Code Page does not apply if a character set for all entries is set!**

Vocabulary existence: If there are words in the Vocabulary (value 2), you can set this value to 0 in order to prevent that R3load uses them.

💾 Save the settings.

Press 🔄 to display your changes in the list.

2.2.7.2 Exception List

This section describes how you can maintain additional settings for selected tables or store tables that shall be excluded from one or more scans. This additional table information is also

entered into the Export Control Table if the table is scanned after being added to the Exception List. You can create one or more entries in the Exception List via or pushbutton *Exception List*. The Exception List is divided into two parts:

1. Customer Exception List: This list can be customized, i.e. you can add, change and remove tables here.

2. Default Exception List: This list of tables is predefined by SAP. You can remove tables from this list and add them to the Customer Exception List.

Note: You cannot exclude tables from the *Consistency Check*. You cannot maintain the Exception List before the *Consistency Check* has been executed.

Read SAP Note 682783 before you maintain tables in the Exception List.

How to exclude tables from export

If you add a table to the Exception List, the table will be automatically entered in the Export Control Table and therefore still be exported.

 Note

If you want to exclude a table from export after the Consistency Check, you must:

1. Drop the table from the database

2. Delete the table entry from the nametab tables DDFTX, DDNTF, DDNTT on database level

3. Reset the table in the Consistency Check (see section Resetting Tables in the Worklist of the Consistency Check [page 41])

Add Tables to the Exception List

You have executed the *Consistency Check*. Now you can

1. choose the scan level on which you wish to exclude tables or

2. go directly to the Exception List using pushbutton *Exception List*

1. Mark the table(s) in the worklist of the relevant scan and choose. Enter the required values on the selection screen.

Exception List Values Table 1

Settings	Function	Status
Character set for all entries	It can be useful to enter a code page for a table which stores e.g. only Japanese or only German data. R3load will use this code page during the export. **The table-specific Fallback Code Page does not apply if this code page is set!**	possible

Table-specific fallback code page	For each table in the Exception List a table-specific Fallback Code Page must be entered. R3load uses this table-specific Fallback Code Page, whenever there is no code page information to determine the correct code page for this table.	mandatory
Flag *skip analysis*	Valid for all subsequent scans of the table. If you want to exclude a table from a particular scan, you have to add it to the Exception List before that scan, set the flag and remove the table again from the Exception List after that scan has been executed. Regardless of the flag, tables will not be deleted from the worklist of the scan *Consistency Check*.	possible

💾 Save the settings.

Press 🔄 to display your changes in the list.

2. You are on the Exception List screen. Choose ⊞ and enter the required values on the selection screen.

Exception List Values Table 2

Settings	Function	Table Category	Status
Character set for all entries	See Table 1	TABCAT 1	possible
		TABCAT 2	possible
		TABCAT 3	possible
Table-specific fallback code page	See Table 1	TABCAT 1	mandatory
		TABCAT 2	mandatory
		TABCAT 3	mandatory

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Flag *scan*	See Table 1	TABCAT 1	possible
		TABCAT 2	possible
		TABCAT 3	possible

Save the settings.

Press to display your changes in the list.

2.2.7.3 Monitor

On each scan level the SPUM4 monitor displays scan statistics and the processing status of the tables. Select pushbutton *Monitor* from the toolbar.

Worklist Status (Consistency Check): Initialization of the CC Worklist: Display of status and total number of initialized tables.

Overview number of tables: Here you get an overview of all initialized tables sorted by table types (number of transparent, cluster, and pool tables

Worklist Overview: Here you can see how many tables are currently processed on which scan level. Tables with warnings are inconsistent and therefore need to be maintained before the conversion.

Tables in Process: Here you can see which tables are currently being processed by which worker job

Select to update the monitor.

To see details about running worker jobs, select pushbutton *Job Overview* from the toolbar.

Recommendation

> In the job overview there is one master job, UM4_PMIG_MASTER_JOB, for the planned worker jobs UM4_PMIG_WORKER_JOB. The master job is a periodic batch job, and will restart a new worker job automatically. This applies for all scan levels.

2.2.7.4 Status

Select tab strip *Status* to display a general overview of all current activities in SPUM4. Conditions for the Upgrade Procedure:

Single Code Page System

All SPUM4 worker jobs must be finished.

All tables have been processed by the Consistency Check with Status 🟢.

MDMP System

All SPUM4 worker jobs must be finished.

All tables have been processed by all mandatory scans with Status 🟢.

⚠️ Caution

When the message "SPUM4 preparations on start released finished. " is displayed in the frame "Overall Preparation Status", SAPup can be started.

Use the 🔷 *Info* buttons to open the longtext of the status messages.

2.2.8 Scan 1: *Consistency Check*

This scan is mandatory for both Single Code Page and MDMP systems.

Select 🖳*Schedule Worker Jobs* from the toolbar, and then set the time and date for the worker job.

You can run multiple jobs simultaneously, but you must add a suffix to the second and all subsequent jobs.

⬆️ Recommendation

Use the following naming convention: <run><scanlevel><job>. For example `1cc2` is the second job of the first run of the *Consistency Check*.

Select 📊*Monitor* from the toolbar. The scan is finished when the number of initial tables and tables in process is 0.

Additional options after the worker job has been started:

- Double click on the table to list all rows of a table where words have been added to the Vocabulary.

- Select *Export Control* from the toolbar to view the Export Control Table.

- Select *Vocabulary* from the toolbar to view the Vocabulary.

- Select *Extras* from the menu bar. You can now run 2 overview reports:

    Cluster Information (read the report documentation 🔷 for detailed information)

    Pool Information (read the report documentation 🔷 for detailed information)

Mandatory: Check if tables with status 'Error' exist and correct them as described below:

Choose ▣ *Selection* from the toolbar, and in the field *Status* enter the value 'E'. Double click on the message type field in the list to see a detailed description of the inconsistency and how to handle the error.

Message Type: Database consistency

Msg.Type	Definition	Description/Correction Steps
1	Table definition contains errors	The table definition is incorrect. A nametab entry may exist, but it is not defined in the ABAP Dictionary. Display the table in SE11. In the SE11 menu, select: 1. *Utilities → Database Object → Check.* 2. *Utilities → Runtime Object → Check.* If one or both checks show inconsistencies, try to correct them, for example by activation. If the table does not exist on the database any more, you can ignore the SPUM4 error message. Other options: If the table itself is obsolet, you can also delete before the conversion. In this case, delete the table from the database using SQL statements and then delete the table entry from nametab tables DDFTX, DDNTF, DDNTT on database level and reset the table in the CC Worklist. **MDMP only**: If the table content is obsolete, you can add the table to the Exception List (described below).

2	A background job was canceled	The background job which processed the table was canceled. Possible reasons:
		
		1. A user canceled the background job manually or
		2. the table cannot be accessed from ABAP via OPEN SQL or
		3. the application server was shut down abnormally
		
		What to do?
		
		1. Examine the table in transaction SE11. In SE11 menu select
		
		    a. *Utilities → Database Object → Check.*
		    b. *Utilities → Runtime Object → Check.*

		2. Look for short dumps in transaction ST22. If the background job was canceled with a short dump, you might find the reason in the long text of the short dump. 3. Look in the system log in transaction SM21. If you have removed the cause of the error, you can reset the table in the CC worklist and schedule a new worker job.
7	Initial records in table cluster	Table contains initial values, which must be removed. Run report `um4_check_cluster`. Select *Extras → Cluster Information* from the SPUM4 menu. A list of all table clusters is displayed. Choose 🛈 and follow the instructions in the online documentation.
8	Invalid pool table entries	The logical pool entry does not exist in the ABAP Dictionary. These values must be deleted. *Run report* `um4_check_pool`. Select *Extras → Pool Information* from the SPUM4 menu. A list of all table pools is displayed. Choose 🛈 and follow the instructions in the online documentation.

💡 Note

When a job is interrupted, one or more tables may have the status "in process" even after all tables have been completed and all jobs have been completed. Choose 🖳*Selection* from the toolbar and then select all tables with the category "P". The worklist will then contain only those tables that are in process. Select the tables and then select 🔙 from the toolbar.

Read SAP Note 33814 for general information about inconsistencies between database and data dictionary.

Single Code Page System

Correct all errors and then proceed with .

MDMP System

Correct all errors, or place tables with errors into the .

Resetting Tables in the Worklist of the Consistency Check

Select *tabstrip* Consistency Check.

Mark the table(s) and then select 🔍 in the toolbar.

Result:

The tables have status `INITIAL` again.The table entries are deleted from the worklists of the subsequent scans but **not from the CC Worklist**.

💡 Note

Exception: Tables which have been deleted from the database are automatically deleted from the CC worklist.

What has happened?

All words from this table are deleted from the Vocabulary.

The table is deleted from the Export Control Table and from the Exception List.

The Reprocess Log entry is deleted.

Tables with Language Information: All language assignments and collisions determined by this table are deleted from the Vocabulary.

For more information about Reset and Repeat options in SPUM4, see chapter <u>2.3.8 Resetting Data</u>.

2.3 Code Page Determination

The goal of the MDMP preconversion is to determine the correct code page for all character data. For each table in the database, this information is placed in a conversion description, which is stored in the Export Control Table. The conversion tool (R3load) reads from the Export Control Table during export. In addition, this information is used during the Conversion Completion Phase (see chap. <u>Conversion Completion</u> [page 84]).

Tool:	transaction SPUM4
Documentation:	this document
Status:	required.

During the preconversion procedure, tables are divided into several categories (TABCAT), according to whether they contain a language field (type LANG or SPRAS) **and** the *Text Lang.* Flag or they do not contain a language field (type LANG or SPRAS) **and** the *Text Lang.* Flag or whether they are not code page-dependent at all.

Category 1 (TABCAT 1) = Code page-dependent with Language Field

The table has a language field and the *Text lang*. flag is set. If the flag is not set, the table is considered a table without LANG field (see TABCAT 2).

Category 2 (TABCAT 2) = Code page-dependent without Language Field

The table has no language field. Code page information has to be derived before the conversion to Unicode. Per default, Category 2 tables are multiple code page-dependent.

Category 3 (TABCAT 3) = Not code page-dependent

The table contains only 7-bit ASCII characters. The table is not code page-dependent and therefore it is irrelevant which code page is used for the conversion.

Category 1 tables are unproblematic, because the language field determines which code page to use for the conversion. Category 3 tables are also unproblematic, because 7-bit ASCII characters have the same code points in all ASCII code pages; therefore, any code page can be used to convert 7-bit ASCII data. Category 2 tables on the other hand are problematic, because the code page is unknown.

There are two ways to determine the correct code page for TABCAT 2 tables. You can:

- Manually assign a code page for the entire table (see chap. Manually the Code Page for an Entire Table [page 43]).

- Create and use the Vocabulary (see chap. Creating the Vocabulary [page 44]).

After having been created, the Vocabulary contains a list of words (stored in the tables UM4PMDIC und UM4PMDII) with at least one non 7-bit ASCII character. When all of the words in the Vocabulary have been assigned a language, the correct code page for each row of a TABCAT 2 table can be determined, and this ensures that the data will be converted correctly. Creating and maintaining the Vocabulary requires several scans (see chap. 2.1), which run as parallelized batch jobs. Once you have created and maintained a Vocabulary in one system, you can also use it in other systems.You can transfer the Vocabulary from one system to another anytime before executing the database export. See chapter Vocabulary Transfer [page 51] for more details.

The duration of the scans depends on system hardware and the amount of additional activity in thesystem. Optimally, each batch job requires one CPU on an application server and also one on the DB server. Preliminary tests show that 1 TB DB can be scanned in 4 days with a 10 CPU DB server and 10 application server CPUs. This means 100 GB requires 4 days with 1 batch job or 10 hours with 10 jobs, provided that each job gets one CPU. Additional tests are being conducted and further optimizations are planned.

2.3.1 Manually Assign the Code Page for an Entire Table

If you know in advance that a table without a LANG field contains only data from one code page, then you can exclude the table from the entire MDMP preconversion by adding it to the Exception List (see chap. Exception List [page 35]). Words from tables that are stored in the Exception List are not added to the Vocabulary and can be assigned a code page that is different from the Fallback Code Page in the SPUM4 Settings. For example, if a specific table is only used for Japanese data, you can add this table to the Exception List and assign the code page 8000.

How to exclude tables from export

If you add a table to the Exception List, the table will be automatically entered in the Export Control Table and therefore still be exported.

Note

If you want to exclude a table from export after the Consistency Check, you must:

1. Drop the table from the database

2. Delete the table entry from the nametab tables DDFTX, DDNTF, DDNTT on database level

3. Reset the table in the Consistency Check (see section)

2.3.2 Creating the Vocabulary

In the initial phase, the Vocabulary is empty. First, all tables without a LANG Field (TABCAT 2) are scanned and all character data from these tables are inserted into the Vocabulary.

Second, it is also possible – particularly in systems that have been upgraded several times – that some LANG fields are empty, or SPACE and therefore no code page can be assigned to this data.

Third, one or more languages may be ambiguous and no code page should be specified for that language. For Ambiguous Blended Code Pages, the value of a language field may or may not determine the code page of the character data. If users logged on in English and there was no entry for English in TCP0F (see SAP Note 328895 for more information), then the correct code page for the language key "E" cannot be determined. The same problem occurs if you have used an improper frontend code page setting (see SAP Note 73606).

Therefore, all TABCAT 1 tables are scanned and all words with ambiguous language information are inserted into the Vocabulary.

2.3.2.1 Scan 2: Tables without Language Information

This scan is mandatory for MDMP conversion.

Note:

It can only be executed if the consistency check contains no tables with the following status:

> INITIAL
>
> INPROCESS
>
> ERROR

Select tabstrip *Tables without Language Information.*

The goal of this scan is to build the Vocabulary. Each table entry which cannot be manually assigned a language is entered into table `UM4PMDIC`.

