

Unicode Conversion Guide



SAP NetWeaver Application Server 2004

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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

Type Style	Represents
Example Text	Words or characters that appear on the screen. These include field names, screen titles, pushbuttons as well as menu names, paths and options.
	Cross-references to other documentation
Example text	Emphasized words or phrases in body text, titles of graphics and tables
EXAMPLE TEXT	Names of elements in the system. These include report names, program names, transaction codes, table names, and individual key words of a programming language, when surrounded by body text, for example, SELECT and INCLUDE.
Example text	Screen output. This includes file and directory names and their paths, messages, names of variables and parameters, source code as well as names of installation, upgrade and database tools.
Example text	Exact user entry. These are words or characters that you enter into the system exactly as they appear in the documentation.
<Example text>	Variable user entry. Pointed brackets indicate that you replace these words and characters with appropriate entries.
EXAMPLE TEXT	Keys on the keyboard, for example, function keys (such as F2) or the ENTER key.

Icons

Icon	Meaning
	Background
	Caution
	Example
	Function
	Note
	Recommendation
	Syntax

Unicode Conversion Guide SAP NetWeaver Application Server 2004	7
Restrictions	8
Requirements	9
Component-Specific Requirements	9
Ambiguous Blended Code Page Conversion Requirements	9
Translation Environment Requirements	10
Software Requirements	10
Frontend Requirements	11
Private Use Area in Unicode Systems	11
General Description	11
Chronological Order of the Conversion Steps.....	13
1. Preparation	14
1.1 Upgrade to NW AS 2004 Non-Unicode	14
1.2 Unicode-enabled ABAP programs	15
1.3 Data Maintenance	16
1.3.1 Reducing Data Volume	16
1.3.2 Pre- Conversion Correction of Table Data	17
1.3.3 Text Language for Customer Objects	18
1.3.4 Consistency Check for Cluster Tables	18
1.3.5 Archived Data after Unicode Conversion	19
1.3.6 Printing Old Spool Requests after Unicode Conversion	19
2. Unicode Preconversion Phase	19
2.1 Preconversion Analysis: SPUMG Scans	19
2.1.1 Resetting data	20
2.2 Database Check.....	21
2.2.1 Reset All Scans	21
2.2.2 Language Lists	22
2.2.2.1 Restrictions	22
2.2.2.2 Initialize Language List	23
2.2.2.3 Edit Language List	23
2.2.2.4 Edit Ambiguous Language List	24
2.2.3 SPUMG Settings	24
2.2.4 Initialize Worklist	28
2.2.4.1 Export Control Table	29

2.2.4.2 Exception List	29
2.2.4.3 Monitor	32
2.2.4.4 Status	32
2.2.4.5 SPUMG Main Log	33
2.2.5 Scan 1: <i>Consistency Check</i>	33
2.3 MDMP Preconversion	36
2.3.1 Manually Assign the Code Page for an Entire Table	37
2.3.2 Creating the Vocabulary	38
2.3.2.1 Scan 2: <i>Tables without Language Information</i>	38
2.3.2.2 Scan 3: <i>Tables with Ambiguous Language Information</i>	39
2.3.2.3 Edit Invalid Language Keys	40
2.3.2.4 INDX-type Tables	42
2.3.2.5 Scan: <i>INDX Table Analysis</i>	42
2.3.3 Update Database Statistics	43
2.3.4 Maintaining the Vocabulary	43
2.3.4.1 Assignment Options	43
2.3.4.2 Vocabulary Transfer	44
2.3.4.3 Scan 4: <i>Tables with Language Information</i>	47
2.3.4.4 Hint Management	48
2.3.4.5 Manually Assign Language	51
2.3.4.6 Scan: <i>INDX Table Repair</i>	53
2.3.5 Scan 5: <i>Reprocess</i>	53
2.3.5.1 New Data in Production Systems after Reprocess	54
2.3.6 Resolving Collisions	55
2.3.7 Reprocess/INDX Log	55
2.4 Final Preparation Steps	56
3. Unicode Conversion Phase	57
3.1 Additional Preparation Steps	59
3.2 Database Export and Import.....	62
3.2.1. Database Export	63
3.2.1.1. R3load Log Messages	64
3.2.2. Transfer Files to Target Host	66
3.2.3. Database Import	66
4. Unicode Conversion Completion Phase	68
4.1 First Steps	69
4.1.1 Single Code Page Conversion finished	72
4.2 Conversion Completion (MDMP only)	72
4.2.1 Completion Categories	73
4.2.2 Completion Types in SUMG	75

4.2.3 Completion Procedure	76
4.2.3.1 Automatical Completion	76
4.2.3.2 Manual Repair	77
4.2.3.3 SUMG Main Log	82
4.2.4 Resetting SUMG Data	82
5. List of Necessary SAP Notes	82
6. Appendix.....	85
6.1. Reports/Programs	85
6.2. SUMG Worklist (MDMP only)	89
6.3 Unicode Conversion Project Overview – Example	90
7. Conversion Process – Checklist	95
8. Troubleshooting.....	98

Unicode Conversion Guide SAP NetWeaver Application Server 2004

Purpose

This document details the steps necessary to convert an existing SAP System to Unicode, and deals with the following aspects:

- Required programs and support packages
- Required documents
- Specific steps required for converting an MDMP System or an Ambiguous Blended Code Page system

Read the entire document before you begin! See SAP Note [548016](#) for application-specific information.

Note:

The system copy procedure described in Chapter [Unicode Conversion Phase](#) is valid for SAP Web AS **ABAP** systems only.

If you want to convert a SAP Web AS **Java** system, read SAP Note [795267](#).

SAP Notes

For some conversion steps additional information is required. This information is available from the SAP Note or Website mentioned in the text. If you cannot open the hyperlinks, open a browser window first and then click on the link again.



If you have terminological questions, please use the SAP Terminology Database. You can access the database on SAP Service Marketplace: service.sap.com/sapterm.

Constraints

This documentation should not be used to convert an MDMP system without assistance of an experienced SAP consultant. Contact globalization@sap.com.

Document versions

The Unicode Conversion Guide is available in different versions. You can download the applicable version from service.sap.com/unicode@sap, or from SAP Note 551344.



Note:

All NW AS 2004 document versions are being revised on a weekly basis and therefore supersede the online documentation available.

Make sure you always use the most recent document version!

Validity

The first complete version of Unicode has been delivered with **Web AS Release 6.20/6.40**.

See SAP Note [79991](#) for recent information about Unicode support of mySAP solutions.

See SAP Note [540911](#) for component-specific restrictions.



The conversion tools are still being developed. Therefore SAP strongly recommends running **the most recent** Basis 6.40 Support Package level (at least **SAPKB64012**). You can find all available Support Packages here:

Go to service.sap.com/swdc → Download → Support Packages and Patches → SAP NetWeaver → SAP NetWeaver 04 → ABAP Server → ABAP → SAP_BASIS 6.40.

Recommendation

SAP recommends to run report [UMG_SCAN_STATISTICS](#) in the Unicode system after the database export/ import (see chap. [First Steps](#)). This report collects and analyzes SPUMG statistics, e.g. database size, number of System Vocabulary entries, R3load runtime, Repair Log size.

For enhancement investigation, SAP kindly requests customers to send an e-mail with the following information to internationalization@sap.com:

- the XML-file UMG_STATS_<SID>.xml which results from UMG_SCAN_STATISTICS (see chap. [4.1. First Steps](#), section 12.)
- database size before and after the conversion
- export and import runtimes

Restrictions

1. The conversion of systems using code page 8340 (Hong Kong Supplementary Character Set) are only available as on a **project basis with SAP involvement**.
 - See [chapter 2.2.2 Initialize/Edit Language Lists](#) for details.
 - Download the supplementary documentation “Conversion of HKSCS Systems to Unicode” from SAP Note 551344 or from service.sap.com/unicode@sap → Unicode Library → Unicode Conversion Library → Unicode Conversion Kit 6.40.
2. You can not install a Unicode system with a non-Unicode system in one database (MCOD).

3. SAP Unicode systems are not released for Informix. See [chapter 3. Unicode Conversion Phase](#) for details about database change and simultaneous Unicode conversion.
4. Conversion from Unicode to non-Unicode is not possible.
5. Note that in this document information about Single Code Page systems only applies to Unambiguous Blended Code Page systems. Ambiguous Blended Code Page systems (i.e. systems using SAP Code Pages 6100, 6200 and 6500) are considered as MDMP systems.
6. SAP supports a combined system upgrade with Unicode conversion on pilot project basis for R/3 4.6C systems. For further information contact internationalization@sap.com.
7. Third Party products: If you are using software from other vendors, check whether it is Unicode-compliant. **“SAP certified” does not imply “Unicode compliance”**.

Requirements

Component-Specific Requirements

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](#) 771209 for detailed information.



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

2. If you use HR functionality in your SAP system, you have to process additional steps which are described in SAP Note [573044](#).



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!**

3. If you use SAP Office functionality in your SAP system, read SAP Notes [691407](#) and [690074](#) for further information on Unicode conversion.
4. If you use the SAP liveCache tool, read SAP Notes [632357](#) (SCM 4.0) for information about backing up the liveCache data before the system conversion.

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

Ambiguous Blended Code Page Conversion Requirements

Requirements:	SAP_BASIS 6.40 SP 12 SAP Kernel 6.40 patch level 57
Programs:	profile parameter "i18n/export_to/code_page_attr"
Documentation:	SAP Note 818374

The conversion non-Unicode systems which use at least one of the Ambiguous Blended Code Pages 6100, 6200 or 6500 requires special handling of the profile parameter i18n/export_to/code_page_attr". Read SAP Note [818374](#) for details.

Translation Environment Requirements

Requirements:	SAP_BASIS 6.40 Support Package 12
Programs:	transaction SE63
Documentation:	SAP Note 660873 . Documentation on Translation Tools: see attachments to SAP Note 585116 .
Single Code Page:	required.
MDMP:	required.

If you are using the SAP translation environment (transaction SE63), there are some technical adjustments to be made before the Unicode conversion in the non-Unicode system and after the database export in the Unicode system. You must:

- Convert the Proposal Pool
- Regenerate Translator Profiles
- Reassign Object Groups
- Regenerate Translator Roles

Read SAP Note 660873 for release-specific information. Read SAP Note 585116 and download the documentation mentioned above from this SAP Note. Follow the instructions described in the documentation.



If your system is already a Unicode system, create an OSS message and assign it to component BC-DOC-TTL.

Afterwards you must:

- Export the Proposal Pool from the non-Unicode system (see: chapter [Additional Preparation Steps](#)).
- Import the Proposal Pool in the Unicode system (see: chapter [First Steps](#))

Software Requirements

For information on required software refer to:

- System Copy Guide "Homogeneous and Heterogeneous System Copy for SAP Systems based on Web Application Server ABAP 6.40 or 6.40 SR1"
 - SAP Note [713685](#)
1. For the conversion from non-Unicode to Unicode you need:
 - a. non-Unicode SAPinst tools for the export of the database (located on the SAP Master DVD)
 - b. a Unicode Kernel CD for the import of the database
 2. For the copy of a Unicode system you need a **Unicode** Kernel CD both for the **export** and the **import** of the database.

Import the latest SAP Kernel 6.40 patch as described in SAP Note [19466](#) and the applicable R3load 6.40 version.

Frontend Requirements

Requirements:	at least SAP GUI for Windows 6.20 Patch level 33
Documentation:	SAP Notes 710720 (SAP GUI for Windows 6.40), 316903 (How to use i18n mode) and 508854 (SAPGUI: How to use Unicode)
Single Code Page:	required.
MDMP:	required.

SAP GUI for Windows 6.20 is compatible with products based on SAP Web Application Server 6.20/6.30/6.40 and all earlier releases of SAP Software.

SAP GUI for Windows 6.40 is compatible with products based on SAP Web Application Server 6.20/6.30/6.40 and all earlier releases of SAP Software.



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

Note that SAP GUI for Windows 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, 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

Unicode

The size and scope of Unicode have made it the default character encoding of the Internet communication, such as XML, Java, and HTML. For more information about Unicode, go to the Unicode Technology Media Center on SAP Service Marketplace service.sap.com/unicode@sap and also visit the Unicode Homepage in the public web: <http://www.unicode.org/>

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 derivatives 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 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 see service.sap.com/systemcopy -> optimization.



Unicode conversion using the **incremental migration (IMIG) system copy procedure** is available on a project basis. IMIG has been developed especially for copying very large databases. Compared to the standard system copy procedure, IMIG reduces downtime during the system copy remarkably. Currently, the IMIG procedure is still in pilot status.

For more information about the current status IMIG, see SAP Notes [353558](#) and [693168](#).

General information about IMIG is available in the Component Upgrade Guides for SAP Web Application 6.40 (e.g. "SAP Web Application 6.40: Windows") . Download this document from service.sap.com/instguides and read chapter "General Upgrade Information" section "Incremental Table Conversion".

Both Single Code Page systems and Multi-Display code pages /Multi-Processing code pages (MDMP) systems can be converted to Unicode. Please <mailto:globalization@sap.com> for information about a customer-specific conversion project.

This document contains the information needed to convert both a Single Code Page and an MDMP system.

Single Code Page System or MDMP System?

For information on whether your system is a Single Code Page system or an MDMP system, check if there is more than code page entered in table TCPDB. In an MDMP system, at least two code pages must be entered in TCPDB.

Single Code Page Conversion

For a single code page conversion, all character data will be converted with the Global Fallback Code Page.

A Single Code Page system might 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 while Ambiguous Blended Code Page systems require additional conversion steps. Therefore:

If the source system is an **Ambiguous Blended Code Page system** (i.e. using SAP Code Pages 6100, 6200 or 6500), this system is considered as MDMP system! Note that all additional steps described in the chapters which are marked as '**MDMP only**' apply for the conversion of this system, too! Note that in this document, the term "MDMP systems" also includes Ambiguous Blended Code Page systems.



Note:

If you plan to convert an Ambiguous Blended Code Page system, follow the instructions described in SAP Note 818374.

MDMP Conversion

An MDMP conversion requires additional steps, which are described in this document.

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-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.

Chronological Order of the Conversion Steps

Step	Action	Description
1	Upgrade to Web AS 6.40 non-Unicode	Upgrade the system to the desired component release version, using the standard upgrade procedure and the same NLS settings used before the upgrade.
2	Unicode-enabled ABAP Programs	Check that all customer programs are Unicode-enabled.
3	Table Maintenance	Ensure that obsolete tables/obsolete table entries are deleted and that the <i>Text Lang.</i> flag is correctly set for all tables.
4	Database check	Use SPUMG to check the consistency of the database.
5	Unicode Preconversion	Use SPUMG to prepare the database tables for the system conversion.
6	Final Preparation Steps	As data change between the last scan and the database export is not automatically entered into the Export Control Table, you have to update your worklist before the export as described in chapter 2.4.
7	Unicode Conversion Phase	Use R3load to export and import the database. The actual conversion is being processed during the export.
8	Unicode Conversion Completion	Use SUMG to repair any data in the Unicode system which were not converted correctly.

Note:

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

1. Preparation

1.1 Upgrade to NW AS 2004 Non-Unicode

Follow the upgrade procedure described in the Upgrade Guide for your hardware and component combination. Installation guides are on the installation CDs as well as on service.sap.com/instguides.

Requirements: SAP_BASIS 6.40 Support Package 10
Programs: SAPinst
Documentation: service.sap.com/instguides
 SAP Notes [713685](#) and [661640](#)
Single Code Page: required.
MDMP: required.

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

Requirements: SAP_BASIS 6.40 Support Package 10
Programs: [RSCP0126](#)
Documentation: SAP Notes [485455](#), [511732](#) and [534720](#); online documentation in transaction SCP
Single Code Page: required.
MDMP: required.

Customizing data in a customer client is not overwritten by a language import or an upgrade. Data is only imported into client 000. This is because Customizing data is the responsibility of the customer and cannot be overwritten by data from SAP. This also applies, without restrictions, to translations. However, customers might occasionally need to update their sample data and default settings with the latest translations from SAP.

Use transaction SMLT and the included report RSREFILL to copy the most recent translations (for example of customizing texts) from client 000 to your productive client. SAP recommends to execute RSREFILL at least once before preparing the system conversion.

Requirements: SAP_BASIS 6.40 Support Package 10
Transactions: SMLT
Programs: [RSREFILL](#)
Documentation: SMLT →  *Documentation* → *General Information about Language Transports* → *customizing tables*.
 SAP Notes [43853](#) and [48047](#)
Single Code Page: recommended.
MDMP: recommended.

1.2 Unicode-enabled ABAP programs

Requirements:	SAP_BASIS 6.40
Programs:	transactions UCCHECK and SCOV
Documentation:	ABAPHELP, keyword "Unicode" service.sap.com/unicode@sap System Documentation in UCCHECK and SCOV SAP Notes: 367676 ; 549143 ; 548016
Single Code Page:	required.
MDMP:	required.

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. This also applies for any SAP Programs you modified (see SAP Note 548016 for details) – including customer exits that you use (see SAP Note 549143 for more information). To determine which SAP programs you modified, run transaction SE95.

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.



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.

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. 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.

Unicode Enhanced Syntax Check

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:

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

674882	Upgrade: Syntax error in program RKE5XXXX
708442	Incorrect generated programs in Unicode systems

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



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.

1.3 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 to delete and/or archive 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://www.service.sap.com/data-archiving → Media Library → Literature & Brochures. See also SAP Note 71930 for detailed information about data archiving.
Single Code Page:	recommended
MDMP:	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 in all SAP R/3 systems.

Follow the steps described in SAP Note 679456.

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 to

delete 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
Single Code Page:	not required
MDMP:	required

Run report UMG_ADD_PREP_STEP. This report consists of several reports which were created for maintaining corrupt or obsolete table data before a Unicode conversion.

Action:	<p>Delete entries for TCP00, TCP01 or TTDCF from ATAB (SAP Note 849596)</p> <p>Delete entries from TSTCP (SAP Note 897002)</p> <p>Correct characters in TFO06 (SAP Note 735940)</p> <p>Delete extracts for Report Writer (SAP Note 892607)</p> <p>Delete content of OCSCMPLOBJ (SAP Note 889596)</p> <p>Correct characters in IACSERP and IACS_C (SAP Note 862196)</p> <p>Fill REPOSRC-RLOAD (SAP Note 684332)</p> <p>Delete dynpro source codes with invalid keys (SAP Note 870601)</p> <p>Delete entries from SQ* tables (SAP Note 932034)</p> <p>Delete entries from tables T800S, T800X, T800Y and SETDATA (SAP Note 928859)</p> <p>Delete entries from table TCYD (SAP Note 899931)</p>
Single Code Page:	required
MDMP:	required

1. Call transaction SE38.
2. Enter report UMG_ADD_PREP_STEP and choose . On the next screen the included reports are displayed. If you want to start all reports simultaneously, choose  *Background*. If you want to run one selected report, mark the report and choose .

SAP recommends maintaining corrupt data in tables T52C5, TTDTG and in tables ADRC and ADRP, according to the SAP Notes mentioned below.

Tables:	T52C5; TTDTG; ADRC and ADRP tables
Documentation:	SAP Notes 679275 ; 794966 ; 673941
Single Code Page:	recommended

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

Tables:	QCM <table_name>
Documentation:	System Copy Guide "Homogeneous and Heterogeneous System Copy for SAP Systems based on SAP Web Application Server 6.40 → Chapter 2. Preparations → Section Technical Preparations"; SAP Note 9385
Single Code Page:	recommended
MDMP:	recommended

BW System conversions: Delete temporary database objects as described in SAP Note 449891.

Tables:	Tables starting with /BI0/0
Documentation:	SAP Note 449891
Single Code Page:	mandatory
MDMP:	mandatory

1.3.3 Text Language for Customer Objects

All LANG fields 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 LANG field determines the code page of the character data in that table. Read SAP Note [480671](#) for detailed documentation.

To set this DDIC attribute for customer objects, run report [RADNTLANG](#).



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.

After you have run RADNTLANG please read SAP Note [672835](#) carefully. You will find information about how to maintain special tables which could be affected by wrong data conversion after the *Text lang.* flag has been set.

1.3.4 Consistency Check for Cluster Tables

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

Requirements:	SAP_BASIS 6.40 Support Package 17
Programs:	report UMG R3CHECK FILES ; program R3check
Documentation:	SAP Note 89384

Single Code Page: recommended.

MDMP: recommended.

Run report UMG_R3CHECK_FILES in transaction SE38 order to create control files for R3check. Read the report documentation for details.

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](#).

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.

2. Unicode Preconversion Phase

Transaction SPUMG

SPUMG is used to prepare 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 system conversion is carried out by the separate tool [R3load](#) during the database export.

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

R3load uses the results of SPUMG which are stored in the [Export Control Table](#), the [Vocabulary](#) and the [Language Lists](#).

Tool: transaction SPUMG

Documentation: this document; SAP Note [548016](#); presentation "Conversion of SAP Systems to Unicode" which can be downloaded from service.sap.com/unicode@sap → Unicode Library → Unicode Conversion Library → Unicode: Basic Information.

Single Code Page: required.

MDMP: required.

2.1 Preconversion Analysis: SPUMG Scans

During the Unicode preconversion the database tables have to run through several consecutive scan levels which are listed below.



Terminology:

Scan = scan level

Source system = non-Unicode system

Target system = Unicode system



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

Object: S_ADMI_FCD**Field:** S_ADMI_FCD**ID:** SCP1

This profile is not required for the Vocabulary Maintenance!

Scan required for both Single Code Page systems and MDMP systems

1. [Consistency Check](#) (used for checking the database consistency of the source system)

Scans required for MDMP systems only

2. [Tables without Language Information](#) (checking tables without *Text Lang.* flag)
3. [Tables with Ambiguous Language Information](#) (only active after the Ambiguous Language List has been edited)
4. [INDX Table Analysis](#) (checking INDX-type tables)
5. [Tables with Language Information](#) (checking tables with *Text Lang.* flag)
6. [INDX Table Repair](#) (repairing INDX-type tables)
7. [Reprocess](#)

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

- Tables without Language Information
- Tables with Ambiguous Language Information
- INDX Analysis

2.1.1 Resetting data**RESET SCAN:**

You can reset tables after each scan. Choose the tables from the worklist and select . SPUMG 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 interrupted 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 SPUMG 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 SPUMG 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 SPUMG and/or SUMG.