The following words are added to the Vocabulary:

- words that are equal or longer than the minimum word length (default value in the SPUM4 settings = 3 bytes) and contain at least one non-7bit ASCII character

- words that have less than 30 bytes and contain at least one non-7bit ASCII character

Tables containing only 7-bit ASCII characters are classified as TABCAT 3 tables. As 7-bit ASCII characters have the same code points in all ASCII code pages, any code page can be used to convert TABCAT 3 table data (per default 1100).

Procedure

1. Select *Schedule worker job* and then plan the worker job. To speed up processing, several jobs can be started simultaneously. A load balancing mechanism ensures that each table is only processed once.

 Recommendation

Use the following naming convention. <run><scanlevel><job>. For example `1wo2` is the second job of the first run of the scan *Tables without Language Information*.

2. Select *Monitor* from the toolbar.The scan is finished when the number of in process/initial tables is 0. To check the status of worker jobs, select *Job Overview* from the toolbar.

3. Additional options after the worker job has been started:

   - Double click on the table to list all rows of a table where words have been added to the Vocabulary.

   - Select *Export Control* from the toolbar to view the Export Control Table.

   - Select *Vocabulary* from the toolbar to display the Vocabulary.

When the Monitor shows that all of the worker jobs have been completed, select *Selection* from the toolbar and in the field *Status*, enter the value 'E'. Select *Detail* from the toolbar to show additional information, including the message type (field Msg.type).

If you find entries like < @¿>; <@¿g> <@¿zË>; <@Àæ#õ>; <@Ã> in the Vocabulary after this scan is finished, check SAP Note 1001625.

Message Type: Scan *Tables without Language Information*

Msg.Typ	Definition	Description/Correction Steps
5	Words added to Vocabulary.	Words from these tables have been entered into Vocabulary. **MDMP only.**

Resetting Tables after Scan *Tables without Language Information*

Select tabstrip *Tables without Language Information*.

Mark the table(s) and then select in the toolbar.

Result:

The tables have status `INITIAL` again. The table entries are deleted from the worklists of the subsequent scans but **not from this worklist and the CC worklist**.

What has happened?

The table values in the Export Control Table have been initialized.

The table is deleted from the worklist of the scan *Reprocess*.

All words from this table are deleted from the Vocabulary.

The Reprocess Log entry is deleted.

For more information about Reset and Repeat options in SPUM4, see chapter .

2.3.2.2 Scan 3: Tables with Ambiguous Language Information

This scan can only be executed if the worklist after the *Consistency Check* does not contain tables with the following status:

> INITIAL
>
> INPROCESS
>
> ERROR

All tables with language fields are scanned. When a LANG Field contains an ambiguous language, all words from the row are inserted into the Vocabulary. Ambiguous language means that the language must be entered in table UM4LNOCP. UM4LNOCP contains languages that are not assigned to a single unique CP.

When a LANG field contains no language key, this is also classified as ambiguous language (language key SPACE in the Ambiguous Language List).

Examples for ambiguous language: language key '<SPACE>' in any system

1. In SPUM4, select tabstrip *Tables with Ambiguous Language Information.*

2. Select *Schedule worker job* and then plan the worker job. To speed up processing, several jobs can be started simultaneously. A load balancing mechanism ensures that each table is only processed once.

Recommendation

Use the following naming convention: <run><scanlevel><job>. For example `1wa2` is the second job of the first run of the scan *Tables with Ambiguous Language Information*.

3. Select *Monitor* from the toolbar. The scan is finished when the number of in process/initial tables is 0. To check the status of the worker job, select *Job Overview* from the toolbar.

4. Additional options after the worker job has been started:

   - Double click on the table to list all rows of a table where words have been added to the Vocabulary.

   - Select *Export Control* from the toolbar to view the Export Control Table.

   - Select *Vocabulary* from the toolbar to display the Vocabulary.

When the Monitor shows that all of the worker jobs have been completed, select *Selection* from the toolbar and in the field *Status*, enter the value 'E'. Select *Detail* to show additional information.

2.3.2.3 Edit Invalid Language Keys

If a TABCAT 1 table contains data with a language key which is neither in the Language List nor in the Ambiguous Language List this language key is entered as 'invalid language key' into a separate list when the scan *Tables with Ambiguous Language Information* is finished.

Select *Scanner → Status* from the SPUM4 menu. If the message '*<xx> invalid language keys have not yet been assign to one of the language lists'* is displayed, add the invalid language keys to the Language List (in conjunction with a code page) or to the Ambiguous Language List. For example the language keys SR (code page 1500), ET (code page 1900), LT (code page 1900) and LV (code page 1900) might occur in the invalid language list.

If yes, you must add them to the Language List as inactive languages together with their code page:

Select *Edit → Invalid Language List* from the menu bar.

1. If you want to add a language key to the Language List, mark the entry, press and enter the code page.

   → The *Reprocess* scan uses this language key. No Reprocess Log entry is written.

2. If you want to add a language key to the Ambiguous Language List, mark the entry and press.

   a. You can now reset the table for scan *Tables with Ambiguous Language Information*.

      → Words are added to the Vocabulary.

   b. If you don't reset the table for scan *Tables with Ambiguous Language Information*, a Reprocess Log entry is written because there are words missing in the Vocabulary.

Resetting Tables after Scan *Tables with Ambiguous Language Information*

Select tabstrip *Tables with Ambiguous Language Information*.

Mark the table(s) and then select in the toolbar.

Result:

The tables have status INITIAL again. The table entries are deleted from the worklists of the subsequent scans but **not from this worklist and the CC worklist**.

What has happened?

The table values in the Export Control Table have been initialized.

The table is deleted from the worklist of the scan *Reprocess*.

All words from this table are deleted from the Vocabulary.

The Reprocess Log entry is deleted.

For more information about Reset and Repeat options in SPUM4, see chapter 2.3.8 Resetting Data.

2.3.2.4 INDX-type Tables

INDX-type tables are database tables which have the structure needed for storing cluster data in database tables and in the shared memory. They are named "INDX- type" according to table INDX which is delivered by SAP as an example. INDX-type tables contain both a transparent and a binary part (which is the content of the CLUSTD-field).

According to their transparent part INDX-type tables are divided into the categories TABCAT 1 or 2. The language key is used to determine the correct code page for TABCAT 1 tables. Only TABCAT 2 tables need to be scanned.

The two additional scans for INDX-type tables handle the binary part of INDX-type tables like the scans *Tables without language information* and *Reprocess* handle transparent tables and the transparent part of INDX-type tables.

1. *INDX Analysis* scans the binary part of INDX-type TABCAT 2 tables and inserts words into the Vocabulary.

2. *INDX Repair* is used for maintaining the binary part of INDX-type TABCAT 2 tables before the database export.

As INDX-type tables are scanned twice in SPUM4, there might be two log entries for each INDX-type table entry:

Transparent part: *Tables without Language Information* → Words are added to Vocabulary → *Reprocess* → Reprocess Log. These log entries can be maintained in the non-Unicode system (select 🔧 *Reprocess Log*) and again in the Unicode system.

Binary part: *INDX Table Analysis* → Words are added to Vocabulary → *INDX Repair* → INDX Log. INDX log entries can be maintained completely in the non-Unicode system if there is a code page information available (select 🔧 *INDX Log*). But:

⚠️ **Caution**

If you have maintained INDX log entries in the non-Unicode systems, you cannot maintain those INDX log entries again in the Unicode system!

2.3.2.5 Scan 4: INDX Analysis

Requirements:	kernel 4.6D patch level 2326
	Read SAP Note 867193 for current information about ABAP and kernel patches!

Mandatory for former EBCDIC codepage configurations: Apply 4.6D Kernel Patch from SAP Note 696379.

1. Select tabstrip *INDX Analysis.*

2. Select 🗂 *Schedule worker job* and then plan the worker job. To speed up processing, several jobs can be started simultaneously. A load balancing mechanism ensures that each table is only processed once.

⬆️ Recommendation

Use the following naming convention. <run><scanlevel><job> . For example `1ca2` is the second job of the first run of the *INDX Analysis.*

3. Select ▐ *Monitor* from the toolbar. The worker job is finished when the number of initial tables is 0. To check the status of the worker job, select *Job Overview* from the toolbar.

Result

After both scans have run, the Vocabulary will contain a list of all words that need to be assigned a language. Those words are stored in the following two tables:

- UM4PMDIC
- UM4PMDII

2.3.3 Update Database Statistics

Program:	transaction DB20
Tables:	UM4CCTL; UM4PMIG; UM4PMDIC; UM4PMDII; UM4STAT
Status:	recommended

Call transaction DB20 to update the database statistics for the tables UM4CCTL; UM4PMIG; UM4PMDIC; UM4PMDII; UM4STAT.

Recommendation

Run the report UM4_VOCABULARY_STATISTIC to see how many entries each table has made in the Vocabulary.

2.3.4 Maintaining the Vocabulary

The scans *Tables without Language Information*, *Tables with Ambiguous Language Information* and *INDX Table Analysis* created entries (= words) in the Vocabulary. These words must now be assigned a language.

The language which is assigned in the Vocabulary determines the code page used to convert the data to Unicode, but no changes are made to the field of any database table.

Terminology:

The terms "word" and "vocabulary" are explained in the Appendix of this document.

2.3.4.1 Assignment Options

There are several options for assigning languages to words in the Vocabulary. You can:

1. Import the Vocabulary from another system as described in chapter Vocabulary Transfer [page 51].
2. Use the scan *Tables with Language Information* to insert language keys automatically.
3. Create *Vocabulary Hints* to assign a language based on other table fields.
4. Manually assign language to entry in the Vocabulary.

The field *Filled by* indicates how the language has been assigned to a word.

Filled-by Categories

Value	Meaning	Comment
2	Automatic initial entry (filled by scan *Tables without Language Information*)	Initial value. Language in Vocabulary has the value SPACE.
A	Automatic entry (filled by scan *Tables with Ambiguous Language Information*)	Initial value. Language in Vocabulary has the value SPACE.
R	Manual Reset	Non-initial value. Language in Vocabulary has been reset to SPACE.
3	Automatic language assignment (by Scan *Tables with Language Information*	Language in Vocabulary inherited from other tables with language information.
H	Hint	A Vocabulary Hint assigned the language.
M	Manual language assignment	A user assigned a language manually.
V	Import from previously exported Vocabulary	The language assignment was made in another system and the result has been imported into the current system.
I	Filled by scan *INDX Analysis*	Initial value. Language in Vocabulary has the value SPACE.

Words with the value 2, A, I or R have not been assigned a language. Existing language assignments will be overwritten by manual language assignment only. For details on resolving vocabulary collisions detected by scan *Tables with Language Information* (filled-by value 3), see chapter 2.3.7 Resolving Collisions [page 62].

Other assignment methods do not overwrite language assignments.

Filled-by Scale

M	Overwrites Hints (H), Scan *Tables with Language Information* (3) and Vocabulary Transfer (V)	Will not be overwritten when scans are repeated
H	Overwrites Scan *Tables with Language Information* (3).	Will be overwritten when scans are repeated
V	Overwrites 3	Will be overwritten by M
3	Scan *Tables with Language Information*	Will be overwritten when scans are repeated

You can update the Vocabulary anytime before the database export. You can repeat the scan *Tables with Language Information* but you have to repeat it for all tables on this scan level. Otherwise you will get data inconsistency in the Vocabulary.

2.3.4.2 Vocabulary Transfer

It is possible to use a Vocabulary in more than one system. For example, if you run SPUM4 in a test system copied from your production system, you can copy the Vocabulary back into the production system any time before the database export. **All entries which have been assigned a language** in the Vocabulary of the copied system are then entered into the production system and can be used for maintaining entries in the Vocabulary of the production system.

Note: You cannot transfer a Vocabulary from systems on releases other than SAP Basis 4.6C!

Recommendation

SAP recommends that you start matching the imported Vocabulary to your current Vocabulary in the production system **after** the scan *Tables without Language Information* (or *Tables with Ambiguous Language Information*) because it will only match and maintain existing entries. It is also recommended to match the imported Vocabulary **before** using the other assignment options listed in chapter Maintaining the Vocabulary [page 49] in order to avoid unnecessary manual maintenance.

You have the following option for using existing Vocabulary to maintain a new Vocabulary:

Transfer Vocabulary from system to system

Note:

You have to transfer the Vocabulary **manually** by creating a transport request.

You can only export Vocabulary from a **non-Unicode** system.

Before the actual transfer can take place, you have to export the words. They are automatically entered in table UM4PMDIT. You can add further words afterwards and repeat the transport. The existing words in table UM4PMDIT will then be updated. Table UM4PMDIT is not affected by function *Reset all Scans*.

Transfer procedure

1. Export

In non-Unicode SPUM4 select *Vocabulary*. A list of all words in the Vocabulary is shown.

Select *Export*.

All words which had been assigned a language are now entered into table UM4PMDIT (= Export / Import Table for SPUM4 Vocabulary).

Note:

The database statistics for UM4PMDIT should be updated afterwards, because otherwise the transport of copies will take longer than necessary.

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2. Transport

Run transaction SE01. Select *Request → Create → "Transport of copies"*. Enter a short description of your transport request and a dummy target system (usually the system in which the request is created) and save your transport request.

Double click on the transport request and switch into change mode.

> If you create a transport request for **Vocabulary Transfer**, enter:
>
> > Program ID = R3TR
> > Object Type = TABU
> > Object Name = UM4PMDIT

> If you create a transport request for **Hints Transfer**, enter:
>
> > Program ID = R3TR
> > Object Type = TABU
> > Object Name = UM4HINT; UM4COND; UM4WLIST

Go to *Extras → Change object function*. Select *Entire Table*.

Save the transport request.

Select *Request → Release*.

The transport files are written to the logical file directory DIR_TRANS. Please look in AL11 to see which physical directory is used (e.g. /usr/sap/trans). In the subdirectory "data" and "cofiles" you will find two files which have the transport request number. Copy these files into the corresponding directories in the system into which you wish to transfer the vocabulary.