Non-Unicode System

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

Unicode System

In the Unicode System you can:

1. reset **all data from SPUMG and all data from SUMG**. Go to *SPUMG* → *Scanner* → *Reset all scans* in the Unicode system.
2. reset **all data from SUMG** only. Go to *SUMG* → *Edit* → *Reset*.



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

2.2 Database Check

2.2.1 Reset All Scans



SAP strongly recommends deleting all data before starting the database check! Select *Scanner* → *Reset All Scans*.

After the reset, you must initialize and edit the Language List, edit the Ambiguous Language List (in MDMP systems only), and configure the settings for SPUMG. Afterwards you must run the **Consistency Check** to check the consistency of your system's database. This scan is required for Single Code Page and MDMP systems in order to prevent conversion errors during the database export.

Programs:	SPUMG, UMG_CHECK_POOL, UMG_CHECK_CLUSTER
Documentation:	this document; „Conversion of HKSCS Systems to Unicode“ Download: SAP Note 551344 or service.sap.com/unicode@sap → Unicode Library → Unicode Conversion Library → Unicode Conversion Kit 6.40.
Single Code Page:	required.
MDMP:	required.

2.2.2 Language Lists

Before the database check, you must make sure that the Language List (in Single Code Page and MDMP systems) and the Ambiguous Language List (in MDMP systems only) are filled and edited. Both lists contain **active** and **inactive** languages in combination with the required code page information (see section [Active Flag](#) for details). These language/code page mappings will be used for determining the correct code page during the data conversion.



Active languages can be used for language assignment in the Vocabulary.
Inactive languages are inserted 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.

You have to initialize the Language List; afterwards you can maintain entries in the Language List and in the Ambiguous Language List. The Invalid Language List is described in a separate chapter (see [2.3.2.3 Edit Invalid Language List](#)).

2.2.2.1 Restrictions

You cannot edit the lists during a running worker job!

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 1100

If you use the **wrong** frontend code page 1100 for logon (with SAP GUI for Windows) to SAP systems running with code page 1100, you are able to input some characters that **are not** in the system code page 1100. Example: the Euro sign (€) and the trademark sign (™). Those characters get lost during the conversion!

system code page = 1100 frontend code page = 1100
→ no € and ™ in the Unicode system

There is a workaround to prevent this:

For all languages which are displayed in the Language List with code page 1100 change this entry to 1160 which corresponds to Microsoft code page cp1252.

system code page = 1100 frontend code page = 1160
→ € and ™ in the Unicode system

Note:

This workaround applies only for the transparent tables/table parts! Therefore, text data which are stored in binary format (for example in INDX-type tables) are

excluded from this workaround, because they are not touched during the database conversion!



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 this document from SAP Note 551344 or from service.sap.com/unicode@sap → Unicode Library → Unicode Conversion Library → Unicode Conversion Kit 6.40.



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**.

2.2.2.2 Initialize Language List

Select *Scanner* → *Initialize* → *Language List* from the SPUMG menu.

The languages which are installed in your system are now inserted in the Language List as **active** languages ([active flag](#) is set) in conjunction with their code pages. All other languages supported by SAP are inserted as **inactive** languages.

Ambiguous Blended Code Pages:

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.



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.

2.2.2.3 Edit Language List

Reasons

You may have to change the code page information for a language, or want to move languages from one language list to the other as described in section [2.2.2. Language Lists](#).



You must finish editing entries with active languages in both lists before starting the **Consistency Check!**

Select *Edit* → *Language Lists* from the SPUMG menu. In MDMP systems both lists are available for use, in Single Code Page systems only the first list is displayed.

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

Active Flag

This flag must be set for each language that shall be used for language assignment

1. during the Unicode Preconversion (non-Unicode system):
 - during the scan *Tables with Language Information* (automatically)
 - by means of Vocabulary Hints
 - in the Vocabulary (manually)
2. during the Conversion Completion (Unicode system):
 - by means of Repair Hints
3. for the calculation of the Common Character Set

2.2.2.4 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 SPUMG menu.

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

Note:

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.

2.2.3 SPUMG 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, SAP does not recommend changing 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 SPUMG settings any more after the worklist for the *Consistency Check* has been initialized (see chap. [Initialize Worklist](#)!)

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.

Select the checkboxes

- Unicode Database Size Calculation
- Activate Cluster Database Table Analysis
- Activate Container Analysis

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**. You should change the default settings to 1160 as described in chap. [2.2.2 Language Lists](#).



Note:

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

Example: 1160 → Unicode → 1160.

If you enter a new value, 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*.

Default values

Single Code Page: 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](#).

MDMP: one of the system code pages (retrieved from table TCPDB)

Ambiguous Blended Code Pages:

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 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](#).



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.

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 to set 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

Specifies the number of rows that are processed at one time. Setting the number too low results 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 to use 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 - MDMP only

Minimum Word Length

Specifies the byte length of a word for the Vocabulary (described below). With the default setting a word is at least 3 bytes long and contains at least one non-7 bit ASCII character. Decreasing the value will decrease system performance, but increase the ability of the scans to correctly determine the correct code page (i.e. more words in the Vocabulary but a smaller Reprocess Log). Increasing the value will improve the system performance, but increase the possibility that a word will be ignored during the Preparation Phase (i.e. smaller Vocabulary but a larger Reprocess Log).

More details see [Creating the Vocabulary](#) and [Reprocess/INDX Log](#).

Word separator

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

Details see chapter [2.2.2 Language List](#).

Common Character Set

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



MDMP system with code pages 1100 and 1401:

The German name <Müller> will be inserted into the vocabulary if the Common Character Set is set to "7-bit ASCII" because the name contains the German national character <ü>. It will not be inserted into the vocabulary if the Common Character Set is set to "Intersection of active languages" because the character <ü> has the same code point 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](#).



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 to use the default value to keep the number of entries in the "Reprocess Logs" 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

R3trans Language and Code Page Settings

Here you can determine which language - code page mapping shall be used by R3trans to handle transport requests between systems.

Code Page for INDX-type Tables

Ambiguous Blended Code Page systems only: If your system deploys 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.

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.



SPUMG is also used for the conversion from SAP Bi-Directional Logic to Microsoft Bi-Directional Logic. See SAP Note [553415](#) for more information.

2.2.4 Initialize Worklist

A worklist contains all tables of a system that have to be prepared by SPUMG for the Unicode conversion. In SPUMG, 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. Press . 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; see MDMP Preconversion). According to these table categories, the *Consistency Check* generates the worklists for the subsequent scans.

The respective scan level is visible in the menu directly above the worklist and can be changed by selecting *Change Scan Level* from the toolbar.

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 200 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 indicator shows whether the initialization was completed or shows an error; select  from the toolbar to see the error message for a selected entry; to view all errors, select  from the toolbar. The error 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 chapter [Final Preparation Steps](#) →section **Update Worklist**.

Select *Scanner* → *Update Worklist*.

2.2.4.1 Export Control Table

During the *Consistency Check*, the tables which shall be exported are entered in the Export Control Table (table UMGCCCTL). 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 SPUMG settings), and information about existing entries in the Vocabulary (*Voc.exist*).

Select  *Export Control Table*.

- To add tables manually to the Export Control Table, choose .
- To change table information in the Export Control Table, mark a table and choose .

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.

2.2.4.2 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 are also entered in the Export Control Table. You can create one or more entries in the Exception List via  *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 maintaining 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.



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](#))

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 via  *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
<i>Character set for all entries</i>	It can be useful to enter a Default 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
<i>Table-specific fallback code page</i>	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
<i>Flag skip analysis</i>	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	possible

	<p>executed.</p> <p>Regardless of the flag, tables will not be deleted from the worklist of the scan <i>Consistency Check</i>.</p>	
--	--	--

 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
<i>Language field</i>	If a table has more than one LANG field, you can determine, which one R3load shall actually use for the data conversion.	TABCAT 1	mandatory
		TABCAT 2	not possible
		TABCAT 3	not possible
<i>Character set for all entries</i>	See Table 1	TABCAT 1	possible
		TABCAT 2	possible
		TABCAT 3	possible
<i>Table-specific fallback code page</i>	See Table 1	TABCAT 1	mandatory
		TABCAT 2	mandatory
		TABCAT 3	mandatory

Flag <i>skip analysis</i>	See Table 1	TABCAT 1	possible
		TABCAT 2	possible
		TABCAT 3	possible

 Save the settings.

Press  to display your changes in the list.

2.2.4.3 Monitor

On each scan level the SPUMG 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.



In the job overview there is one master job, `UMG_PMIG_MASTER_JOB`, for the planned worker jobs `UMG_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.

2.2.4.4 Status

Select *Scanner* → *Status* to view a general overview of all current activities in SPUMG.

Scan Level

-  'All tables have been processed'
-  '<xxxx> tables have not been processed until now'
-  'No table has been processed until now'

Consistency Check only:

-  'There are serious errors for some tables' (cluster table with initial records or pool table with invalid pool entries)
-  'Please check the status and message type' (Table cannot be read - no nametab entry)

Vocabulary.

Information about how many entries in the Vocabulary, in the Reprocess Log and in the INDX Log have been maintained until now.

Additional Information

 '<xx> invalid language keys have not yet been assign to one of the language lists':

Select *Edit* → *Invalid Language Keys* from the SPUMG menu. Add the invalid language keys to one of the language lists as described in chap. [2.3.2.3 Edit Invalid Language Keys](#).

 '*The Unicode Nametab is not up-to-date*'. This message always appears until the Unicode nametab has been created (see section: [3.1 Additional Preparation Steps](#) 4. Create Unicode Nametab.)

2.2.4.5 SPUMG Main Log

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

2.2.5 Scan 1: Consistency Check

Single Code Page systems: required

MDMP systems: required

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.



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 to view table statistics, including the number of transparent, cluster, and pool tables. The statistics also show the number of inconsistent tables, which must be repaired before the conversion. Select  to update the monitor.

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



In the job overview there is one master job, UMG_PMIG_MASTER_JOB, for the planned worker jobs UMG_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.

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 is completed:

- 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 3 overview reports:
 - [Table Information](#)
 - [Cluster Information](#) (read the report documentation  for detailed information)
 - [Pool Information](#) (read the report documentation  for detailed information)
- Select *Select entries* 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: Database consistency

Msg.Type	Definition	Description/Correction Steps
1	Incorrect table definition	<p>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:</p> <ol style="list-style-type: none"> 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 (described below)
2	Table cannot be read	<p>Examine the table in in SE11. Then you can either:</p> <ol style="list-style-type: none"> 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.
4	Language key is not type LANG	The language key in a table must be type LANG and not type C (character) Change the type to LANG
7	Illegal initial values	Table contains initial values, which must be removed. Run report umg_check_cluster . Select <i>Extras</i> → <i>Cluster Information</i> from the SPUMG menu. A list of all table clusters is displayed. Select  and follow the instructions in the online documentation.
8	Illegal pool table values	The logical pool entry does not exist in the ABAP Dictionary. These values must be deleted. Run report umg_check_pool . Select <i>Extras</i> → <i>Pool Information</i> from the SPUMG menu. A list of all table pools is displayed. Select  and follow the instructions in the online documentation.

Double click on the table name in the list to see a detailed description of the inconsistency and how to handle the error.



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. Select  *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.



When the Consistency Check is finished, check if table TCYD is displayed in the  [Default Exception List](#) (see chapter [2.2.4.2 Exception List](#)). If the table is entered, delete it from this list before you continue.