3. Import

> Only languages marked as active (**Active flag** must be set in the Language List) can be imported from the exported Vocabulary (table UM4PMDIT).

1. To import the entries of table UM4PMDIT use transaction STMS (Transport Management System).

Select *Overview → Imports* and the system you are working in.

2. If your transport request is not shown in the list, choose *Extras → Other requests → Add* and enter the transport request number of your previous export.

3. Select the transport request by placing the cursor on your request and choose *Select/Deselect* (F9) from the application toolbar.

4. Choose *Request → Import (CTRL-F11)* to start the import of the Vocabulary.

5. In SPUM4 choose pushbutton *Vocabulary*.

6. Select pushbutton 🖉 *Auto Assign Language*. In field *Choose method* you must select the CL_UM4_AL_IMPORT method. In field *Choose languages* press F4 and select the language(s) you want to assign. If you don't select at least one language, all active languages in the system will be used. On subscreen section *Select Vocabulary* you can define which entries in your Vocabulary shall be matched with the imported Vocabulary, for example words, entries of a special table, tables which have been filled by a special scan etc. The system matches the entries of the two tables. When the matching is

finished, press . A list of all imported entries is shown. All imported entries get the *Filled-by value* V.

4. Show

Press *Show* in:

- Source system to view a list of all exported entries.

- Target system to view a list of all imported entries.

2.3.4.3 Scan 5: Tables with Language Information

This scan is not mandatory. The Vocabulary can be maintained completely without using this scan.

Note:

It can only be executed if the previous scans contain no tables with the following status:

INITIAL

INPROCESS

ERROR

Select tabstrip *Tables with Language Information*

The goal of the scan is to assign a language to words in the Vocabulary based on the values of LANG fields in other tables in the database.

In case several languages are assigned to the one word, collisions may occur.

First, tables with a LANG field are scanned to determine the correct language for the entries in the Vocabulary. When a word in the Vocabulary matches a word that is in a table with a LANG field, the value of the LANG field is inserted into the Vocabulary. In other words, a word in the Vocabulary "inherits" a language from a table with the language field. As a result, words that did not have a language key in the first table scan are assigned a language in the Vocabulary.

 Caution

> Remember that only "activated" languages (**Active Flag** must be set in the Language List; see chap. Edit Language List [page 30]) will be used during this automatical language assignment.

1. Select *Schedule worker job* and then plan the worker job. To speed up processing, several jobs can be started simultaneously. A load balancing mechanism ensures that each table is processed only once.

 Recommendation

> Use the following naming convention: <run><scanlevel><job>. For example `1wl2` is the second job of the first run of the scan *Tables with Language Information.*

2. Select ▊▊ *Monitor* from the toolbar. The scan is finished when the number of in process/initial tables is 0. To check the status of worker jobs, select *Job Overview* from the toolbar.

3. Additional options: after the worker job is completed:

- Double click on the table to list all invalid language key values.

- Select *Export Control* from the toolbar to view the Export Control Table.

- Select *Vocabulary* from the toolbar to display the Vocabulary.

When the Monitor shows that all of the worker jobs have been completed, select ▣ *Selection* from the toolbar and in the field *Status*, enter the value 'E'. Select *Detail* to show additional information, including the message type (field Msg.type).

Message Type: Scan *Tables with Language Information*

Msg.Typ	Definition	Description/Correction Steps
6	Invalid LANG field	The LANG field contains an invalid value

The value of the LANG field is invalid. Either the language is a valid language, but the language does not appear in the Language List or the language is not a possible language, for example "??". There are several ways to continue.

Example:

You do not have Hungarian installed as a language, but some entries in a table nevertheless have LANG = H.

- Enter or correct the value of the LANG field in the database, reset the table and rerun the scan.

- If the language is not required and the entries are obsolete, assign EN as the language.

- If the language is not required in the table (e.g. HR-table) which means that all entries in this table are from the same language, add the entire table to the Exception List (see chap. Exception List [page 35])

- Add the language to the Language List, reset and then rerun the scan *Tables with Language Information.*

Resetting Tables after Scan *Tables with Language Information*

Select tabstrip *Tables with Language Information.*

Mark the table(s) and then select ✎ in the toolbar.

Result:

The tables have status INITIAL again. The table entries are deleted from the worklists of the subsequent scans but **not from this worklist and the CC worklist**.

What has happened?

All language assignments and collisions determined by this table are deleted from the Vocabulary.

All unknown language keys are deleted.

For more information about Reset and Repeat options in SPUM4, see chapter 2.3.8 Resetting Data.

Result

Entries in the Vocabulary have been assigned a language. The remaining entries in the Vocabulary must also be assigned a language. You have the following options:

1.   create and execute Hints (see chap. Create and Execute Hints [page 56]).
2.   assign languages manually (see chap. Manually Assign Language [page 57])

2.3.4.4 Hint Management

A Hint is a way to assign a language to a set of table rows. There are two types of Hints:

1.   Vocabulary Hints: Used for assigning languages to data (words) without a language key which has been added to the Vocabulary during the SPUM4 scans.

2.   Repair Hints: Used for assigning languages to table rows in the conversion completion phase. (see chap. Create Repair Hints [page 89])

A Vocabulary Hint must contain the following information:

Hint ID: Each Vocabulary Hint must have an ID.

Wordlist: Combination of one Condition and **one specified** source table/source view. You must not enter * in field *source table*.

> A Condition is a string specifying a SQL WHERE clause. It supports the operators AND, OR, =, <>, >=, >, <=, <, LIKE and NOT LIKE. They can be grouped by ( ). Note that ABAP syntax applies! Always use ' ' in the WHERE clause. Subqueries are not supported in dynamic SQL conditions.

You can use a Condition in more than one Wordlist.

Table/"*":   Target table(s). These tables have been added to the System Vocabulary. They contain words which shall be assigned a language according to the source table/source view in the Wordlist.

> Note that a Vocabulary Hint can apply to a single table or to **all** tables containing words which should be assigned a language in the Vocabulary. In the latter case you must enter * instead of the name of the table when you create the Vocabulary hint.

Correct Language: Language which is stored as active language in the SPUM4 Language List. The system will assign this language to the entries in the Vocabulary after you have executed the Hint.

See SAP Note 680695 for information about how to maintain the vocabulary of tables LFA1 and KNA1.

 Example

Example 1

Table 1 has a country field and a product number and Table 2 has 8-bit characters but no LANG field. It does, however, have the product number. In transaction SE11 you can create a view that joins the two tables via product number. In addition to the product number field the view contains all fields of Table 2 and the country field of Table 1 which is called Country in this view example. Then you create a Wordlist "View, WHERE Country = 'JP'" and create a Vocabulary Hint containing this Wordlist and the target table or '*'. The Hint will then apply to all rows in the view where the country is JP. This means that the Hint will assign the language JA to all words in Table 1 that are in a row where the country is JP and to all rows in Table 2 when the product number in Table 2 is the same as product number in Table 1 and the country in Table 1 is JP.

Example 2

The Hint (ADRP, NAME_FIRST = 'HUGO' AND NAME_LAST = 'MÜLLER', DE) means all words contained in rows where NAME_FIRST is 'HUGO' and NAME_LAST is 'MÜLLER' are assigned the language DE (German).

Example 3

In this example you can see, that Condition WERKS-CS is used in two Hints, which are defined for searching the entire vocabulary (Table Name '*'). The words are taken from the source tables MSEG and LIPS.

Table Name	Hint ID	Wordlist ID			Corr. Lang	Description
*	MSEG-CS	MSEG-CS			CS	MSEG MHCZ
*	LIPS-CS	LIPS-CS			CS	LIPS MHCZ

Wordlist ID	Source Table	Condition ID
MSEG-CS	MSEG	WERKS-CS
LIPS-CS	LIPS	WERKS-CS

Condition ID	Condition
WERKS-CS	MANDT = '975' AND (WERKS = '0700' OR WERKS = '0710')

Check SAP Note 938374 for more information.

Create Vocabulary Hints

Before you can create the Hint, you must create a Wordlist:

1. Create and edit Wordlist(s)

1. Select *Hint Management* from the toolbar.

2. Select the tabstrip *Wordlist (Condition)*.

3. The tabstrip contains two frames. Go to the right frame first.

4. Select ☐ and create a Condition for the Wordlist. Enter Condition ID and WHERE clause and then save the Condition.

5. Go to the left frame. Select ☐ and enter the name of the source table or source view and the Condition ID. Save the Wordlist. You can use a Condition in more than one Wordlists. You can also change or delete existing Conditions and Wordlists.

6. Select the tabstrip *Hints*.

2. Create and edit Vocabulary Hints

1. Select ☐ from the toolbar.

2. Enter a Hint ID, the name of the target table/or '*' and a description.

3. Select the Wordlist you want to apply and then set the correct language which shall be assigned to the table entries. Note that you can only enter languages that are stored in the Language List as active languages (see chap. Edit Language List).

4. Check the Wordlist for each Hint before executing it. Mark the Hint in the ALV Grid and select 📑 *Display Wordlist* from the toolbar. If the Condition fails, you will get an error message.

Execute Vocabulary Hints

Select 🗄*Execute Hints* from the toolbar. After a Hint has been executed, choose 🔄 and select pushbutton *Vocabulary* to check the language assignments in the Vocabulary. If the Hint execution failed, check main log entries. Go to *Scanner → Main Log*.

Upload/download Hints locally

It is possible to use a Hint in more than one system. For example, if you run SPUM4 in a test system copied from your production system, you can copy the Hint back into the production system and use it for language assignment in the Vocabulary.

Select pushbutton 🔲 *HintManagement*.

📥 *Upload*: Read in existing Hint.

You can read in several files simultaneously.

📤 *Download*: Save newly created Hint to your PC for later use.

Vocabulary Hints Transfer

Once a Hint has been created, you can use it in more than one system. You can transfer Hints using the same method as described in Chapter Vocabulary Transfer → section Transfer procedure → 2. transport.

2.3.4.5 Manually Assign Language

For the remaining entries in the Vocabulary you have to assign a language manually. Select *Vocabulary* from the toolbar.

Note:

The Vocabulary is not locked or synchronized. Therefore, if multiple users want to work on it at the same time, they should agree on who is going to do which portion.

Although users assign languages in the Vocabulary, the Export Control Table contains code pages, not languages. The relationship between the language and the corresponding code page is determined by the settings in the Language List, and therefore when the logon language EN does not use the default code page 1100, the Export Control Table contains the correct code page. For example, in an "Asian MDMP" system English may use the code page 8000 (SJIS) and therefore all data with the language key EN will be converted using the code page 8000.

To avoid wrong language assignment, SAP strongly recommends that users only use their logon language when assigning languages in the Vocabulary. In addition, users should only assign a language to those words that the users recognize from their language. Especially for Asian Languages, it is essential that the user logs on with the correct language and only assigns a language to those words that the users recognize from their language.

Assignment Options

Option	Path	Description	Procedure	Additional Information
Assign selected language	🖊 *Assign Language*	Pushbutton for assigning other languages.	Select words which you recognize belonging to the same language. Press pushbutton and **choose the correct language**.	
Use assign method	🖊 *Auto Assign Language*	Pushbutton for calling Auto Vocabulary Assignment Method delivered by SAP.	In field *Choose method* press F4 and select method **CL_UM4_AL_IMPORT.** In field *Choose languages* press F4 and select the language(s) you want to assign. If you don't select at least one language, all active languages in the system will be used.	For more information see SAP Note 756535.
Text Patterns	🎲 *Selection*	Use text patterns for	Enter a text pattern which is likely to apply for one	**Examples**

	→ line *Words*	a faster language assignment.	single language. Select🕐. Check the entries. Select all entries which are from the same language, select🖉 *Assign Language* and assign the correct language.	German patterns: *zahl; *keit; Ver*; Änderungs* French patterns: *eur; Dé* Danish or Norwegian pattern: *else SAP delivers frequently used text patterns extracted from 11 European and Asian languages. You can download the patterns from the ZIP file attached to SAP Note 871541.

 Caution

> Remember that only "activated" languages are available for the manual language assignment (**Active Flag** must be set in the Language List; see chap. Edit Language List).

Because the Export Control Tables uses code pages instead of languages, it is possible for a Spanish (SP) user to recognize a French (FR) word and assign the language SP to it – since FR and SP use the same code page, the correct code page will be selected.

Words that are incorrectly assigned to a language which uses a different code page than the correct language will not be converted correctly!

 Caution

> The Vocabulary must be completely maintained before the system copy is made. Otherwise data corruption can occur.

2.3.5 Scan 6: *Reprocess*

This scan is mandatory for MDMP conversions.

Note:

It can only be executed if the previous scans contain no tables with the following status:

INITIAL

INPROCESS

ERROR

In this last scan all multiple-code page dependent tables with the following errors are processed again:

- A table contains words which have been collected in the Vocabulary but have not been assigned a language. This also includes Vocabulary Collisions [page 63] which have not been resolved.

- A table contains words with characters which are not 7-bit ASCII and which have less than 3 bytes.

- A table contains words with characters which are not 7-bit ASCII and which have more than 30 bytes.

This scan creates the Reprocess Log. The Reprocess Log simulates the R3load behavior but R3load does not read it during the Export/Import procedure. It is used for conversion completion activities in SAP NW 7.0.

Execute Scan *Reprocess*

1. Select tabstrip *Reprocess*

2. Select *Schedule worker job* and then plan the worker job. To speed up processing, several jobs can be started simultaneously. A load balancing mechanism ensures that each table is only processed once.

 Recommendation

Use the following naming convention: <run><scanlevel><job>. For example `1rp2` is the second job of the first run of the *Reprocess* Scan.

3. Select *Monitor* from the toolbar. The worker job is finished when the number of initial tables is 0. To check the status of the worker job, select *Job Overview* from the toolbar.