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 [Unicode Conversion Phase](#) .

MDMP System

Correct all errors, or place tables with errors into the [Exception List](#).

Resetting Tables in the Worklist of the Consistency Check

Select *Change Scan Level* → 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**.



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.

2.3 MDMP Preconversion

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 for the Unicode Conversion Completion.

Programs: transaction SPUMG

Documentation: this document

Single Code Page: required if the system uses an **ambiguous blended code page** (see section [Single Code Page System or MDMP system?](#)). Otherwise proceed directly to [Unicode Conversion Phase](#).

MDMP: required.

During the conversion 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.

Single code page dependent: the language fields in the table contain languages that use one code page.

- The entire table can be converted with one code page without evaluating the language fields row by row.

Multiple code page dependent: the language fields in the table contain languages that use more than one code page.

- The table must be converted using more than one code page and the code page must be set row by row.

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

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

Category 3 (TABCAT 3) = Not code page dependent

The table has text data that 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.
- create and use the Vocabulary.

After having been created, the Vocabulary contains a list of words (stored in the tables UMGPMDC and UMGPMDC) 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, 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](#) for details.

The duration of the scans depends on system hardware and the amount of additional activity in the system. 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](#)). 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 SPUMG 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.

**Remember:**

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

If you want to exclude a table from export, either edit the R3load .tsk and .ctl files manually, or drop the table in the source system and remember to delete the table from the worklist of the *Consistency Check*.

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 words 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 pushbutton *Change Scan Level* → *Tables without Language Information*.

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

The following words are added to the Vocabulary:

- words that are equal or longer than the minimum word length (default value in the SPUMG 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.



Use the following naming convention. <run>scanlevel<job>. For example 1w02 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 is completed:
 - 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*).

Message Type: Scan *Tables without Language Information*

Msg.Type	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 *Change Scan Level* → *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.

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 UMGLNOCP. UMGLNOCP contains languages that are not assigned to a single unique CP.

Examples for ambiguous language:

- language key '<SPACE>' in any system
- language key 'EN' in Ambiguous Blended Code Page systems

1. In SPUMG, select *Change Scan Level → 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.



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 is completed:
 - 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.

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:

- UMGPMDDIC
- UMGPMDDII

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 SPUMG 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.

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

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 must 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.



Run the report [UMG VOCABULARY STATISTIC](#) to see how many entries each table has made in the Vocabulary.



Run transaction DB20 to update the database statistics for UMGPMDDIC and UMGPMDDII.

Resetting Tables after Scan *Tables with Ambiguous Language Information*

Select *Change Scan Level* → *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.

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 1,2 or 3. 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 Table Analysis* scans the binary part of INDX-type TABCAT 2 tables and inserts words into the Vocabulary.
2. *INDX Table 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 SPUMG, 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 Table 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:



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: *INDX Table Analysis*

Used for scanning TABCAT 2 tables.

Requirements: SAP_BASIS 6.40 Support Package 10
Kernel patch level 42 (see SAP Note 696379)

1. Select *Change Scan Level* → *INDX Table 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.



Use the following naming convention. <run>scanlevel<job>. For example 1ca2 is the second job of the first run of the INDX Table 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.
4. Maintain the Vocabulary.

2.3.3 Update Database Statistics

Program:	transaction DB20
Tables:	UMGCCTL; UMGP MIG; UMGPMDIC; UMGSTAT
Single Code Page:	not required
MDMP:	recommended

Call transaction DB20 to update the database statistics for the tables UMGCCCTL; UMGP MIG; UMGPMDIC; UMGSTAT.

2.3.4 Maintaining the Vocabulary

The scans *Tables without Language Information*, *Tables with Ambiguous Language Information* and *INDX 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](#).
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 <i>Tables without Language Information</i>)	Initial value. Language in Vocabulary has the value SPACE.
A	Automatic initial entry (filled by scan <i>Tables with Ambiguous Language Information</i>)	Initial value. Language in Vocabulary has the value SPACE.
I	Filled by scan <i>INDX Table Analysis</i>	Initial value. Language in Vocabulary has the value SPACE.
R	Reset	Non-initial value. Language in Vocabulary has been reset to SPACE.

3	Automatic language assignment (scan <i>Tables with Language Information</i>)	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	Vocabulary Transfer (import of previously exported Vocabulary)	The language assignment was made in another system and the result has been imported into the current system.
C	Technical Properties (valid character ranges)	Language assignment (assignment method CL_UMG_AL_TECHNICAL_PROPERTIES)
S	Character Statistics	Language assignment (assignment methods CL_UMG_AL_NA_CHARSTAT or CL_UMG_AL_YA_CHARSTAT)

Words with the value 2, A, I or R have not been assigned a language. When a language has been assigned, the Filled-by categories are weighted ($M > H > V > 3$), which determines if the assigned language can be overwritten and whether entries are overwritten if the scans are repeated.

Filled-by Scale

M	Overwrites Hints (H), Scan <i>Tables with Language Information</i> (3) and Vocabulary Transfer (V)	Will not be overwritten if scans are repeated
H	Overwrites Scan <i>Tables with Language Information</i> (3) and Vocabulary Transfer (V).	Will be overwritten when scans are repeated
V	Overwrites 3	Will be overwritten by M and H
3		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 in 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 SPUMG 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: It is recommended to 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](#) in order to avoid unnecessary manual maintenance.

You have two options for using existing vocabulary to maintain a new Vocabulary:

1. Upload/download Vocabulary locally

Select  *Vocabulary*. Select *External Vocabulary*.

 *Upload*: Read in existing vocabulary.

You can read in several files simultaneously.

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

The vocabulary is saved in .voc files (maximum size of each file is 50 000 words). If you want to download vocabulary “test.voc”, for example, with 150 000 words, 3 automatically numbered files are saved to your local PC:

- test001.voc (words 1-50 000)
- test002.voc (words 50 001-100 000)
- test003.voc (words 100 001-150 000)

If you want to delete single entries from the external vocabulary, mark the entries and select .

If you want to delete sets of entries, select  *Delete all Entries* and then choose which set (SAP entries or customer entries) you want to delete.

2. Transfer Vocabulary from system to system

Note:

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

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

Transfer procedure

1. Export

In SPUMG select  *Vocabulary*. A list of all words in the Vocabulary is shown.

Press pushbutton *Export*.

All words which had been assigned a language are now entered into table UMGPMDIT.

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 = UMGPMDDIT

If you create a transport request for **Hints Transfer**, enter:

Program ID = R3TR

Object Type = TABU

Object Name = UMGHINT; UMGCONDITION; UMGWORDLIST

Click on the key icon in the column "Function" and enter *.

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 UMGPMDDIT).

1. To import the entries of table UMGPMDDIT 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 SPUMG select  *Vocabulary*.
6. Press pushbutton  *Auto Assign Language*. In the area *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:

- the source system to view a list of all exported entries.
- the target system to view a list of all imported entries.

2.3.4.3 Scan 4: *Tables with Language Information*

This scan is not mandatory because 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.



Remember that only "activated" languages (**Active Flag** must be set in the Language List; see chap. [Edit Language List](#)) 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 only processed once.



Use the following naming convention. <run>scanlevel<job>. For example 1w12 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 view 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.Type	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.

For 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](#))
- 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.

Result

Entries in the Vocabulary have been assigned a language. The remaining entries in the Vocabulary must also be assigned a language. There are three ways to maintain the Vocabulary. You can:

1. create and execute Hints (see chap. [Hint Management](#))
2. assign languages manually (see chap. [Manually Assign Language](#))

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 SPUMG scans.
2. Repair Hints: Used for assigning languages to table rows during the Unicode Conversion Completion. (see chap. [Create Repair Hints](#))

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 <i>source table</i> . 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 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 SPUMG 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 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')

Create Vocabulary Hints

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

1. Create and edit Wordlist(s)

1. Select pushbutton  *Hint Management* from the application bar.
2. Select 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 the 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 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 SPUMG 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. 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 should only assign a language to those words they recognize from their language. Especially for Asian Languages, it is essential that users log on with the correct language and only assign languages to those words they recognize from their language.

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

Manual Language Assignment

Option	Pushbutton	Description	Procedure	Additional Information
Assign selected language	 <i>Assign Language</i>		Select words which you recognize belonging to the same language. Press pushbutton and choose the correct language .	
Use assign method	 <i>Auto Assign Language</i>	Methods delivered by SAP. Choose the method and the language(s) you want to assign. If you don't choose at least one language, all active languages in the system will be used.	CL_UMG_AL_NA_CH ARSTAT (Character Statistics for non-Asian languages) CL_UMG_AL_YA_CH ARSTAT (Character Statistics for Asian languages)	Read the class documentation and download the character statistics attached to SAP Note 756534 .  To open a class documentation access transaction SE24. Enter the name of the class (e.g. CL_UMG_NA_AL_CHARSTAT) and press  <i>Display</i> . On the next screen press <i>Class documentation</i> from the taskbar.
			CL_UMG_AL_IMPORT (Vocabulary Import)	For more information see SAP Note 756535 .
			CL_UMG_AL_TECHNICAL_PROPERTIES (Technical Properties)	For more information see the class documentation. Open the class documentation as described above.
Vocabulary Patterns	 <i>Selection</i> → line <i>Words</i>	Use vocabulary patterns for a faster language assignment.	Enter a vocabulary pattern which is likely to apply for one single language. Press  Check the entries. Select all entries which are from the same language, press  <i>Assign Language</i> and assign the correct language.	Examples German patterns: <i>*zahl; *keit; Ver*; Änderungs*</i> French patterns: <i>*eur; Dé*</i> Danish or Norwegian pattern: <i>*else</i> SAP delivers frequently used vocabulary patterns extracted from 11 European and Asian languages. You can download the patterns from the ZIP file attached to

				SAP Note 871541 .
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Remember that only “activated” languages (**Active Flag** must be set in the Language List; see chap. [Edit Language List](#)) are available for the manual language assignment.

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.

In addition, SAP provides sets of words which have been already assigned correct languages. You can download those sets from SAP Note [756535](#) and use them for maintaining your Vocabulary (assign method **CL_UMG_AL_IMPORT**). Follow the instructions described in the SAP Note.



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

2.3.4.6 Scan: *INDX Repair*

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

Requirements: SAP_BASIS 6.40

Kernel Patch Level 105 (see SAP Note [696379](#))

Select tabstrip *INDX Repair*. Select  *Schedule worker job* and proceed as described above.

Note:

This scan creates a separate Log for INDX-type tables (INDX Log). You can access this log by selecting  *INDX Log*. Proceed as described in section [Reprocess/INDX Log](#).

2.3.5 Scan 5: *Reprocess*

This scan is mandatory for MDMP conversion.

Note:

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

INITIAL

INPROCESS

ERROR

In the Reprocess 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](#) 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. The Reprocess Log is used for automatical completion the Unicode system (transaction SUMG).

Execute Scan Reprocess

1. Select *Change Scan Level* → *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.



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*, all tables should have been assigned a language. If the language assignment fails, use the Reprocess Log to maintain those tables manually. Select  *Reprocess Log* and proceed as described in section [Reprocess/INDX Log](#).