After the *Reprocess* scan, all tables should be assigned a language. If the language assignment fails, i.e. if the Reprocess could not determine the correct conversion code page, a log entry is written. This log contains the table name, the key values, the reason why no language could have been assigned (e.g. language not maintained in the Vocabulary, default code page missing, conversion collision, etc.).

Use the Reprocess Log to maintain such tables manually as described in the following section.

2.3.5.1 Reprocess Log

For more information and additional help reports, see SAP Note 938374

Make sure that the log of a table is not maintained by more than one user.

Select a table in the worklist of the Reprocess scan and choose ⬛*Reprocess Log*.

You can assign any language which is installed in the system by selecting ✏️ *Assign Language*.

You can also use the assignment method CL_UM4_AL_IMPORT delivered by SAP. Choose ✏️ *Auto Assign Language* and proceed as described in chap. 2.3.4.5 Manually Assign Language [page 57]

💾 Save the language assignments.

Reprocess Log entries do not disappear after saving. When all Reprocess Log entries for one table are maintained, this table will get status 🟢 in the worklist of the Reprocess Repair scan. You can reset language assignments. Select the entry and choose↩️.

Reprocess Log entries that are maintained in the non-Unicode system are available in the Unicode system.

Reuse Reprocess Logs

You can upload/download the language assignments of a Reprocess Log on a local PC or on an application server for later usage.

Run report UM4_LOAD_REPLOG in transaction SE38. Follow the instructions in the report documentation.

⚠️ **Caution**

If you repeat the *Reprocess* scan, all language assignments that have been made during the last *Reprocess* scan will be deleted!

Resetting Tables after Scan *Reprocess*

Select tabstrip *Reprocess*.

Mark the table(s) and then select ↩️ in the toolbar.

Result:

The tables have status INITIAL again.

What has happened?

The Reprocess Log entry is deleted.

For more information about Reset and Repeat options in SPUM4, see chapter 2.3.8 Resetting Data.

2.3.6 Scan 7: INDX Repair

If you have scanned INDX-type tables in your system (*INDX Analysis*), SAP recommends that you run scan *INDX Repair* after you have finished maintaining the Vocabulary.

Requirements:	kernel 4.6D patch level 2326 (see SAP Note 867193)

1. Select tabstrip *INDX Repair*.

2. Select ⎅*Schedule worker job* and then plan the worker job. To speed up processing, several jobs can be started simultaneously. A load balancing mechanism ensures that each table is only processed once.

🔼 Recommendation

Use the following naming convention: <run><scanlevel><job>. For example `1cr2` is the second job of the first run of the *INDX Repair* Scan.

Note:

After the scan INDX Repair, all INDX–type tables should be assigned a language. If the language assignment fails, i.e. if the INDX Repair could not determine the correct conversion code page, a log entry is written. This log contains the table name, the key values, the reason why no language could have been assigned (e.g. language not maintained in the Vocabulary, default code page missing, conversion collision, etc.).

Use the INDX Log to maintain such tables manually before the conversion as described in the following section. Note that the INDX Log entries that are maintained in the non-Unicode system will not be available in the Unicode system (see: section 5.2.2 Completion Types in SUMG [page 86]).

2.3.6.1 INDX Log

Make sure that the INDX log of a table is maintained by one user only.

1. Select a table in the worklist of the INDX Repair scan and choose ⛏*INDX Log*.

2. You can assign any language which is installed in the system by selecting ✏*Assign Language*.

3. You can also use the assign method CL_UM4_AL_IMPORT delivered by SAP. Choose ✏ *Auto Assign Language* and proceed as described in chap. 2.3.4.5 Manually Assign Language.

4. If you want to reset a language assignment in the INDX log, you must do it before saving.

5. 💾 Save the language assignments. INDX Log entries will disappear from the list.

When all INDX Log entries for one table are maintained, this table will get status 🟢 in the worklist of the INDX Repair scan. You cannot reset the language assignments in the Log. If you want to redo the language assignment, do the following:

Select *Scanner* → *Settings*. Make sure that the flag "Scan previously repaired INDX records" is set in section *Special Options*. Save the settings and choose tabstrip INDX Analysis.

Select ↩ and choose option REPEAT SCAN. Afterwards run INDX Analysis and INDX Repair again and maintain INDX Log entries as described above.

2.3.7 Resolving Collisions

Collisions are likely to occur whenever a language key is incorrect in the database. In certain cases, a Collision can occur when the word is used in more than one language.

A Collision is indicated in the *Reprocess* scan. It occurs when R3load gets conflicting information about which code page to use for the conversion of a table row in:

- TABCAT2 tables

- TABCAT1 tables with ambiguous language information.

There are two types of Collisions:

a. **Vocabulary Collision**

Occurs in the scan *Tables with Language Information*, when the same word is entered into two tables that both have a LANG field (TABCAT 1), but the values of the LANG fields have incompatible code page assignments. (When the word has LANG = X and another occurrence of the word has LANG = Y, and language X and Y use different code pages.) In this case no entry is made for a language in the Vocabulary, and the word will have to be assigned a language. This can be done either manually, by creating a Vocabulary Hint or by means of Vocabulary Transfer.

To see where a collision occurs, press *Vocabulary*. Collisions are marked 'X' in the list. To display a collision, select from the toolbar. To determine which table led to the collision entry in the vocabulary, select the entry and then click on . This gives you the hex value for the entry in the table selected.

b. **Conversion Collision**

Occurs when words in the same table field have incompatible code page assignments. (When a word A has been assigned to language X and word B has been assigned to language Y and A and B are in the same table row, and X and Y belong to different code pages.)

If a Conversion Collision occurs, the entire table row will be converted using the single code page with which the conversion of the first fields of the table row have been executed. If no code page can be determined for the first fields, the Fallback Code Page will be used for the conversion of the entire table row. In R3load log an entry is written for the actual code page which has been used for the conversion of this row.

The log entries can be examined after the conversion and the preparations needed to repair these tables can be taken.

2.3.8 Resetting Data

RESET SCAN:

You can reset tables after each scan. Choose the tables from the worklist and select . SPUM4 data are deleted and you can restart the scan for these tables.

RESUME SCAN:

You can resume each scan for selected tables (except: Consistency Check). If a worker job was interupted during the scan and the checkpoint mode was switched on, you can resume the scan for table(s) where the worker job failed. Choose the table(s) from the worklist and select . The table status is set to INITIAL but all other SPUM4 data is not deleted. A new worker job starts scanning the table at the last checkpoint saved from the previous worker job.

REPEAT SCAN:

You can repeat each scan for selected tables (except: Consistency Check). Choose the tables from the worklist and select . The status of the table is set to INITIAL without

deleting any other SPUM4 data except the checkpoints from previous scans (if there are any). A new worker job will therefore scan the whole table.

RESET ALL SCANS

Note:

If you perform *Reset All Scans*, you will also delete all Hints, conditions and wordlists created in SPUM4.

Non-Unicode System

In the non-Unicode System you can reset **all data from SPUM4.** Go to *SPUM4 → Scanner → Reset all scans*.

Unicode System

In the Unicode System you can:

1. Reset **all data from SPUM4 and all data from SUMG**. Go to *SPUM4 → Scanner → Reset all scans* in the Unicode system.

2. Reset **all data from SUMG** only. Go to *SUMG → Edit → Reset*.

    After having resetted SPUM4 and/or SUMG data you can recover the non-Unicode SPUM4 language list in SUMG. In SUMG select *Edit → Retrieve Lang List* from the menu.

2.3.9 SPUM4 Main Log

You can access the Main Log by selecting *Scanner → Main Log* from the menu bar.

2.4 Final Preparation Steps

Tool:	transaction SPUM4
Documentation:	this document
Single Code Page: required	
MDMP:	required

The MDMP preconversion produces the following results:

*   Conversion Descriptions have been created for all scanned tables and entered into the Export Control Table.

*   Words from tables that had no language key are now entered into the Vocabulary.

*   Language keys have been added to words in the Vocabulary, based on data from the tables with language keys, the application of Hints, on manual entry, and on Vocabulary Transfer.

⚠️ **Update Worklist**

If there is a time difference between the scan and the database export, it may happen that a new table has been created or a Support Package has brought a new table with it. In such a case, the preconversion must be rerun right before the export is carried out to ensure that the data change is reflected in the Export Control Table. The results will be appended to previous scans.

Proceed as follows:

Single Code Page:	required
MDMP:	required

1. Update the worklist. In SPUM4 select *Scanner → Worklist → Update Worklist.*

2. Select 📊 *Monitor* from the toolbar. The Monitor will show you if new tables were added to the system. Those tables have the status "Initial". For those tables the Consistency Check [page 39] needs to be run.

Execute the remaining steps in MDMP systems only:

Single Code Page:	not required
MDMP:	required

3. Repeat the scan *Tables without Language Information* [page 44] for all tables in the worklist of this scan.

4. If there are tables in the worklist of the scan *Tables with Ambiguous Languages* [page 46], repeat the scan *Tables with Ambiguous Languages* for all tables in the worklist.

5. Select 📊 *Monitor* from the toolbar and verify that there are no more tables with status "Initial". Otherwise process those tables as described above.

6. Step 3 and 4 might add new words to the Vocabulary. You must assign a language to those words. You can:

- Repeat the scan *Tables with Language Information* [page 53]

- Use the Hint Management [page 55]

- Assign the language manually [page 57].

7. Repeat the scan *Reprocess* [page 59] for all tables. Resolve Collisions as described in section Resolving collisions [page 62].

Update Log

Single Code Page:	required
MDMP:	required

In SPUM4 select *Scanner → Update Log.*

After you have updated the worklist, this log displays all tables which have been added or changed after the consistency check. You can now reset those tables in the worklist of the consistency check and rerun the consistency check. Afterwards, the resetted tables will be removed from the log.

Check Status of SPUM4

System:	SAP Basis 4.6C
Programs:	transaction SPUM4

Single Code Page:	required
MDMP:	required

On the SPUM4 main screen select the tabstrip "*Status*".

Single Code Page System

All SPUM4 worker jobs must be finished.

All tables have been processed by the Consistency Check with Status .

MDMP System

All SPUM4 worker jobs must be finished.

All tables have been processed by all mandatory scans with Status .

⚠️ Caution

Do not start the Upgrade Process before this system message is displayed in the frame "Overall Preparation Status":

"SPUM4 Preparation on start released finihsed"

Only then SPUM4 is definitely completed, and SAPup can be started.

3. Upgrade Process

Upgrade Tool: SAPup

Perform the Upgrade Process as described in the Upgrade Guide. See SAP Note 818322 for additional upgrade information.

Make sure that all SPUM4 activities are completed now.

⚠️ **Caution**

It is strongly recommended to apply at least Support Package 11 during the Upgrade.

The next section describes the upgrade phases which are only relevant for the CU&UC.

3.1 System Uptime

3.1.1 Phase UCMIG_STATUS_CHK1

System:	SAP Basis 4.6C
Status:	required

Upgrade checks status of SPUM4.

3.1.2 Phase JOB_UM4_COPY_RESULTS

System:	Shadow system
Status:	required

The migration data generated by SPUM4 are entered into the target release tables.

3.1.2 Phase RUN_RADCUCNT_ALL

System:	Shadow system
Status:	required

The Unicode Nametab is generated for all DDIC objects.

Errors

In this phase messages due to old DDIC inconsistencies might be produced. SAP Note 932779 describes basic information about how to analyse nametab problems.

Description	Description/Correction Steps
1EED: DD sources table "xxx" could not be read.	Ignore this message.
'Table type XXXXXX: Row type YYYYYYY does not exist. Nametab cannot be created.'	Ignore this message.
1EED: Runtime object for "xxx" could not be generated.	Check these objects in SE11. Press the check button. <table><tr><td>*Data Element EEE not available.*</td><td>Ignore this message.</td></tr><tr><td>*Type TTT not available.*</td><td>Ignore this message.</td></tr><tr><td>*Table TTT not available for views.*</td><td>Ignore this message.</td></tr></table> If you receive other messages, read SAP Note 837173. If you don't find help in this Note, try to reactivate the object. If the reactivation fails, contact SAP support via CSN component BC-DWB-DIC.

3.2 System Downtime

3.2.1 Phase JOB_UM4_FILL_RLOAD

In this upgrade phase report UM4_FILL_RLOAD is automatically run. This report fills the RLOAD component of tables REPOSRC with the language key of the original language of the program source code.

3.2.2 Phase RUN_RADCUCNT_NEW

The Unicode Nametab is regenerated for DDIC Objects which have been changed since the initial generation of the Unicode Nametab in phase RUN_RADCUCNT_ALL.

Approx. runtime: < 10 minutes

3.3 Post-Upgrade Activities

Perform the post-upgrade activities as described in your Component Upgrade Guide, chapter **6 Follow-Up Activities.** Note that the following activities must be executed before the Unicode Conversion Phase is started:

■ **Executing the Script saproot.sh**

■ **Adjusting Repository Objects**

■ **Oracle: Performing Actions for the Cost-Based Optimizer**

4. Unicode Conversion Phase

You have successfully performed the upgrade from SAP Basis 4.6C to SAP NW 7.0 non-Unicode. The next section describes:

■ The additional preparation steps which must be performed after the upgrade to SAP NW 7.0 and before the database export

■ The R3load copy procedure of non-Unicode system to Unicode system.

Unicode Conversion Tool: Program R3load

The default conversion method is to export the entire database using R3load, create a new Unicode database, and then import the database using R3load again. In fact you perform both a system copy using SAPinst (as described in the **System Copy Guide** mentioned below) and simultaneously the system conversion to Unicode. The conversion must be performed during the **export procedure**. The export files generated during the export procedure are used for the creation of the target (i.e. Unicode) system.

Note

You can choose either the homogeneous or the heterogeneous system copy method. If you want to perform a database or platform change during the conversion process, you must choose the heterogeneous system copy method.