2.3.5.1 New Data in Production Systems after Reprocess



Between the Reprocess scan and the database export new data might be entered into a production system. SPUMG cannot process such deltas, so they will be imported without being converted! The conversion of the data must be completed manually in transaction SUMG in the Unicode system (see chapter [4.2.3.2 Manual Repair](#)).



Note: If you reset the *Reprocess*, all language assignments that have been made during the last *Reprocess* 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.

2.3.6 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 Log*. 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.

2.3.7 Reprocess/INDX Log

When the scan *Reprocess* could not determine the correct conversion code page, a log entry is written (Reprocess Log). This log contains the table name, the key values, the reason why no code page could have been assigned (e.g. language not maintained in the Vocabulary, default code page missing, conversion collision, etc.).

The same applies for the scan *INDX Table Repair*. A separate log is written for the scan *INDX Table Repair* (INDX Log).

The Reprocess Log entries which are maintained in the non-Unicode system are still available in the conversion completion phase. The INDX Log entries which are maintained in the non-Unicode system are not available in the conversion completion phase!

Mark a table in the worklist of the scan and then select  *Reprocess/INDX Log*. You can see a list of problematic tables which need to be assigned a language for the conversion.



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

1. You can assign any language which is installed in the system by selecting pushbutton  *Assign Language*.
2. You can also use several assign methods delivered by SAP. Proceed as described in chap. [Manually Assign Language](#).

Save your changes. You can reset language assignments. Select entry and choose .

Reuse Reprocess Logs and INDX Logs

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

Go to *Extras* → *Up/Download Reprocess Logs* or *Up/Download INDX Logs*. Follow the instructions in the system documentation (select  from the toolbar).

2.4 Final Preparation Steps

Programs: transaction SPUMG

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 in 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 SPUMG 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](#) 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](#) for all tables in the worklist of this scan.
4. If there are tables in the worklist of the scan [Tables with Ambiguous Languages](#), 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](#),
 - use the [Hint Management](#) or
 - assign the language [manually](#).
7. Repeat the scan [Reprocess](#) for all tables. Resolve Collisions as described in section [Resolving collisions](#).

Update Log

Single Code Page:	required
MDMP:	required

In SPUMG 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.

3. Unicode Conversion Phase

Program: R3load

This applies for SAP ABAP systems only.

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 relevant **System Copy Guide** mentioned below) and simultaneously a system conversion to Unicode. The conversion must

be performed during the **export procedure**. For creating the Unicode system you use the export files generated during the export procedure.

Program: Jload

System copy of SAP Java systems is supported as of SAP_BASIS 6.40 SR1. Please read SAP Note [795267](#) for details.



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, choose the heterogeneous system copy method.

Downtime Estimate

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

After both export/conversion and system copy has been successfully completed, SAP recommends 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.

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.

Requirements:	SAP_BASIS 6.40 SP 10 Use the latest R3load 6.40 version and the latest version of R3ldctl and R3szchk.
Programs:	report RADCUCNT ; report TWTOOL01
Documentation:	- this document - SAP Note 548016 - SAP Note 795267 for JAVA system copy procedure - SAP Note 723288

- **System Copy Guide** "Homogeneous and Heterogeneous System Copy for SAP Systems Based on SAP Web Application Server 6.40" which can be downloaded from <http://service.sap.com/instguides> → SAP Net Weaver → Release 04 → Installation.

- "Unicode Conversion: Tips and Tricks for Improving the Conversion Time".

You can find this document under <http://service.sap.com/unicode@sap> -> Unicode Library -> Unicode Conversion Library.

For detailed information about **optimization of the system copy procedure** go to <https://service.sap.com/systemcopy> -> optimization.

Single Code Page: required.

MDMP: required.

Important SAP Notes

SAP Note	Title
548016	Conversion to Unicode/Unicode System Copy
857081	Unicode conversion: downtime estimate
837173	RADCUCNT in Unicode Conversion: Collective Note
42305	RSCPINST (NLS installation Tool)
600027	Installing corrected MSSQL Collation
552464	What is Big Endian/Little Endian? What Endian do I have?
425079	Tablespace configuration for reduced tablespace set
679456	Reducing Data Volume before Unicode Conversion
695196	Error in the export for Unicode migration
713685	Hom./Het. System Copy SAP Web AS 6.40
723288	Central Installation Note SAP Web AS 6.40
771209	NW04: System copy (supplementary note)
795267	System Copy for 'SAP Web AS Java 6.40 SR1' based systems
811431	Informix: Dbcodepage und Unicode Konvertierung

3.1 Additional Preparation Steps

Perform the following steps on your source system:

1. Delete entries from the Unicode nametab tables DDNTF_CONV_UC and DDNTT_CONV_UC:

Delete the table entries on database level.

2. Log on to your SAP system as user DDIC.

3. Apply SAP Note [771209](#), section “2. Actions before the export”.

4. Run report [TWTOOL01](#).

Note:

Do not start the export before all matchcode IDs have been deleted! Run this report until message "Check successful, no action necessary" is shown!

5. Create the Unicode nametabs.



Do not import new DDIC objects or modify existing DDIC objects after you have created the Unicode nametabs and before the export of the database! Otherwise the Unicode nametabs will become invalid!

Running this report may take several hours, depending on the number of tables in your SAP system. SAP therefore recommends running this report as batch job:

1. Call transaction SE38 → enter program RADCUCNT → press  (F8).
 - a. If you run this report for the first time in your system, use variant UNICODE-02-CRE. This variant creates the Unicode nametab.
 - b. For all following runs (e.g. update existing Unicode nametab), use variant UNICODE-02.
2. Specify a name for the log file according to the variant (e.g. enter *F:\temp\unicode02cr.001* on Windows NT/2000 where directory *F:\temp* must exist).
3. Check the log of RADCUCNT **carefully**. If you ignore errors, the import will not succeed and you will have to redo the conversion procedure.

RADCUCNT may produce messages due to old DDIC inconsistencies:

Message	Description/Correction Steps						
<i>1EED: DD sources table “xxx” could not be read.</i>	Ignore this message.						
<i>1EED: Runtime object for “xxx” could not be generated.</i>	<p>Check these objects in SE11. Press the check button.</p> <table border="1"> <tbody> <tr> <td><i>Data Element EEE not available.</i></td> <td>Ignore this message.</td> </tr> <tr> <td><i>Type TTT not available.</i></td> <td>Ignore this message.</td> </tr> <tr> <td><i>Table TTT not available for views.</i></td> <td>Ignore this message.</td> </tr> </tbody> </table> <p>If you receive other messages, read SAP Note 653981. If you don't find help in this Note, try to reactivate the object.</p> <p>If the reactivation fails, contact SAP support</p>	<i>Data Element EEE not available.</i>	Ignore this message.	<i>Type TTT not available.</i>	Ignore this message.	<i>Table TTT not available for views.</i>	Ignore this message.
<i>Data Element EEE not available.</i>	Ignore this message.						
<i>Type TTT not available.</i>	Ignore this message.						
<i>Table TTT not available for views.</i>	Ignore this message.						

	via CSN component BC-DWB-DIC.
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Correct all errors and then rerun RADUCNT for the corrected objects in order to generate the missing entries in the Unicode nametabs.

1. Call transaction SE38 → enter program RADUCNT. Run RADUCNT as a batch job with **variant UNICODE-02** for the corrected objects only.
2. Make sure that Unicode length = 02.
 - Log name = Specify a name for the log. Use 'F' for log file and 'T' for database log.
 - Section *Generation for single object*.
 - Type: Use F4 to select object type.
 - Name: Enter name of the object.
 - Specify a name for the log file according to the variant (e.g. enter *F:\temp\unicode02cr.001* on Windows NT/2000 where directory *F:\temp* must exist).
3. Press  (F8) to execute RADUCNT.

6. After RADUCNT has been successfully executed, you should update the database statistics in order to improve the performance of the R3load export procedure.

a. Database statistics update for Unicode nametab tables:

Tables:	DDNTF_CONV_UC; DDNTT_CONV_UC
Single Code Page:	recommended
MDMP:	recommended

Perform the statistics update on database level. You can expect a runtime of at least several minutes. Run report UMG_SHOW_UCTABS to display DDNTT_CONV_UC.

b. Database statistics update for other tables:

Program:	transaction DB20
Tables:	UMGCCTL; UMGPMIG; UMGPMDIC; UMGSTAT
Single Code Page:	not required
MDMP:	recommended

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

7. Make sure that tables DDXTT, DDXTF, DDXTF_CONV_UC and DDXTT_CONV_UC are empty before starting the conversion.

Check tables in transaction SE11.

If you find DDIC objects in tables DDXTF and DDXTT, activate each object. Afterwards the tables should be empty. Then rerun RADUCNT (**with variant UNICODE-02**) for these objects.

If you find entries in tables DDXTF_CONV_UC and DDXTT_CONV_UC, delete all entries on database level.

8. Maintain the following tables right before the database export is done (not during system uptime!):

Tables:	see SAP Note 679456 -> Attachment "ReducingDataVolume.htm"
To Do:	Tables marked with '*system downtime' must be maintained according to the assigned SAP Note.
Single Code Page:	required
MDMP:	required

9. Convert the translation workbench data (Proposal Pool):

If you use the Translation Workbench, make sure you have already converted the Proposal Pool as described in chapter [Requirements](#), section [Translation Environment Requirements](#).

Now you must export the Proposal Pool(s).

Note:

Although the system is on SAP_BASIS 6.40 it might contain translations that have been made in SAP_BASIS 6.20. With SAP_BASIS 6.20 SP 25 the format of the SAP translation environment has been changed; so translations which have been made ≤ SP 24 must be exported and imported using special reports.

Go to transaction SE11 and check if there are entries in table TRMTRA.

Check	Conclusion	Action
Entries in table TRMTRA	There are translations in the system which have been done before the import of SAP_BASIS 6.20 SP 25 and which have not been converted correctly after the import of SAP_BASIS 6.20 SP 25 :	Go to transaction SE38. Run report RS_TRANSLATION_EXPORT_OLD_PP for all source – target language combinations in your system.
No entries in table TRMTRA	There are only translations which have been done after the import of SAP_BASIS 6.20 SP 25 or in SAP_BASIS 6.40.	Go to transaction SE38. Run report RS_TRANSLATION_EXPORT_PP for all source – target language combinations in your system.

3.2 Database Export and Import

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 Web Application Server ABAP 6.40 or 6.40 SR1"

Section: **R3load Procedures on <OPERATING SYSTEM>**"

Read section [Kernel Requirements](#) at the beginning of the Unicode Conversion Guide.

**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!

3.2.1. Database Export

1. Perform the necessary preparation steps before starting SAPinst.
2. Read the document “Unicode Conversion: Tips and Tricks for Improving the Conversion Time”.
3. Perform the database export in the non-Unicode system (source system) as described in the relevant section of the *System Copy Guide: Running SAPinst to Export the Database*.
4. When running SAPinst to export the database and SAPinst prompts for *General Export Parameters* → *Data file code page* make sure the code page of the target system depending on the byte order of its CPU is entered (see SAP Note [552464](#)):
 - If the target platform (e.g. Linux, OSF1, NT) uses a little endian CPU (e.g. Alpha or Intel CPU), enter **4103**.
 - If the target platform (e.g. HP-UX, AIX, SunOS, OS/390) uses a big endian CPU (e.g. Sun SuperSPARC), enter **4102**.



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 <i>Database System Common Parameters</i> → <i>General Settings</i> → <i>Database character set</i> make sure the character set of the source database is entered (e.g. UTF-8, WE8DEC or US7ASCII).	See <i>System Copy Guide</i> , chapter <i>Oracle-Specific Procedure</i>
All Servers	During the export of the source system R3load writes log and XML files into the installation directory of the source system.	R3load writes two logs: SAP*.xml (=R3load Log; MDMP conversion only)

	<p>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 SAPAPPL2001.xml.</p> <p>Note: Keep these files separate from files with the same names generated during the import.</p> <p>Remember the location of these files. Enter this location during Unicode Conversion Completion processing, chapter 4.1 First Steps, section 10. Generate text file, e.g. "file_info.txt".</p>	SAP*log (Single Code Page and MDMP conversions)
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3.2.1.1. 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 <i>Codepage Recognition</i> is not empty and also check the fields <i>Lang. Fld.</i> and <i>Lang. Pos.</i>
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).

		<p>Error during Import: R3load performs a data conversion and cannot read the nametab. It could be one of the following conversion types:</p> <p>a) The conversion from a non-Unicode to a Unicode code page was performed.</p> <p>b) The endiannes has changed (4102 <-> 4103).</p>	<p>a) The conversion to Unicode should always be performed during the Export, please repeat according to chapter Database Export.</p> <p>b) Make sure that the R3load package containing the nametab information is imported first.</p>
Error	<p>Error from: Codepage handling (RSCP)</p> <p>code: 32 RSCPETOOLONG The data was longer than the buffer.</p> <p>langMBCPMap: no c.p. assigned</p> <p>module: rscpmi no: 15 line: 2060 T100: TS006 TSL01: F44</p>	<p>R3load tried to find a pool table which does not exist in the ABAP Dictionary.</p> <p>This error occurs when the Consistency Check shows error message type 8 "Illegal pool table values" and report UMG_CHECK_POOL has not been run.</p>	<p>Run report UMG_CHECK_POOL.</p>
Error	<p>(EXP) ERROR: <object name> missing in DDNTT_CONV_UC</p>	<p>R3load could not find the Unicode nametab for object <object name></p>	<p>Repeat RADUCNT for this object. Check the RADUCNT log file and make sure that the missing nametab could be generated.</p>
Warning	<p>rscpMCConvertM: RscpGuessCodepage -> 12: 'The word does not exist in the dictionary' <table_name></p>	<p>R3load found a non 7-bit ASCII word in table <table_name> that does not exist in the Vocabulary for table <table_name>.</p>	<p>Update the worklist and execute step 3 for table <table_name> (see section Update Worklist).</p>
		<p>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.</p>	<p>Maintain the data after the import in SUMG (Manual Repair).</p>
Warning	<p>rscpMCConvertM: RscpGuessCodepage -> 10: 'Some words in the</p>	<p>R3load found a string whose words were assigned languages of different code pages in the Vocabulary. This</p>	<p>Resolve the Collision as described in chapter Resolving Collisions.</p>

	string have different codepages.'	is a Conversion Collision.	
Warning	rscpMCConvertM: RscpGuessCodepage -> 11: 'The word in the dictionary has no language' <word> <table_name>	R3load found a word which has not been assigned a language in the Vocabulary.	Update the worklist and execute step 6 for table <table_name> (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

3.2.2. 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](#).

3.2.3. 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	SAP Service Marketplace: service.sap.com/unicode . SAP Note 790099 .

	additional RAM.	
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	
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	<ol style="list-style-type: none"> 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%. If the file DBSIZE.XML also contains the 'old' tablespaces PSAPBTAB{D,I}, PSAPSOURCE{D,I} etc., increase the size of tablespace 	<p>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.</p> <p>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.</p> <p>See SAP Note 425079 for details.</p> <p>Example:</p>

	PSAP*<RELEASE>{D,l} by 100% and the size of all other tablespaces (excluding PSAPROLL and PSAPTEMP) by 50%.	<p>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.</p> <p>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.</p>
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.	

4. 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.

Requirements:	SAP_BASIS 6.40 Support Package 12
Programs:	report UMG_POOL_TABLE; report RSCPINST; report UMG_SCAN_STATISTIC; transaction SUMG, R/3 parameters in SAP Note 790099
Tables:	TCPDB; DDTPOOLCNV

Documentation:	this document; SAP Note 790099 ; System Copy Guide "Homogeneous and Heterogeneous System Copy for SAP Systems Based on SAP Web Application Server ABAP 6.40 or 6.40 SR1". Section: Final Activities You can download the <i>System Copy Guide</i> from www.service.sap.com/instguides → <i>SAP NetWeaver</i> → <i>Release 04</i> → <i>Installation</i> → <i>SAP Web AS</i> .
Single Code Page:	required
MDMP:	required

Important SAP Notes

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

4.1 First Steps

1. Perform the last activities 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, which are listed in the following chapter.

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.

Call SE38 → 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 [RUTTTYFACT](#).

1. Call SE38 → enter report RUTTTYFACT.
2. Modify the logname in the entrance screen if desired.
3. Execute the report in the background.

4. Run [RSCPINST](#) to empty table TCPDB:

Read SAP Note [42305](#) and follow the instructions.

5. 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. 4.2.3](#))!

6. 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.

7. BW system conversion only:

In case of problems during data load refer to SAP Note [518426](#).

8. CRM Server Unicode conversion only:

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

9. Import the Proposal Pool for the translation workbench.

If you use the Translation Workbench, you have converted the Proposal Pool as described in chapter [Requirements](#), section [Translation Environment Requirements](#). You have checked if there were entries in table TRMTRA and exported the Proposal Pool(s) accordingly as described in chap. [Additional Preparation Steps](#).

Now you must import the Proposal Pool(s) the same way:

Conclusion	Action
There were translations in the system which have been done before the import of SAP_BASIS 6.20 SP 25 and which have not been converted correctly after the import of SAP_BASIS 6.20 SP 25:	Go to transaction SE38. Run report RS_TRANSLATION_IMPORT_OLDD_PP for all source – target language combinations in your system.
There were only translations which have been done after the import of SAP_BASIS 6.20 SP 25 or in SAP_BASIS 6.40.	Go to transaction SE38. Run report RS_TRANSLATION_IMPORT_PP for all source – target language combinations in your system.

10. Adapt SAP system profile parameters.

Adapt R/3 parameter settings according to SAP Note [790099](#).

If you have problems with generated objects, which are not Unicode-enabled (do not have the Unicode flag), read SAP Notes [652129](#) and [321714](#).

11. Generate text file, e.g. 'file_info.txt'.

During the export of the source system R3load writes log and xml files (xml files in MDMP Systems only) 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](#)).

This file 'file_info.txt' should contain all names and complete paths of the SAP*.xml files and SAP*.log files (Export and Import).

- It is required for the Conversion Completion Process (MDMP only).
- It can be used for report UMG_SCAN_STATISTICS (see section 11.).



UNIX:

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



Windows:

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

12. Run report UMG_SCAN_STATISTICS.

Call SE38 → enter report UMG_SCAN_STATISTICS.

Run UMG_SCAN_STATISTICS specifying the 'file_info.txt' file (see section 10.).

For enhancement investigation, SAP kindly requests customers with Single Code Page systems and with MDMP systems to send the resulting XML-file UMG_STATS_<SID>.xml to internationalization@sap.com.

13. 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 SAPFTP, SAPFTPA, SAPHTTP, SAPHTTTPA 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.

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 an OSS message on component BC-CTS-TMS and refer explicitly to SAP Note 935239.

14. SAP_HR Japan

If you use Japanese SAP_HR functionality in the Unicode system, you may find corrupt Japanese texts in some customizing tables. These texts must be restored manually as described in the SAP Notes [821326](#) and [821408](#).

4.1.1 Single Code Page Conversion finished

Your Single Code Page conversion is finished. The Conversion Completion Procedure described in chapter 4.2. is only required for an MDMP conversion to Unicode!

4.2 Conversion Completion (MDMP only)

Transaction SUMG

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

Requirements:	SAP_BASIS 6.40 SP 10
Programs:	transaction SUMG
File:	file_info.txt
Documentation:	this document; SAP Note 896307
Single Code Page:	not required.
MDMP:	required.



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 SAP Note [896307](#)
4. Apply SAP Note 896307 if required

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

1. **Reasons detectable by R3load (missing or inconsistent input during the Unicode Preconversion)**
 - Vocabulary:
 - Entries in the Vocabulary have not been assigned a language.
 - 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:
 - R3load could not determine the code page during the export. An error log (R3load Log) is written. Wrong data can be repaired using the log written during the SPUMG scan *Reprocess* ( *Reprocess Log*). See section [Scan 5: 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 repaired 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.

4.2.1 Completion Categories

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

Category 1:	Transparent tables, cluster tables, pooled tables	See Automatical completion!
Category 5:	Transparent tables, cluster tables, pooled tables	See 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	display only!
Category 3:	Report Sources	display only!

There might be entries in the R3load Log which are classified as Category 2 (dynpro source) or Category 3 (report source). 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 SPUMG:

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 → 



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!

IMIG Log provides all tables which are processed by IMIG.

Category 1: Transparent tables, cluster tables, pooled tables

IMIG Log: Select table → 

For each original table, which needs to be maintained, a corresponding table is generated by IMIG. This table contains name, key fields, code page, non 7-bit ASCII keys, table-specific Fallback Code Page and timestamp of the original table. SUMG reads the table according to the corresponding table name.

Tables which were processed by IMIG can be repaired manually in SUMG (see section [4.2.3.2 Manual Repair](#)).

Manually entered tables in SUMG:

Category 5: transparent tables, cluster tables, pooled tables

Category 6: INDX-type tables

Display problems with INDX-type tables: use SAP_BASIS 6.40 kernel patch level 42.

4.2.2 Completion Types in SUMG

SUMG provides two major completion types:

4.2.2.1 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 created and maintained in SPUMG).

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

4.2.2.2 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 each or several tables) or
- 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 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. Tables which were processed by IMIG.

Solution: Use pushbutton *Add IMIG List* to load the IMIG log. Now you can create Repair Hints or repair the table entries manually.

4. 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. [Language Lists](#)) are available for the manual language assignment.

4.2.3 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.

Choose transaction SUMG.

4.2.3.1 Automatical Completion

1. In the menu bar go to *Edit* → *Load R3load log file*.
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 are uploading the files for the first time or if you have done *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.



If you prefer to upload the R3load log with an immediate-execution batch job, go to *Extras* → *Load log and Init Worklist in Background*. Then select  to display the SUMG Worklist.



Loading R3load log is cancelled or only part of the R3load log is loaded:

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 (SPUMG), 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.

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. [Manual Repair](#)).



Exclude tables from automatical completion:

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.