When both export/conversion and system copy are successfully completed, SAP recommends you to keep the non-Unicode system for the duration of the testing period of the Unicode system. Afterwards the non-Unicode system can be deleted using the standard procedure.

Downtime Estimate

SAP Note 857081 provides a rough estimate of system downtime (based on customer experiences) and tips for optimizing the export/import procedure.

Incremental conversion (IMIG) for large systems is not available in combination with the Combined Upgrade & Unicode Conversion.

IBM DB2 UDB for UNIX and Windows: Tablespace sizes for conversion Unicode - non Unicode

To get the appropriate tablespace sizes for IBM DB2 UDB for UNIX and Windows, install R3szchk BEFORE the conversion. You can download from SAP Service Marketplace at service.sap.com/patches <your product> <your release> → Binary Patches. To avoid wasting space in your DB2 UDB for UNIX and Windows tablespaces SAP strongly recommends that you create all tablespaces in the target database with extentsize 2.

Note:

This is not the default for all SAPinst releases up to and including SAP NetWeaver 2004 SR1. You therefore need to manually adjust the extentsize in the SAPinst tablespace dialogs. The pagesize for a unicode system should be 16K as proposed by SAPinst.

The following section describes the R3load copy procedure of non-Unicode system to Unicode system.

System:	SAP NW 7.0 non-Unicode
Requirements:	Upgrade process finished
	Newest version of R3load (check SAP Note 1001625!), R3ldctl and R3szchk
Programs:	report TWTOOL01; UMG_ADD_PREP_STEP UM4_FINISH_PREPARATION
Documentation:	- this document
	- SAP Note 940953
	- System Copy Guide. You can download the System Copy Guides from www.service.sap.com/instguides → *SAP NetWeaver → SAP NetWeaver 7.0 (2004s) → Installation.*
	Choose the applicable System Copy Guide according to your System Copy Procedure (ABAP, ABAP + Java) and SR (SR1 or SR2).
	- **Unicode Conversion: Tips and Tricks for Improving the Conversion Time**.
	You can download this document from *Unicode Conversion Guides → Unicode Conversion Tips&Tricks* at www.service.sap.com/unicode@sap.
	For detailed information about **optimization of the system copy procedure** go to https://service.sap.com/systemcopy → optimization.
Status:	required.

Important SAP Notes

SAP Note	Title
600027	Installing corrected MSSQL Collation
552464	What is Big Endian/Little Endian? What Endian do I have?

2008-09-19

425079	Tablespace configuration for reduced tablespace set
695196	Error in the export for Unicode migration
811431	Informix: dbcodepage und Unicode Konvertierung
857081	Unicode conversion: downtime estimate
940953	Error fix: UM4_FINISH_PREPARATION (yellow lamp,non exist tabs)
950798	Error fix:UM4_FINISH_PREPARATION takes too long

4.1 Additional Preparation Steps in SAP NW 7.0 non-UC

Perform the following steps in your SAP NW 7.0 non-Unicode system:

1. **Log on to your SAP system as user DDIC.**

2. **Run report TWTOOL01. Note:** Run this report until message "Check successful, no action necessary" is shown!

3. **Database statistics update:**

Program:	transaction DB20
Tables:	UMGCCTL; UMGPMIG; UMGPMDIC; UMGPMDII; UMGSTAT
Status:	recommended

Call transaction DB20 to update the database statistics for the tables UMGCCTL; UMGPMIG; UMGPMDIC; UMGPMDII; UMGSTAT.

To avoid long runtime of UM4_FINISH_PREPARATION, SAP recommends updating the database statistics for the following tables as well:

DD02L/T, DD03L/T, DD08L, DD05S, DD12L, DD17S, DDNTT, DDNTF, DDXTT, DDXTF, DDFTX, DD01L/T, DD04L/T, DD07L/T, DD25L/T, DD26S, DD27S, DD06L, DD16S, DD09L, DD25L

 Recommendation

The following two reports UMG_ADD_PREP_STEP and UM4_FINISH_PREPARATION can be run in parallel. To be able to run the jobs in background at least 5 batchjobs are required (1 batchjob for UMG_ADD_PREP_STEP and 4 batchjobs for UM4_FINISH_PREPARATION).

4. Run UMG_ADD_PREP_STEP.

Note:

With SAP_Basis 7.00 Support Package 11 and higher UMG_ADD_PREP_STEP is started automatically as batchjob during UM4_FINISH_PREPARATION. There is no manual handling required.

If you have Support Package 10 or lower, go to transaction SE38. Enter UMG_ADD_PREP_STEP and choose ⏱*Background*. All reports will be executed automatically in sequential order.

5. Reducing workload for manual repair in the Unicode system.

During the upgrade some data are imported into the system which contain non 7BIT ASCII characters. Since there are no SPUMG scans in the target release it is possible that the data are not converted correctly because they are missing in the SPUMG vocabulary. Such data have to repaired manually afterwards in the Unicode System (see section Manual Repair [page 88].

⬆ Recommendation

With SAP_Basis 7.00 Support Package 15 and higher, you can use a vocabulary delivered by SAP. Download the most recent version of the .rar files attached to SAP Note 1129173. Extract the files and upload them using report UMG_ADD_VOCABULARY. The report will add all the words which have been imported during the upgrade with corresponding language assignments to the SPUMG vocabulary.

6. Finish Unicode preparation.

⚠ **Caution**

Make sure that R3ldctl is not executed (neither directly nor via SAPinst) before this step is finished! Otherwise control information for pool tables will be missing.

Go to transaction SE38. Enter report **UM4_FINISH_PREPARATION** and select⏱. Follow the instructions in the report documentation🛈.

This report should be used only in the CU&UC scenario. The report has to be executed after the upgrade is finished and before the export of the database is started.

⚠ Caution

UM4_FINISH_PREPARATION consists of three steps. Make sure that each step is successfully finished before you proceed with section 7!

1. Update of the SPUMG worklist. This step also includes update of the Unicode nametab.

2. Consistency Check for tables which have been added during the upgrade.

3. Merge of the SPUMG control tables which have been created before and after the upgrade.

    Note:

    After this step all tables must be displayed with Status🟢. Otherwise the inconsistent tables must be corrected as described in chap. 2.2.5 Scan 1: Consistency Check →section **Message Type: Database consistency**.

> **Note:**
>
> If your Support Package level is lower than SAP_Basis 7.00 SP 8, it happens that many pool tables have status ■(error) in the worklist of the Consistency Check. These entries are not handled correctly by the Consistency Check within the execution of report UM4_FINISH_PREPARATION.
>
> Reset the tables with status ■ in the worklist of the Consistency Check. The pool tables will disappear from the worklist because they do not exist anymore in the target release. Other tables with status ■ must be maintained as described in chap. 2.2.5 Scan 1: Consistency Check →section **Message Type: Database consistency**.

After UM4_FINISH_PREPARATION is executed, check the content of table UMGPOCNV once more. Now there must be at least one entry for table pool KAPOL or ATAB. If this entry does not exist, go to SE38 and run report UMG_POOL_TABLE manually.

7. **Make sure that tables DDXTT, DDXTF, DDXTF_CONV_UC and DDXTT_CONV_UC are empty!**

8. **Database statistics update for Unicode nametab tables:**

Tables:	DDNTF_CONV_UC; DDNTT_CONV_UC
Status:	recommended

Perform the statistics update on database level. You can expect a runtime of at least several minutes.

4.2 Database Export and Import

You perform the database export from the non-Unicode system (source system), the system copy and the database import into the Unicode system (target system) as described in the **System Copy Guide**:

"Homogeneous and Heterogeneous System Copy for SAP Systems based on SAP NetWeaver 2004s"
Section: **"Exporting the Source System Using SAPinst"**

SAP recommends you to read the document "Unicode Conversion: Tips and Tricks for Improving the Conversion Time". You can download this document from *Unicode Conversion Guides → Unicode Conversion Tips & Tricks* at www.service.sap.com/unicode@sap.

Unicode Conversion with database change: Important information for Informix databases

If you plan to convert an Informix database, follow the instructions in SAP Note 811431 BEFORE the database export!

IBM DB2 Universal Database for iSeries:

Before starting the installation, follow the instructions in SAP Note 1158503 "iSeries: Setting environment Variables for SAPinst".

4.2.1. Database Export

1. Perform the necessary preparation steps before starting SAPinst. Choose option *Unicode Migration* as described in chapter **Generating DDL statements** in the System Copy Guide.

2. Choose the byte order of your CPU (see SAP Note 552464):

   - If the target platform (e.g. Linux, OSF1, NT) uses a little endian CPU (e.g. Alpha or Intel CPU) choose Little Endian (LE).

   - If the target platform (e.g. HP-UX, AIX, SunOS, OS/390) uses a big endian CPU (e.g. Motorola 680x0 or Sun SuperSPARC), choose Big Endian (BE).

3. Perform the database export in the non-Unicode system (source system) as described in the relevant section of the System Copy Guide*:* **Exporting the Source System Using SAPinst**.

⚠ Be aware that this parameter depends on the processor architecture, not on the operating system.

Make sure that the most recent non-Unicode R3ldctl (SAP Kernel) is used for the export.

Note the additional information for the Unicode Conversion during the export of the database:

Server	Necessary Steps	Further Information
MS SQL Server only	During the installation, the collation setting must be fixed.	see SAP Note 600027
Oracle only	When running SAPinst to export the database and SAPinst prompts for *Database System Common Parameters → General Settings → Database character set* make sure the character set of the **source database** is entered (e.g. **UTF-8**, **WE8DEC** or **US7ASCII**).	See *System Copy Guide*, chapter *Oracle-Specific Procedure*
All servers	During the export of the source system R3load writes log and XML files into the installation directory of the source system. Copy those files to any location on your new Unicode server. The file names are like SAP*.log and SAP*.xml, for example SAPAPPL2.log or	R3load writes two logs: ■ SAP*xml or <TABLENAME>*.xml (=R3load Log) ■ SAP*log or <TABLENAME>*.log

	SAPAPPL2001.xml.		
	If you create own packages for the files, the file names are like <TABLENAME>*.log and <TABLENAME>*.xml.		
	Note: Keep these files separate from files with the same names generated during the import.		
	Remember the location of these files. Enter this location during **Unicode Conversion Completion** processing, chapter **5.1 First Steps**, section. Generate text file, e.g. "file_info.txt".		

4.2.1.1. R3load Log Messages

Msg. Type	Definition	Description	Correction Steps
Error	`Error from: Codepage handling (RSCP) | code:  128 <table_name>  'No such object, Row not found'`	This error can occur when a new table was added to the system.	Update the worklist and execute step 2 for table <table_name> (see section Update Worklist). Read SAP Note 33814 for details.
Error	`Received return code 2048 from rscpMCStartTab`	This error might occur when table clusters and cluster tables have different language information.	Check entries in the Export Control Table. Make sure the field *Codepage Recognition* is not empty and also check the fields *Lang. Fld.* And *Lang. Pos*.
Error	`Error when retrieving physical nametab for table <table name>`	**Error during Export:** The Unicode nametab has not been generated or there have been errors while report RADCUCNT has been executed.	If this message occurs repeatedly, use report RADCUCNT to generate the Unicode nametab (again) (see chapter Additional Preparation Steps). SAP Note 932779 describes basic information about how to analyse nametab problems.
		Error during Import: R3load performs a data conversion and cannot read the nametab. It could be	a) The conversion to Unicode should always be performed during the Export. Repeat according to chapter Database Export.

		one of the following conversion types: a) The conversion from a non-Unicode to a Unicode code page was performed. b) The endiannes has changed (4102 <-> 4103).	b) Make sure that the R3load package containing the nametab information is imported first.
Error	1558: inconsistent settings for table position validity detected.1561: nametab says table positions are not valid. 1564: alternate nametab says table positions are valid. 1568: for field 4 of alternatenametab displacement is 32, yet dbtabpos shows 26. 1571: character length is 1 (in) resp. 2 (out). 1224: unable to retrieve nametab info for logic table XXXX 8038: unable to acquire nametab info for logic table XXXX 2807: failed to convert cluster data of cluster item. myCluster: XXXX **EINS****W%RT** 319: error during conversion of cluster item. 322: affected physical table is XXXX. (CNV) ERROR: code page conversion failed rc = 2	Errors concerning cluster tables occur in SAPCLUST.log	Apply SAP Note 913783.
Error	Error from: Codepage handling (RSCP) code: 32 RSCPETOOLONG The data	R3load tried to find a pool table which does not exist in the ABAP Dictionary. This error occurs	Run report UMG_CHECK_POOL.

	was longer than the buffer. langMBCPMap: no c.p. assigned module: rscpmi no: 15 line: 2060 T100: TS006 TSL01: F44	when the Consistency Check shows error message type 8 "Illegal pool table values" and report UMG_CHECK_POOL has not been run.	
Error		R3load terminates during export of **single code page system**	Read SAP Note 718329 for correction instruction.
Error	(EXP) ERROR: <object name> missing in DDNTT_CONV_UC	R3load could not find the Unicode nametab for object <object name>	Ignore this error by setting the environment variable I18N_NAMETAB_TIMESTAMPS = IGNORE as described in SAP Note 738858.
Warning	rscpMCConvertM: RscpGuessCodepage -> 12: 'The word does not exist in the dictionary' <table_name>	R3load found a non 7-bit ASCII word in table <table_name> that does not exist in the Vocabulary for table <table_name>.	Update the worklist and execute step 3 for table <table_name> (see section Update Worklist).
		R3load found a non 7-bit ASCII word in table field of type <CLNT>; <TIMS>; <DAT>; <NUMC> that does not exist in the Vocabulary for table <table_name>. Those table fields are excluded from the SPUMG scans for performance reasons.	Maintain the data after the import in SUMG (Manual Repair).
Warning	rscpMCConvertM: RscpGuessCodepage -> 10: 'Some words in the string have different codepages.'	R3load found a string whose words were assigned languages of different code pages in the Vocabulary. This is a Conversion Collision.	Resolve the Collision as described in chapter Resolving Collisions.
Warning	rscpMCConvertM: RscpGuessCodepage ->	R3load found a word which has not been	Update the worklist and execute step 6 for table <table_name>

	`11:`
	`'The word in the`
	`dictionary has no`
	`language' <word>`
	`<table_name>`
		assigned a language in the Vocabulary.	(see section Update Worklist).