4.2.3.2 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 Category	Add to Manual Repair List
INDX-type tables	Category 6	<p>INDX-type tables are displayed in the SUMG Worklist only if there is no code page information available in SPUMG (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).</p> <p>If there is a code page information available for an INDX-type table, this table can be completely repaired in the INDX Log in SPUMG. Note: Afterwards it will not be available for repair in SUMG!</p> <p>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.</p> <p>To add INDX-type tables, press  and choose completion category 6.</p>
IMIG tables	Category 1	<p>If you have used the IMIG procedure, select <i>Add IMIG List</i> from the toolbar. You can now maintain tables which have been processed by IMIG like</p>

		category 1 tables.
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	<p>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'.</p> <p>Such tables cannot be processed by R3load because</p> <ul style="list-style-type: none"> • they have no entry in the Export Control Table or • they have a wrong language information in the Export Control Table. <p>Those tables are automatically added to the manual repair list.</p> <p>Check the table content in transaction SE11. If necessary, repair the tables in the manual repair list.</p>

The manual completion procedure provides two completion methods:

[Repair Hints](#)

valid for category 1 / 4 / 5 / 6

[Manual Repair](#)

valid for category 1 / 4 / 5 / 6

4.2.3.2.1 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. [SPUMG settings](#)). As a result, some text 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:	<p>Conditions in Repair Hints are table independent.</p> <p>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!</p> <p>You can use a Condition in more than one Repair Hint.</p>
Table:	<p>A table containing data which have been converted wrongly and therefore needs to be converted again using another language (<i>correct language</i> field).</p> <p>Note that a Repair Hint can only apply to one single table.</p>
Current Language:	<p>In this field you need to enter the assumed language (i.e. the code page) according to which</p> <ol style="list-style-type: none"> the data have been already maintained in the Reprocess Log in the Unicode system, or the data have been converted during the export. <p>In the latter case, the current language input is optional.</p>
Correct Language:	<p>Language which shall be used to convert the data again. This list includes only languages which are stored as active languages in the SPUMG Language List.</p>

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 the 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 the Language 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 → code page 1100 → code page 8500 → 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.

5. 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. *Execute only never executed hints* is set by default to ensure that hints will not be executed twice.  SAP does not recommend to reexecute hints!
- b. *Effect only rows reported by log (R3load/IMIG/INDX log)*: Hints will only affect the rows whose keys are reported in the R3load, IMIG log or INDX 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*.

Upload/download Hints locally

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

Select pushbutton *Hint Management*.

 *Upload*: Read in existing Hint.

You can read in several files simultaneously.

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

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 chap. [Vocabulary Transfer](#) → section [Transfer procedure](#) → 2. [Transport](#).

4.2.3.2.2 Manual Repair

You want to maintain tables which cannot be processed by worker jobs and you do not want to use Repair Hints. Remember that this task should to be done by native language speakers.

To add tables select , enter the table name and choose the correct category as described in chapter [4.2.3.2 Manual Repair](#).

To add tables processed by IMIG press pushbutton *Add IMIG List*.

Background information

For each original problematic table, IMIG generates a corresponding table. This table contains the name and key fields of the original table, the used code page, non 7 bit ASCII keys, the table-specific Fallback Code Page and the timestamp. SUMG reads this table according to the corresponding table name.



For more information on the current status of the IMIG procedure, read chapter General Description, section [Database Conversion](#).

Select  to display more information about the table.

Select all tables you want to maintain and choose . The tables are now locked. Mark one table and select .

Condition

You can now use a Condition in order to select only certain table rows instead of the complete table. Enter the Condition ID and choose . For information on how to create and edit Conditions see section [Create and Execute Hints](#).

If you do not want to use a Condition, leave the input field empty and choose .

Now the table entries which need to be repaired are displayed. You can select one or more table entries and then assign the correct language to the selected entries.

- Tables with category 5: Choose  *Current lang.* to set the - wrong - language the entries have been converted with during R3load procedure. Then choose  *Convert to* to set the assumed correct language and converted the table entry. The changed table entries are displayed. You can undo changes by selecting .
- Tables with category 1: Choose  *Convert to* to set the assumed correct language and converted the table entry. The changed table entries are displayed. You can undo changes by selecting .
- Tables with category 4 and 6: Choose  *Set to* to set the correct language. The code page information is changed but the table entries are not yet converted (see [4.2.3.2 Manual Repair](#)).

Per default, all languages which have been added to the SPUMG Language List as 'active' languages are available. If a language is missing, select pushbutton *Switch language list*. Afterwards 'active' and 'inactive' languages are available. Refer to chapter [2.2.2 Language Lists](#) for information about the use of active and inactive languages.

Make sure that table entries have been maintained correctly, 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 [795871](#).

4.2.3.3 SUMG Main Log

You can access the main log by selecting *Go to* → *Main Log* from the menu bar.

4.2.4 Resetting SUMG Data

You can delete **all** SUMG data (SUMG worklist, Logs, 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.



After a reset of SUMG data you can recover the **non-Unicode** SPUMG language list for further repair. Select *Edit* → *Retrieve Lang List* from the menu.

5. List of Necessary 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
41300	Table DBTABPRT is very large
42305	RSCPINST (NLS installation tool)

48009	Tables ACCTHD, ACCTIT, ACCTCR: Questions and Answers
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
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
881048	F4-Hilfe: Unicodekonvertierung für Tabelle DDSHPVAL50
508854	SAPGUI: How to use Unicode
511732	Removed code pages in 6.10
513536	Add. Information on upgrade to SAP R/3 Enterprise Core 4.70
517085	Resource Requirements for R/3 Enterprise
518426	ODS-object, SYSTEMCOPY, migration
537145	ODS Object – DUMP when activating or loading data
540911	Unicode-caused release restrictions for SAP R/3 Enterprise
543715	Pilot Projects for Migrations and System Copies
548016	Conversion to Unicode / Unicode System Copy
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
588480	Release Restrictions for SAP BW Unicode

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
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.
661640	Additional info on upgrading to Web AS 6.40
671730	Tables with obsolete SAP entries in R/3 Enterprise
672339	Transactions with \$ characters not Unicode-capable
672835	Textflags could cause problems during Unicode Conversion
673898	OT: 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 KNA1
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
693168	Pilot Projects for Incremental Migration
695196	Error in the export for Unicode migration
701031	ALE: Fehler bei der ALE-Customizing Verteilung im Unicode System
710720	SAP GUI for Windows 6.40: Delivery and new functions
713685	Hom./Het. System Copy SAP SAP_BASIS 6.40
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
756534	Automatic Assignment of Languages with Character Statistics
756535	Special SAP vocabulary for maintaining the SPUMG vocabulary
765475	Unicode Conversion: Troubleshooting
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
821326	Residence Tax Payment Medium: Texts in cust tables destroyed
821408	Pay Scale Type/Area texts in Japanese is destroyed
837173	RADCUCNT in Unicode Conversion: Collective Note
842788	DB Multiconnect: Unicode Migration
857081	Unicode conversion: downtime estimate
871541	Frequently used text patterns
896307	SUMG repair data error correction

6. Appendix

Word

→ [back](#)

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.

Vocabulary

→ [back](#)

The Vocabulary contains a list of words with at least one non 7-bit ASCII character.

Word	Language	Collision	Filled by	Name	Current Date	Time
Pümper	EN		2	USERNAME	2003.07.14	11:39:25
Grün	BG		V	USERNAME	2003.07.14	11:50:48

6.1. Reports/Programs

Name of report/program	When/where to be run?	Reasons/results	Status
------------------------	-----------------------	-----------------	--------

RADCUCNT	<p>Unicode Preconversion Phase</p> <p>Additional Preparation Steps (system uptime)</p> <p><i>non-Unicode System</i></p>	<p>You must delete entries from the Unicode nametab tables DDNTF_CONV_UC and DDNTT_CONV_UC and then run RADCUCNT to generate the Unicode nametab tables.</p>	<p>mandatory</p> <p>→ back</p>
RADNTLANG	<p>Unicode Preconversion Phase</p> <p>Table Maintenance (system uptime)</p> <p><i>non-Unicode System</i></p>	<p>This report sets the Text Lang. flag for tables with one LANG/SPRAS field.</p> <p>Note:</p> <p>In SAP_BASIS 6.40 systems this report must be used to set the Text Lang. Flag for customer objects only!</p> <p>It should be (re)run directly before the conversion process in case transports into a system have caused the Text Lang. flag value to be overwritten.</p>	<p>mandatory</p> <p>→ back</p>
RSCPINST	<p>Unicode Conversion Completion Phase</p>	<p>1. Use this report to empty table TCPDB. Follow the instructions in SAP Note 42305.</p> <p>2. You can use this report to install further languages in your system (Unicode and non-Unicode).</p>	<p>1. mandatory</p> <p>→ back</p> <p>2. additional information</p>
RSCP0126	<p>Unicode Preconversion Phase</p> <p>Upgrade to NW AS 2004</p> <p><i>non-Unicode System</i></p>	<p>This report must be used to convert customer code pages beginning with "9xxx". It copies old code pages from tables TCP02, TCP03 and TCP07 into tables TSCPSEG, TCPSBUILD, TCPSPTS and TCPSPTL.</p>	<p>mandatory</p> <p>→ back</p>
RS_FILL_TRDIR_RLOAD	<p>Unicode Preconversion Phase</p> <p>Pre-Conversion Correction of Table Data</p> <p><i>non-Unicode</i></p>	<p>Pre-Conversion correction of table data:</p> <p>This report fills REPOSRC-RLOAD.</p>	<p>mandatory</p> <p>→ back</p>

	<i>System</i>		
RSREFILL	<p>Unicode Preconversion Phase</p> <p>Upgrade to NW AS 2004</p> <p><i>non-Unicode System</i></p>	<p>Compares the Customizing texts in the logon client with the SAP proposals in a reference language in client 000. If these texts are identical, their translations in the target language are copied from client 000 to the logon client. Data is inserted only; no existing data is overwritten.</p>	<p>Recommended</p> <p>→back</p>
RSSPAM17	<p>Unicode Preconversion Phase</p> <p>Pre-Conversion Correction of Table Data</p> <p><i>non-Unicode System</i></p>	<p>Pre-Conversion correction of table data:</p> <p>This report deletes all data from table OCSCMPLOBJ.</p>	<p>mandatory</p> <p>→back</p>
RUTTYPACT	<p>Unicode Conversion Completion Phase</p> <p>First Steps</p> <p><i>Unicode System</i></p>	<p>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.</p>	<p>mandatory</p> <p>→back</p>
TWTOOL01	<p>Unicode Conversion Phase</p> <p>Additional Preparation Steps</p> <p><i>non-Unicode System</i></p>	<p>This report will find all active pool-matchcode IDs. These matchcode IDs are not supported by Unicode SAP systems. Read SAP Note 24860 for more information about the conversion of these objects.</p> <p>Note:</p> <p>Do not start the export before all matchcode IDs have been deleted! Run this report until message "Check successful, no action necessary" is shown!</p>	<p>mandatory</p> <p>→back</p>
UMG_CHECK_CLUSTER	<p>Unicode Preconversion Phase</p>	<p>Error message: "Illegal initial values" → run report UMG_CHECK_CLUSTER</p>	<p>mandatory</p> <p>→back</p>

	<i>Non-Unicode System</i> SPUMG Menu → Extras → Cluster Information	for each table. This report checks if a table cluster contains data with outdated timestamps (field TIMESTMP).	
UMG_CHECK_POOL	Unicode Preconversion Phase <i>non-Unicode System</i> Consistency Check SPUMG Menu → Extras → Pool Information	Error message: "Illegal pool table values" → run report UMG_CHECK_POOL. This report checks if all data of the pool tables are saved in the table pool and in the dictionary.	mandatory → back
UMG_HISTORY	Unicode Conversion Completion Phase First Steps <i>Unicode System</i>	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 SPUMG data. Go to transaction SPUMG → <i>Scanner</i> → <i>Reset All Scans</i> . → back
UMG_POOL_TABLE	Unicode Conversion Completion Phase First Steps <i>Unicode System</i>	Table pools which have been entered in UMGPOCNV during the Consistency Check are copied to table DDTPOOLCNV. Then report RADPOCNV enlarges the VARDATA fields of the table pools.	Read SAP Note 813445! → back
UMG_R3CHECK_FIL	Unicode	This report creates control	Recommended