Warning	`rscpMCConvertM:`
	`RscpGuessCodepage ->`
	`17:`
	`'Codepage could not be`
	`decided because more`
	`than one different 8-`
	`bit codepages were`
	`found.'`
		R3load found a string whose words were assigned languages of different code pages in the Vocabulary. This is a Conversion Collision.	Resolve the Collision as described in chapter Resolving collisions.

Warning	`UMGSETTINGS says:` `RADCUCNT not succesful`	R3load notices if RADCUCNT is executed by SPUMG option, but not the execution with SE38 and therefore triggers a warning.	Ignore the message in case RADCUCNT has been executed with SE38. Otherwise start RADCUCNT execution via SPUMG option

4.2.2. Transfer Files to Target Host

Perform the file transfer as described in the relevant section of the *System Copy Guide*: **Transferring the Export Files to the Target Host**

⚠️

During the change, the syslog files are not converted to Unicode. To handle this problem follow the steps described in SAP Note 688089.

4.2.3. Database Import

Install the Unicode system (target system) as described in the relevant section of the *System Copy Guide*: **Installing the Target system**

Note the additional information for the installation of a Unicode target system:

Issue	Necessary Steps	Further Information
Hardware resources	When planning the installation of the target system, be aware that Unicode systems require additional hardware resources. Unicode SAP systems require approximately 50% of additional RAM.	SAP Service Marketplace: http://service.sap.com/unicode. SAP Note 790099.

R/3 Parameter Settings	When installing the Unicode system you might want to adapt your R/3 Instances memory configuration (increase current buffer settings and memory parameters).	Read SAP Note 790099 for details.
Conversion from non-Unicode to Unicode only	Tablespace sizes do not get calculated correctly. Therefore, you have to adapt the tablespace sizes before the import by editing the file DBSIZE.XML. Path: Export →Folder →/DB/ORA/DBSIZE.XML	Details see database-specific information in the following rows.

DB6 only	If you import into a DB2 UDB for Unix and Windows (DB6) database, you have the following choice:
	
	  a. use the tablespace dialogs in SAPinst to adjust the tablespace sizes or
	
	  b. edit the file DBSIZE.XML	

Oracle only	1. If the file DBSIZE.XML only contains the SAP tablespaces PSAP<SAPSID>, PSAP<SAPSID><RELEASE> and PSAP<SAPSID><USR>, increase the size of tablespaces SYSTEM, PSAP<SAPSID>, PSAP<SAPSID><USR> by 50% and the size of tablespace PSAP<SAPSID><RELEASE> by 100%. 2. If the file DBSIZE.XML also contains the 'old' tablespaces PSAPBTAB{D,I}, PSAPSOURCE{D,I} etc., increase the size of tablespace	During the installation of the new target system the old tablespaces are inserted into a smaller number of new tablespaces automatically, and the system will be installed with the new tablespace layout. It is therefore not necessary to change the size of every single tablespace in DBSIZE.XML. This is especially valid for those tablespaces which are sources for the tablespace PSAP<SCHEMA-ID>620. If the sum of all required tablespace extensions is known, it is sufficient to extend one of the source tablespaces by this sum. See SAP Note 425079 for details. **Example**:

	PSAP*<RELEASE>{D,I} by 100% and the size of all other tablespaces (excluding PSAPROLL and PSAPTEMP) by 50%.	If each of the tablespaces PSAPEL620D, PSAPEL620I, PSAPES620D and PSAPES620I has to be extended by 100MB, it is sufficient to extend only one of them by 400MB in DBSIZE.XML. During the tablespace layout change from PSAPEL620D, PSAPEL620I, PSAPES620D and PSAPES620I in the source system to PSAP<SCHEMA-ID>620 in the target system this last tablespace will become 400MB larger than the sum of the source tablespaces.
Installation of Instances	To install a Unicode central instance, database instance or dialog instance, select Unicode <SAP Component> for <Database> instead of <SAP Component> for <Database> in the installation tool SAPinst.	SAP Note 790099.
Conversion from non-Unicode to Unicode on MS SQL Server only	If SAPinst fails while trying to start the RFC jobs as SAPinst used the standard DDIC password '19920706' instead of the password you have entered in the corresponding SAPinst dialog, press RETRY and enter your DDIC password once again.	

5. Unicode Conversion Completion Phase

This section describes the steps which have to be performed in the Unicode system after the conversion and import of the database has been successfully completed.

System:	SAP NW 7.0 Unicode
Programs:	report UMG_POOL_TABLE; report RUTTTYPACT; transaction SUMG, R/3 parameters in SAP Note 790099
Tables:	TCPDB; DDTPOOLCNV
Documentation:	this document; SAP Note 790099; **System Copy Guide,** Section: **Final Activities**

Single Code Page:	mandatory
MDMP:	mandatory

Important SAP Notes

SAP Note	Title
790099	R/3 Parameter Settings for Unicode Conversion
813445	Documentation of the report UMG_POOL_TABLE

5.1 First Steps

1. Perform the last activites in the source system and in the target system as described in the *System Copy Guide*.

2. Then proceed with the additional steps in the Unicode system listed in the following chapter.

5.1.1 First Activities in the Unicode system

Note the additional steps you have to execute in a Unicode system (target system):

Log on to your Unicode system.

1. **Run report UMG_HISTORY.**

Run this report to save and display data from SPUMG and SUMG.

Open SE38 and enter report UMG_HISTORY. Follow the instructions described in the report documentation.

2. **Report UMG_POOL_TABLE: Read SAP Note 813445 for important details before running this report!**

3. **Run report RUTTTYPACT.**

   1. Open SE38 and enter report RUTTTYPACT
   2. Modify the logname in the entrance screen if desired.
   3. Execute the report in the background.

4. **Update the I18N System Configuration:**

Open transaction I18N and select *I18N Customizing → I18N System Configuration*. The I18N System Configuration automatically determines the settings required for a consistent NLS configuration. With this application you check all important i18n configuration tables, all important i18n application server profile parameters, and update the necessary database tables.

During this Unicode Conversion Phase you use the I18N System Configuration to ensure that the database table TCPDB is empty and to enter the correct country code if required.

> We recommend that you do not add or delete languages now. Language configuration and import should be done when the Unicode conversion is completed.

You will receive a system message "This is a Unicode system." Confirm this message. The entrance screen will be displayed.

On subscreen *Enter country* the Code field is empty and the field name of country code contains entry "Unicode".

If you have used a country code in your non-Unicode system, you must now enter the same country code again in the Unicode system. You will need the country code information for example if you want to read English SAPscript documents or write non-Unicode files with logon language English.

In the menu bar, choose *Goto → Select Country (Unicode).* A set of available country codes will be entered into the ALV Grid list. Mark the correct country code and select ✔*Choose.*

> If you do not remember the country code used in the non-Unicode system, check the SPUMG Main Log for information.

Select *Simulate.* Check if the following applies:

The correct country code is displayed with message "RSCPINST will update TCP0D entries when activated".

TCPDB for Unicode configuration is <Empty> with message RSCPINST will update TCPDB entries when activated. "

Go back to the entrance screen and select *Activate.*

5. Import Proposal Pool from SAP Basis 4.6C system:

You want to use the Proposal Pool created in the SAP translation environment (transaction SE63) in the source system. You have exported the Proposal Pool in SAP Basis 4.6C (see chap. 1.3.8 Translation Environment).

Follow the instructions in SAP Note 1055820, scenario 3, how to import the Proposal Pool in your Unicode System.

6. Special handling of TLOCK* tables:

Single Code Page conversions: Read and apply SAP Note 795871 now.

MDMP conversions: Read and apply SAP Note 795871 after having finished all completion steps in SUMG (end of chap. 5.2.3)!

7. Special handling of table DBTABLOG

Single Code Page Conversions: Apply SAP Note 514967.

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MDMP Conversions: Apply SAP Note 1042842.

8. **Security Audit (BC-SEC): Audit files created in the non-Unicode system can no longer be evaluated after the Unicode Conversion.**

Convert all non-Unicode files to Unicode (see SAP Note 539404, section *[30] Question* for details).

9. **Table DMEE_TREE_NODE: Problems with records with TREE_TYPE 'RUHR' of DMEE_TREE_NODE**

Read SAP Note 895804 and run report HRUU_CONVERT_IN_UNICODE if necessary.

10. **Problems with HR-RU tables T7RU8P and T7RU9P**

Run report HRUU_CONVERT_IN_UNICODE as described in SAP Note 1015682.

11. **BW system conversion only:**

In case of problems during data load refer to SAP Note 518426.

12. **CRM Server Unicode conversion only:**

In case of problems with corrupt language-dependent data in Mobile Client Text Tables, refer to SAP Note 793546.

13. **Adapt SAP system profile parameters.**

Adapt R/3 parameter settings according to SAP Note 790099.

If you are using SAP_HR with AddOn HR-CEE, run report HRUU_CONVERT_IN_UNICODE.

14. **Generate text file for R3load XML files.**

During the export of the source system R3load has written xml files into the installation directory of the non-Unicode system. You copied those files (e.g.SAPAPPL2001.xml) to your new Unicode server (see section Database Export.

Now you must manually create a text file which should contain all names and complete paths of the SAP*.xml files (Export and Import). You can name this file 'file_info.txt', for example. It is required for the Conversion Completion Process (MDMP systems only).

UNIX:

```
/usr/test/r3load/exp/log/SAPAPPL0001.xml
/usr/test/r3load/exp/log/SAPAPPL1001.xml
/usr/test/r3load/exp/log/SAPCLUST001.xml
/usr/test/r3load/exp/log/SAPPOOL001.xml
/usr/test/r3load/exp/log/SAPSSEXC001.xml
```

Windows:

H:\SAPinstNLX\SAPAPPL0001.xml
H:\SAPinstNLX\SAPAPPL1001.xml
H:\SAPinstNLX\SAPAPPL2001.xml

15. RFC Destinations

To avoid problems with internal TCP/IP-connections after the Unicode conversion, you should maintain those connections which refer to the Unicode system itself, before using the destinations (for example SAPFTPA, SAPHTTPA connections with activation type *Start on Application Server*).

■ Go to transaction SM59, open tree TCP/IP connection, choose a connection and press pushbutton *Change* from the taskbar.

■ Select tabstrip *Special Options*. In dialog box *Character Width in Target System* select radiobutton *Unicode*. Save the settings.

■ Apply SAP Note 706528.

To avoid problems with **outgoing R/3 connections** after the Unicode Conversion, you should check the connections in transaction SM59 as described above before using the destinations.

1. When the destination is a **Unicode** system you should set *Character Width in Target System* to *Unicode*.

2. When the destination is a **non-Unicode** system you should set *Character Width in Target System* to *non-Unicode*. If the destination uses a default language/code page configuration as described in SAP Note 647495, the MDMP settings can be inactive. Otherwise you should set the MDMP settings to active and press 🖼 to enter the language/code page configuration of the destination (see SAP Note 547444 for details).

To avoid problems with **incoming R/3 connections** after the Unicode Conversion from non-Unicode client systems which are on releases lower than SAP_Basis 6.10 you should check whether Legacy RFC mode needs to be set up as described in SAP Note 722193.

TMS connections after the Unicode Conversion:

Note that due to technical limitations TMS configurations must be deleted on the domain controller and afterwards created again.

Open a customer message on component BC-CTS-TMS and refer explicitly to SAP Note 935239.

16. Ambiguous Blended Codepage (SAP code pages 6100, 6200, 6500) systems only:

Correct records in table STXL. Open transaction SE38 and execute report UMG_ADJUST_STXL. On the selection screen, choose action *Do repair and save changes* in the action frame. Other parameters do not need to be changed. If you experience a long runtime or performance problems, schedule a background job with the corresponding variant.

If the report is not available in your system, read SAP Note 1122341.

5.1.2 Single Code Page CU&UC finished

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Your Single Code Page CU&UC is finished. The "Conversion Completion Procedure" which is described in chapter 5.2 is required for MDMP systems only!

5.2 Conversion Completion
Unicode Conversion Tool: Transaction SUMG

After the database export you might recognize data in the Unicode system which is not correctly converted. That is, the data must be converted again, using the correct language information (code page).

Requirements:	SAP NW 7.0 Unicode
Programs:	transaction SUMG
File:	file_info.txt
Documentation:	this document
Status:	mandatory

⚠ Before you begin:

1. **Check your Kernel patch level: Import at least kernel 6.40 patch level 101 or higher (SAP Note 898909)**

2. **Check your Support Package level**

3. **Read and apply SAP Note 924923**

There are several reasons why data might have been converted wrongly:

1. **Reasons detectable by R3load (missing or inconsistent input during Unicode Preconversion)**

   - Vocabulary:

     o Entries in the Vocabulary have not been assigned a language.

     o Entries which are not 7-bit ASCII are missing because they have more than 30 bytes or less than 3 bytes.

   - There are conflicting language (code page) assignments:

     → The code page cannot be determined during the R3load export. An error log (*R3 load Log*) is written. Wrong data can be maintained automatically using the log written during the SPUM4 scan *Reprocess* (⚑ *Reprocess Log*). See section Scan 6: Reprocess for details.

2. **Reasons not detectable by R3load (wrong input during the Unicode Preconversion)**

   - There are wrong language (code page) assignments:

     → No error log is written. Wrong data can be maintained manually after having been detected in the Unicode system. Read chapter Manual Repair for details.

Depending on the table type and the import source transaction SUMG provides several methods for completing the conversion of corrupt data.

Note:

During the upgrade many new tables have been created on the database. These tables have not been processed by the SPUMG scans "Tables without/with Ambiguous Language Information". However, they can contain texts including characters outside the 7BIT-ASCII range. The content is delivered by SAP, and the major part of it is 1100 (Latin-1). The affected tables will appear in the "Manual Repair" in SUMG. Most of the records are converted correctly when the Global Fallback Codepage was set to 1100 or 1160. In any case you can use the "Manual Repair" to check if the records were correctly converted.

5.2.1 Completion Categories

R3load Log provides the following objects separated into different completion categories:

Category 1:	Transparent tables, cluster tables, pooled tables	**automatical completion!**
Category 5:	Transparent tables, cluster tables, pooled tables	**manual repair!**
R3load Log:	Select table →	

For each original transparent or logical table for which the source code page could not be determined, R3load generates a corresponding table in XML format. This table contains the name of the original table, the category, the key fields, the used code page, time and date and it is stored in the R3load Log.

SUMG reads the generated R3load Log and saves the data for further usage.

Category 2:	Dynpro Sources (table DYNPSOURCE)	**display only!**
Category 3:	Report Sources (table REPOSRC)	**display only!**

There might be tables in the R3load Log which are classified as Category 2 (DYNPSOURCE) or Category 3 (REPOSRC). These log entries exist because the sources might contain language-dependent comments or the subcomponents (for example, function modules) have no language key assigned.They can not be repaired by SUMG; however, you can access the sources of these R3load Log entries and maintain corrupt text data manually:

Select one Category 2 or Category 3 entry in the worklist and press .

The name of the source is now displayed as entry in the R3load Log. You can access the source by double-clicking the select-button at the beginning of the table row.

Check the source. If it does not contain errors, you can delete it from the SUMG worklist. If it contains errors, repair the text data in the source directly and afterwards delete the source from the SUMG worklist.

INDX-type tables

INDX-type tables consist of both a transparent part and a binary part and are therefore scanned twice in SPUM4:

1. *Tables without Language Information* (transparent part) → *Reprocess*

2. *INDX Table Analysis* (binary part) → *INDX Table Repair*

Accordingly, there might be two log entries for each INDX-type table entry:

1. Reprocess log (transparent part). These entries can be maintained in the non-Unicode system and again in the Unicode system.

2. INDX log (binary part). The INDX log entries can be maintained completely in the non-Unicode system.

   Note:

   After having been maintained in the non-Unicode system, INDX log entries will not be available anymore for maintenance in the Unicode system!

R3load provides the transparent part of INDX-type tables (category 1 in the SUMG Worklist).

INDX Log provides the binary part of INDX-type tables.

Category 4:	INDX-type tables
INDX Log:	Select table →

 Caution

If there are two entries in the SUMG Worklist for an INDX-type table, make sure you maintain the binary part (category 4) BEFORE repairing the transparent part (category 1)! Otherwise the binary part of the table is not available any longer!

Manually entered tables in SUMG:

Category 5:	transparent tables, cluster tables, pooled tables
Category 6:	INDX-type tables

5.2.2 Completion Types in SUMG

SUMG provides two major completion types:

5.2.2.1 Automatical Completion (Tabstrip *Worklist*)

To be executed in the SUMG Worklist via pushbutton *Schedule Worker Job*. Can be executed for more than one table.The worker job is performed according to the Reprocess Log (which has been written and maintained in SPUM4).

If a table has been maintained completely in the Reprocess Log (i.e. all entries have been assigned a language in SPUM4), the worker job in SUMG is executed and the table will get the status (completed) in the SUMG Worklist. See section Reprocess Log for details.

5.2.2.2 Manual Repair (Tabstrip *Manual Repair*)

To be executed for the following tables with status "M":

1. Tables which could not be completed by the worker job.

   Reason: The table has not been maintained in the Reprocess Log (or only partially), i.e. there are table entries which have not been assigned a language yet.

Solution: You can

- Create and execute Repair Hints for single tables (select pushbutton *Hint Management* from the toolbar)

- Maintain each table entry manually. This needs to be done by a native language speaker because the entries' actual language must be recognized and then assigned for converting the entries.

2. **INDX-type tables automatically entered according to the INDX Log.**

   Reason: The table has not been maintained in the SPUM4 INDX Log, i.e. there are table entries which have not been assigned a language yet.

   Solution: You can maintain each table entry manually by setting the language for the INDX data.

3. **Manually added tables.**

   Solution: for category 5 tables see 1.

   For category 6 tables see 2.

Remember that only "activated" languages (**Active Flag** must be set in the Language List; see chap. Initialize/Edit Language Lists) are available for the manual language assignment.

5.2.3 Completion Procedure

You are now in the Unicode system. During the R3load export procedure, the R3load Log has been written to your local drive in XML format.

Open transaction SUMG.

5.2.3.1 Automatical Completion

1. In the menu bar go to *Edit → Load R3load log.*

2. Enter path and name of the file which contains the path of the R3load Log (see section Generate text file, e.g. 'file_info.txt'). R3load Log is loaded and ready for usage.

   Note: Message "Table(s) existed in DB already. Do you want to append all tables always?" appears.

   If you upload the files for the first time, or if you have done a reset (*Completion → Reset)*, choose 'yes'.

3. Use transaction DB20 to update the database statistics for table UMGR3LLOG.

4. In the menu bar go to *Edit → Worklist → Initialize Worklist*.

5. Choose tabstrip *Worklist*. The SUMG Worklist is displayed.

Loading R3load log with an immediate-execution batch job

Uploading the R3load log with an immediate-execution batch job might be terminated with errors.

Apply correction instruction from SAP Note <u>1005061</u> first. Afterwards go to *Extras →
Load log and Init Worklist in Background.* Then select 🔁 to display the SUMG
Worklist.

You can also upload the R3load log in dialog mode as described in SAP Note 1005061.

⚠ Message: "R3load log was uploaded. See 'how to reload' in Unicode conversion guide."

**How to reload R3load Log if uploading is cancelled or only part of the R3load Log is
uploaded**:

You can restart the upload process in order to avoid duplicated rows because too many
duplicated rows might slow down the SUMG performance. Note that this option is only
recommended directly after loading R3load because you have to reset all SUMG data
before loading again.

In the menu bar, go to *Completion → Reset.* If message "Table(s) existed in DB already.
Do you want to append all tables always?" appears, choose "Yes".

Afterwards repeat steps 1 and 2.

6. All tables which are processed by SUMG are displayed. You can use 🔲 *Selection* from
   the toolbar to maintain the display. You can display the Reprocess Log entries for each
   table by using pushbutton ⚠.

7. Select 📇 *Schedule Worker Job.* Enter the table(s) which have been completely
   maintained in the Reprocess Log (SPUM4), and set time and date. When the job has
   been started, the tables are maintained according to the language assignments in the
   Reprocess Log. If the error remains, the status of the table is set to "M" (manual repair).

⚠ **Worker job is cancelled:**

If a worker job is cancelled during the automatical completion and the tables which were
processed get status "S" or "B", select the tables from the worklist, use pushbutton ✏
Status from the toolbar and choose "Cancelled to New" from the dropdown list.
Afterwards you can start a new worker job.

⬆ **Recommendation**

You can exclude tables from the automatical completion and move them directly to the
manual repair list.

Select the table(s) from the worklist, use pushbutton ✏ *Status* from the toolbar and
choose "New to Manual" from the dropdown list. The table(s) are now added to the
manual repair list.

8. The remaining tables can be maintained manually by means of Repair Hints, Conditions
   or by assigning the correct language to the tables entries (see chap. <u>Manual Repair</u>).

5.2.3.2 Manual Repair

Choose tabstrip *Manual Repair.* All tables which could not be maintained by the worker job
are displayed. You can add more tables which you think need to be maintained (again).

Tables with the following completion categories can be maintained manually:

Type	Completion	Add to Manual Repair List

	Category	
INDX-type tables	Category 6	INDX-type tables are displayed in the SUMG Worklist only if there is no code page information available in **SPUM4** (category 4). In this case, the binary part of INDX-type tables need to be assigned a code page in **SUMG**.If there are errors in the transparent part of an INDX-type table (e.g. wrong table key), an additional entry will be displayed in the Worklist (category 1). If there is a code page information available for an INDX-type table, this table can be completely repaired in the INDX Log on **SPUM4**. Note: Afterwards it will not be available for repair in SUMG! The actual conversion of INDX-type table data to Unicode does not take place during the R3load procedure but after the first use in the Unicode system. This means, in **SUMG** you do not touch the data clusters but assign a code page for the later conversion of the table entry. This procedure can be repeated. To add INDX-type tables, press 🗂 and choose completion category 6.
Other manually added tables	Category 5	To add those tables, press 🗂 and choose completion category 5.
Special case: Tables which are **automatically** added to the manual repair list with **completion category 5!**	Category 5	Tables which have TAB_USED_CP tags and are displayed in the R3load log XML files with comment 'No rows are in R3load log, but the whole table might be wrong'. Such tables cannot be processed by R3load because • they have no entry in the Export Control Table or • they have a wrong language information in the Export Control Table. Those tables are **automatically** added to the manual repair list. Check the table content in transaction SE11. If necessary, repair the tables in the manual repair list.

The manual completion procedure provides 2 completion methods:

Repair Hints   **valid for category 1 / 4 / 5 / 6**

Language/code page assignment   **valid for category 1 / 4/ 5 / 6**

5.2.3.2.1 Create Repair Hints

Repair Hints are used to assign languages to table rows. All data without a language key is converted using the Global Fallback Code Page (see chap. SPUM4 settings). As a result, some character data may be corrupted after the conversion process and need to be maintained. This means that the data are converted again using the assigned language.

Technically, the table entries need to be converted back from Unicode to the code page with which they actually have been converted during the export (current language). Then they need to be reinterpreted according to the correct code page (correct language) and finally back to Unicode. This means, you have to enter the current language, which you assume is wrong, and the correct language into which the table entries must be converted.

Note:

> It is not necessary to specify the current language for INDX-type tables because during the execution of the hints only the correct language is used for setting the codepage for INDX-type table entries!

1. Select tabstrip *Manual Repair*. All tables which could not be maintained automatically by the worker job are displayed. Press 🖼 to add more tables which you think need to be maintained (again). There might be cases where you cannot be sure if a table has been already maintained in the Unicode system.

2. Select pushbutton *Hint Management* from the toolbar.

Terminology: You might find the term "filter" on the SUMG screens. This is a synonym for "Condition" in SUMG.

A Repair Hint must contain the following information:

Hint ID:	Each Hint must have an ID.
Condition:	Conditions in Repair Hints are table independent. A Condition is a string specifying a SQL WHERE clause. It supports the operators AND, OR, =, <>, >=, >, <=, <, LIKE and NOT LIKE. They can be grouped by ( ). Note that ABAP syntax applies! You can use a Condition in more than one Repair Hint.
Table:	A table containing data which have been converted wrongly and therefore needs to be converted again using another language (*correct language* field). Note that a Repair Hint can only apply to one single table.
Current Language:	In this field you need to enter the assumed language (i.e. the code page) according to which a. the data have been already maintained in the Reprocess Log on the Unicode system, or b. the data have been converted during the export. In the latter case, the current language input is optional.
Correct Language:	Language which shall be used to convert the data again. This list includes only languages which are stored as active languages in the SPUM4 Language List.

Before you can create the Repair Hint, you must create a Condition:

1. **Create and edit Condition(s)**

   - Select the tabstrip *Wordlist(Condition)*.

   - Select ☐ and create a Condition for the Repair Hint. Enter Condition ID and WHERE clause and then save the Condition. Select the tabstrip *Hints*.

2. **Create and edit Repair Hints**

   - Select ☐ from the toolbar.

   - Enter a Hint ID, the name of the target table and a description.

   - Select the Condition you want to use and then set the correct language which shall be assigned to the table entries. Note: Except for category 5 tables, you can only enter languages that are stored in theLanguage List as active languages (see chap. Edit Language List).

   - Choose the current language and the correct language.

   ⚠ **Make sure, you don't enter a wrong language as current language because otherwise you might get corrupt data after the conversion.**

   > You assume English as current language (1100) and Korean as correct language (8500), but actually the entries have been converted according to the Chinese code page (8400). In SUMG, the entries are now converted the following way:
   >
   > Unicode $\rightarrow$ code page 1100 $\rightarrow$ code page 8500 $\rightarrow$ Unicode.
   >
   > The result will be wrong because 1100 does not include the same characters as 8400.

   If you leave the current language field empty, the system uses the Global Fallback Code Page.

3. **Save the Repair Hint.**

Execute Repair Hints

There are two ways to execute Repair Hints:

1. *Hint Management*

In this case you can execute only one single hint.
Select a hint and then press 🖫 *Execute Hints* from the toolbar

2. Tabstrip *Manual Repair*

In this case you can execute several hints at the same time. Select pushbutton *Execute Hints* from the toolbar.

Enter the name of the table(s). There are two additional parameters:

a. *Only never executed hints* is set by default to ensure that hints will not be executed twice.
    ⚠️ SAP does not recommend reexecuting hints!

b. *Only rows in R3load*: Hints will only affect the rows whose keys are reported in the R3load log.

After the Repair Hints have been executed, check the converted data. Use 🔲 to display detailed information about the selected table.

To check the status of the Repair Hints select pushbutton *Hint Management*.

Repair Hints Transfer

Once a Hint has been created, you can use it in more than one system. You can transfer Hints using the same method as described in Chapter <u>Vocabulary Transfer</u> → section <u>Transfer procedure</u> → 2. <u>transport</u>.

5.2.3.2.2 Manual Repair

Select tabstrip *Manual Repair*. All tables which cannot be maintained by using worker jobs are displayed. You wish to maintain tables manually without using Repair Hints.

To add more tables, press🔲.

Select 🔲 to display more information about the table.

Select the tables you wish to maintain and press🔒. The tables are now locked. Mark one table and select 🔲 to start the manual repair.

You can now use a Condition in order to select only certain table rows instead of the complete table. Enter the Condition ID and press🔲. For information on how to create and edit Conditions see section <u>Create and Execute Hints</u>.

Now the table is displayed. Select the table row and:

*   Set the current language and the correct language for category 1 and 5 tables.

*   Set the correct code page for category 4 and 6 tables.

Check the table entry after the conversion. You can undo the conversion by selecting🔲 . Make sure the entry has been converted correctly, and then select the row(s) and press🔲.

You cannot undo the conversion after you have saved the completed table!

Select 🔲 to return to tabstrip *Manual Repair*. Select ✔ to confirm the completed table.

You don't need to unlock the table (button🔲) before confirming it.

Special handling of TLOCK* tables: Read and apply SAP Note <u>795871</u>.

5.2.3.3 SUMG Main Log

You can access the main log by selecting *Go to* → *Main Log* from the menu bar.

5.2.4 Resetting SUMG Data

You can delete **all** SUMG data (SUMG Worklist, Logs, and Hints) from the Unicode system.

Make sure your repairs are completely finished! The SUMG data cannot be restored except for the Worklist and the Main Log which are stored by executing report UMG_HISTORY.

Select *Completion → Reset* from the menu bar.

Note

After a reset of SUMG data you can recover the **non-Unicode** SPUM4 language list for further repair. Select *Edit → Retrieve Lang List* from the menu.

6. SAP Notes

SAP Note	Title
16083	Standard jobs, reorganization jobs
19466	Downloading SAP kernel patches
24860	Conversion: Physical MC ID → Transparent MC ID
33814	DB02 reports inconsistencies betw. database & Dict.
34533	SET_PARAMETER_MEMORY_OVERFLOW error
48545	Maintenance order: Termination during order entry
68194	Deletion of groups and logs
73606	Supported Languages and Code Pages
79991	Multi-Language and Unicode support of mySAP solutions
91519	Deleting logs of the application log
141244	Deactivating the application log during data transfer
178476	High increase of table ACCTIT, ACCTHD or ACCTCR
183960	ALE: Deactivating application logs for data
184190	Deleting expired listing Conditions
195157	Application log: Deletion of logs
321714	PE03: Technical information on features
328355	BD 21: Long access times for the BDCPV view
328895	Brief information on language combination on R/3

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353558	DB2/390: Incremental Migration to DB2/390
367676	Release upgrade from 4.6 to 6.10 for customer programs
379940	Unicode based mySAP availability
449918	Reading archived data in Unicode systems
480671	The Text Language Flag of LANG Fields
485455	Change in code page structure for Release >= 6.10
506290	Personal values list incorrectly displayed in Unicode
508854	SAPGUI: How to use Unicode
511732	Removed code pages in 6.10
518426	ODS-object, SYSTEMCOPY, migration
537145	ODS Object – DUMP when activating or loading data
543715	Pilot Projects for Migrations and System Copies
549143	Searching for User-Exits which need Unicode-enabling
566543	The ADRVP table becomes very large
573044	Unicode Conversion HR
577847	Optimizing data archiving
587855	DBIF_RSQL_INTERNAL_ERROR when reading pooled tables
587896	Add. Info on upgrade to SAP R/3 Enterprise Core 4.70 SR1
600141	Oracle9i: Automatic UNDO Management
603852	Additional information on upgrading to SAP SCM 4.0
624070	UNICODE-Konvertierung: Vorabtest
624498	Downloading of lists in Unicode system
627764	Unicode migration: table pools inconsistent after conversion
637683	Enhancements to SAP R/3 Enterprise Core 4.70 Ext.2 upgrade 2
638258	SL0: Deletion of Conversion Workbench objects
652129	SAP BP: Business partner search
653981	RADCUCNT: Objects that cannot be generated.
672339	Transactions with $ characters not Unicode-capable
672835	Textflags could cause problems during Unicode Conversion
673898	0T: PCPW file layouts cause 4.70 upgrade issues
673941	Unicode Conversion for address tables (ADRC, ADRP)

679275	T52C5: Report for MDMP Unicode conversion
679456	Reducing data volume before Unicode conversion
680695	Unicode conversion in tables LFA1 und KANN1
682783	Default Unicode conversion code page for HR tables
684332	Unicode system: Populating the TRDIR – RLOAD language
688089	SYSLOG: unreadable characters after change to UNICODE
691407	No enhancements in SAP Office
690074	Problems when displaying sent spool lists
690891	SAPGUI for Windows 6.40: Beta Versions
695196	Error in the export for Unicode migration
710720	SAP GUI for Windows 6.40: Delivery and new functions
718329	R3load cancels the export during Unicode migration
712619	Unicode-Konvertierung: Sprachenschlüssel in Tabelle
721902	SE71: Dump during language selection in Unicode systems
726954	Private Use Areas in Unicode Systems
740863	RADCUCNT: Objects that cannot be generated. (BPP/CRM 4.00)
756534	Automatic Assignment of Languages with Character Statistics
756535	Special SAP vocabulary for maintaining the SPUM4 vocabulary
790099	R/3 Parameter Settings for Unicode conversion
793546	CRM Server Unicode Migration: Mobile Client Text Tables
794966	TTDTG: Fehlerhafte Einträge bei Unicodekonvertierung
813445	Documentation of the report UMG_POOL_TABLE
842767	Problems with old spool requests after Unicode conversion
867193	ABAP und Kernel Patches for Upgrade and Conversion in 4.6C
940953	Error fix: UM4_FINISH_PREPARATION (yellow lamp,non exist tabs)
1002250	Error 'sapinst': Internal error when accessing a table

7. Appendix

Word

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A word is defined as a text string with a minimum length of 3 bytes and a maximum length of 30 bytes containing at least one character not from the 7-bit ASCII range and at least one character outside the common character set. Each table entry of type CHAR, LCHAR, VARC, STRG and SSTR is interpreted as text string.

Long text strings are separated by delimiters (word separators) into words; therefore words may not contain delimiters.

A delimiter is defined as one of the following characters: "#$%&()*+,./:-;<>=?!0123456789 and SPACE

6.1. Reports/Programs

Name of report/program	When/where to be run?	Reasons/results	Status
RADNTLANG	**Unicode Preconversion Phase** Steps in ABAP Preparation System *non-Unicode System*	This report sets the Text Lang. flag for customer objects (tables with one LANG/SPRAS field).	**Mandatory** → **back**
I18N System Configuration	**Unicode Conversion Completion Phase**	1. Use this configuration to empty table TCPDB. Follow the instructions in SAP Note 42305. 2. Use this application to install further languages in your system Unicode and non-Unicode).	**1. mandatory** → **back** **2. additional information**
RSCP0125	**Unicode Preconversion Phase** Steps in ABAP Preparation System *non-Unicode System*	This report must be used to check the roundtrip-capability of customer code pages (code pages beginning with "9").	**Mandatory** → **back**
RSCP0126	**Unicode Preconversion Phase** Steps in ABAP Preparation System *non-Unicode*	This report must be used to convert customer code pages (code pages beginning with "9"). It copies old code pages from tables TCP02, TCP03 and TCP07 into tables TSCPSEG,	**mandatory** →**back**

	System	TCPSBUILD, TCPSPTS and TCPSPTL.	
RUTTTYPACT	**Unicode Conversion Completion Phase** First Steps *SAP NW 7.0 Unicode System*	This report activates all table types stored in database table DD40L. The length of the row types of each table type must be determined and saved in the Unicode system.	**mandatory** →**back**
TWTOOL01	**Unicode Conversion Phase** Additional Preparation Steps *SAP NW 7.0 non-Unicode System*	This report will find all active pool-matchcode IDs. These matchode IDs are not supported by Unicode SAP systems. Read SAP Note 24860 for more information about the conversion of these objects and SAP Note 695196 for details on earlier releases **Note:** Run this report until message "Check successful, no action necessary" is shown!	**mandatory** →**back**
UMG_HISTORY	**Unicode Conversion Completion Phase** First Steps *SAP NW 7.0 Unicode System*	This report is used to archive and display the following data: **SPUMG** Language List, Ambiguous Language List, Main Log, Export Control Table, Settings, Common Character Set, Common Separators, Code Pages used to define the CCS/CS. **SUMG (MDMP only)** Worklist, Main Log	**mandatory** Run this report before starting the Post-Conversion Repairs. SPUMG conversion information needed for SUMG and Archiving is saved. Afterwards you can reset SPUM4 data. Go to transaction SPUM4 → *Scanner → Reset All Scans*. → **back**
UMG_POOL_TABLE	**Unicode**	Table pools which have	**Read SAP Note**

	Conversion Completion Phase First Steps *SAP NW 7.0 Unicode System*	been entered in UMGPOCNV during the Consistency Check are copied to table DDTPOOLCNV. Then report RADPOCNV enlarges the VARDATA fields of the table pools.	**813445 and 947291!** →**back**
UMG_SCAN_STATISTIC	**Unicode Conversion Completion Phase** First Steps *SAP NW 7.0 Unicode System*	This report collects and analyzes SPUM4 statistics, e.g. database size, number of Vocabulary entries, R3load export runtime, and Log size.	**recommended** →**back**
UM4_CHECK_CLUSTER	**Unicode Preconversion Phase** *SAP Basis 4.6C Non-Unicode System* SPUM4 Menu → Extras → Cluster Information	Error message: "Illegal initial values" → run report UM4_CHECK_CLUSTER for each table. This report checks if a table cluster contains data with outdated timestamps (field TIMESTMP).	**mandatory** →**back**
UM4_CHECK_POOL	**Unicode Preconversion Phase** *SAP Basis 4.6C non-Unicode System* Consistency Check SPUM4 Menu → Extras → Pool Information	Error message: "Illegal pool table values" → run report UM4_CHECK_POOL. This report checks if all data of the pool tables are saved in the table pool and in the dictionary.	**mandatory** →**back**
UM4_FILL_RLOAD	**Upgrade Process** System Downtime *Phase JOB_UM4_FILL_RLOAD*	This report is run automatically after all XPRAS have been executed. It is used to prepare the language-dependent conversion of texts to ABAP program code.	**mandatory** →**back**

UM4_FINISH_PREPA RATION	**Unicode Conversion Phase** Additional Preparation Steps *SAP NW 7.0 non-Unicode System*	Finish preparation of Unicode Conversion after Upgrade to SAP NW 7.0 non-Unicode. The report has to be run after the upgrade is finished and before the export of the database is started. It is divided into three parts which must be executed sequentially as batchground jobs. Update of the SPUMG worklist 1. Consistency Check for tables which have been added during the upgrade 2. Merge of the SPUMG control tables which have been created before and after the upgrade Follow the instructions described in the report documentation. Each part must be finished successfully before the next step in chapter **Additional Preparation Steps** is executed!	**mandatory** → **back**
UM4_LOAD_REPLO G	**Unicode Preconversion Phase** Reprocess *SAP Basis 4.6C non-Unicode System*	With this report you can save the language assignments of a Reprocess Log on a local PC or on an application server and upload them later for reuse. Example: The language assignments made in a test system can be used during the conversion of the production system in order to save time. Select *Download* to save the lang. assignments of a Reprocess Log in a file. Select *Upload* to reuse the lang. assignments from the previously stored	**Recommended** → **back**

		file.	
		Follow the instructions described in the report documentation.	
UM4_VOCABULARY _STATISTIC	**Unicode Preconversion Phase** Tables with Ambiguous Language Information *SAP Basis 4.6C non-Unicode System*	This report displays information about a set of tables in the Vocabulary. You can see the number of words without assigned language and the number of words with assigned language. Additionally, flag *showvoc* displays the words without language assignment.	**recommended** →**back**

6.2. SPUM4 Message Types

Msg.Typ	Definition	Description/Correction Steps	When
1	Table definition contains errors	The table definition is incorrect. A nametab entry exists, but it is not defined in the ABAP Dictionary. Examine the table in SE11. Then you can either: 1. *Repair the table.* 2. *Delete the table before converting. In this case, delete it from the database using SQL statements and then delete the table entry from nametab tables DDFTX, DDNTF, DDNTT on database level and reset the table in the CC Worklist.* 3. **MDMP only**: *add the table to Exception List*	**Consistency Check**
5	Words added to Vocabulary	Words from these tables have been entered into Vocabulary. **MDMP only.** Read Sap Note 551344 for details.	**Tables without Language Information** **Tables with Ambiguous Language Information**

6	Invalid language keys found	The LANG field contains an invalid value *Correct the value of the LANG field.*	**Tables with Ambiguous Language Information**
7	Invalid initial records	Table contains initial values, which must be removed. *Run report* umg_check_cluster *in SE38, enter the name(s) of the table(s) and start the report.*	**Consistency Check**
8	Invalid pool table entries	The logical pool entry does not exist in the data dictionary. These values must be deleted. *Run report* umg_check_pool *in SE38.*	**Consistency Check**
9	Table is marked for Reprocess	Table contains words which are not added to Vocabulary because they are too long or too short.	**Tables without Language Information** **Tables with Ambiguous Language Information**
C	Some records are problematic		**Reprocess**
D	All records are problematic		**INDX Table Repair**
E	Table Type has changed		**Update Worklist**
F	Table Category has changed		**Update Worklist**
G	Table newly created		**Update Worklist**
H	Table does not exist anymore		**Update Worklist**
L	Ambiguous language key found		**Tables with Ambiguous Language Information**
	Pool Table: language key not in table key	When the language key is not in the primary key for a table, there is no way to determine the correct key to use. Such tables will have be repaired manually after conversion.	

6.3. SUMG Worklist (MDMP only)

The SUMG Worklist is generated from different sources:

Source	Content
R3load Log	XML-file containing transparent tables, cluster tables, pooled tables with entry in the R3load Log.
INDX Log	Table containing all INDX tables without language (code page) information
Manually added tables	Can be added by the user on tabstrip *Manual Repair*: a. transparent tables, cluster tables, pooled tables b. INDX-type tables