ES	Preconversion Phase Consistency Check for Cluster Tables	files for the consistency check for cluster tables (program R3check).	→ back
UMG_SCAN_STATISTICS	Unicode Conversion Completion Phase First Steps <i>Unicode System</i>	This report collects and analyzes SPUMG statistics, e.g. database size, number of Vocabulary entries, R3load runtime, Log size.	recommended → back
UMG_TABLE_INFORMATION	Unicode Preconversion Phase	This report displays information about one or a set of table(s): scan/vocabulary information and entries in the Export Control Table.	recommended → back
UMG_VOCABULARY_STATISTIC	Unicode Preconversion Phase Tables with Ambiguous Language Information <i>non-Unicode System</i>	This report displays information on 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 <i>showvoc</i> displays the words without language assignment.	recommended → back

6.2. 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
IMIG Log	Generated by the IMIG processing, in format of internal tables
Manually added tables	Can be added by the user on tabstrip <i>Manual Repair</i> : <ul style="list-style-type: none"> a. transparent tables, cluster tables, pooled tables b. INDX-type tables

6.3 Unicode Conversion Project Overview – Example

In principle there are many different ways how to convert a system landscape to Unicode. In the following an example is shown which can be used as starting point for setting up a final conversion plan adjusted to different specific customer situations.

The example deals with an MDMP → Unicode conversion, but the main steps would be the same for a Single Code Page → Unicode conversion.

1. Preparation (2 weeks + time to apply newest support packages)

Determine target configuration		
	Language Requirements	
	Check Unicode Availability of required component in the target release	
	Determine hardware requirements for:	<ul style="list-style-type: none"> ■ Target Unicode systems (sandbox (SB1/2), DEV, QAS, PRD)
		<ul style="list-style-type: none"> ■ Additional systems for conversion tests
		<ul style="list-style-type: none"> ■ Keeping non-Unicode systems (one by one) until target systems are stable and no errors have to be tracked any more
		<ul style="list-style-type: none"> ■ Available hardware for the distribution monitor
Create Inventory		
	Current release, support package	
	Current hardware	
	Current database, operating system	
	Current system landscape	
	3 rd party software and tools	
	C/C++ RFC clients	
	Full list of interfaces	
	Self-developed ABAP, user exits, modifications etc.	
	Existing test plans/scripts, top transactions etc.	
Collect required documentation		
	Unicode Conversion Guide and referred SAP Notes	
	Homogeneous and Heterogeneous	

	System Copy Guide and referred SAP Notes	
	SAP Note 548016 and related SAP Notes	
Determine available manpower		
	Database administrator	
	System administrator	
	Developer ABAP/C/C++	
	Person responsible for data cleanup and archiving	
	One native speaker per language for language assignment in vocabulary	
	Persons conducting test in Unicode system (ABAP programs, interfaces)	
Locate and get required software		
Apply required (recommended: newest) support packages to systems		

2. Blueprint (1Week)

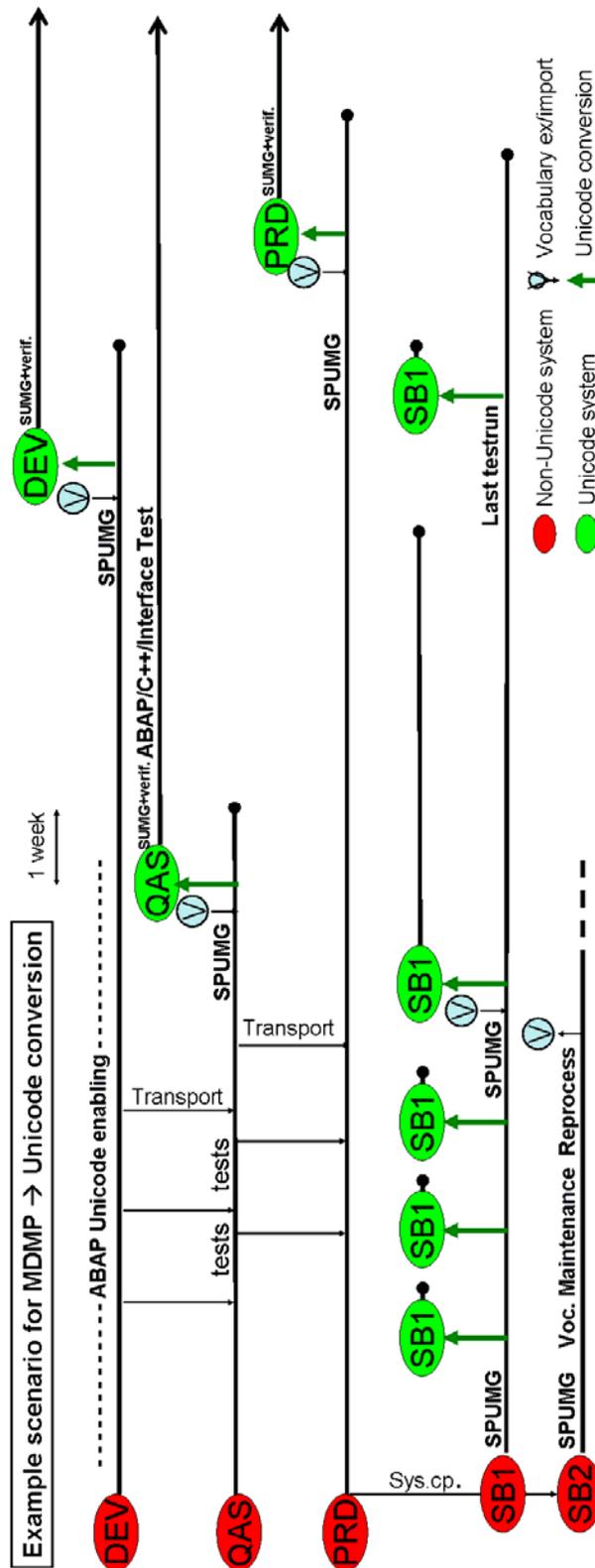
Create detailed execution plan

3. Realization

Start data clean up and archiving (2 Weeks)		
DEV (Development System):		
1.	Start ABAP Unicode enabling (4 to 8 Weeks including tests in the QAS)	
2.	Do tests in the non-Unicode QAS before forwarding to PRD	
3.	Do final tests in the Unicode converted QAS system (4 weeks)	
4.	Run SPUMG Scans (1 week)	
5.	Feed system with vocabulary and reprocess information from SB2	
6.	Finish vocabulary maintenance (2 days)	
7.	Convert the system (2 days)	
8.	Post conversion steps (SUMG, others) 1 day	

9.	Verify result (1 week)	
10.	Drop old system	
SB1 (Sandbox System 1):		
1.	Create SB1 by copying the productive system (2 days)	
2.	Run SPUMG scans (1-2 weeks)	
3.	Start exercising System Copy (6 weeks):	■ Use Migration Monitor
		■ Use Distributino Monitor
		■ Check database tuning possibilities with Database administration Unicode
4.	Repeat until downtime requirements are met	
5.	In the meantime feed system with vocabulary and reprocess information from SB 2	
6.	Use for as many test runs as you need to feel comfortable with the procedure	
7.	Use SB1 for your first complete system conversion including the vocabulary information from SB1	
8.	Perform last test run before conversion of the productive system	
SB2 (Sandbox System 2):		
1.	Create SB2 by copying the productive system (2 days)	
2.	Run SPUMG scans (1-2 weeks)	
3.	Maintain vocabulary, create and use hints for maintaining the vocabulary (4 weeks)	
4.	Run reprocess, maintain reprocess (1 week)	
5.	Save vocabulary, hints and reprocess log for reuse in other systems	
QAS (Test and Quality Assurance System)		
1.	Run test of Unicode-enabled ABAP programs in the non-UC QAS	

2.	Run SPUMG scans (1-2 weeks)	
3.	In the meantime feed system with vocabulary and reprocess information from SB2	
4.	Finish vocabulary maintenance (1 day)	
5.	Convert the system (1-2 days)	Post-Conversion steps included
6.	Post-Conversion Steps (SUMG; others) (1 day)	
7.	Verify result (1 week)	
8.	Drop old system	
9.	Use the Unicode QAS for ABAP and interface tests. (Transports from DEV to the Unicode QAS are still possible and necessary for program corrections)	
PRD (Productive System)		
1.	Run SPUMG scans (1-2 weeks)	
2.	In the meantime feed system with vocabulary and reprocess information from SB2	
3.	Finish vocabulary maintenance (1 day)	
4.	Convert the system (1-2 days)	Post-Conversion Steps included
5.	Post-Conversion Steps (SUMG; others) (1 day)	
6.	Verify result (1 week)	
7.	Keep the old system as long as you have Unicode conversion related open OSS messages! If system verification is OK, you can drop the old system.	



7. Conversion Process – Checklist

Purpose

Use the tables below as a checklist for preparing and executing the system conversion and to navigate through the conversion procedures.

SAP Notes

For some steps additional information (described in the SAP Notes) is required. If you cannot open the hyperlinks, open a browser window first and then click on the link again.

Application-specific Restrictions

✓	Action
	General restrictions: See SAP Note 548016
	HKSCS system conversion: Consider details described in SAP Note 726954
	SAP BW 3.5 system conversion: Consider details described in SAP Note 543715
	SAP HR 4.70: Consider details described in SAP Note 573044
	SAP Office functionality: Consider details described in SAP Note 691407 and 690074

Upgrade to Basis 6.40 Non-Unicode

✓	Action
	Perform Upgrade
	Migrate Customer Code Pages (report RSCP0126)
	Use report RSREFILL to copy the most recent translation of customizing texts from client 000 to productive client
	Check customer and modified SAP Programs (transaction UCCHECK)
	Modify programs if needed
	Test modified programs. Monitor testing with the Coverage Analyzer (transaction SCOV)

Table Maintenance

✓	Action
	Delete obsolete data from tables ADRP with field PERS_GROUP and OCSCMPLOBJ (report RSSPAM17)
	Run report RS_FILL_TRDIR_RLOAD (SAP Note 684332)
	Run report RADNTLANG to set the <i>Text Lang.</i> flags for customer objects

	Turn off <i>Text Lang.</i> flag where needed
--	--

Database Check (SPUMG)

✓	Action
	Initialize/Edit Language Lists
	Edit Ambiguous Language List if needed
	Maintain SPUMG settings (MDMP)
	SPUMG settings: Set flag <i>Scan of INDX-type tables</i> if needed
	Initialize Worklist
	Run scan <i>Consistency Check</i>
	Fix problematic tables/move tables to Exception List Manually assign a code page when possible

Create Vocabulary (SPUMG)

✓	Action
	Run scan <i>Tables without Language Information</i>
	Run scan <i>Tables with Ambiguous Language Information</i> if active
	Run scan <i>INDX Table Analysis</i> if active

Maintain Vocabulary (SPUMG)

✓	Action
	Run scan <i>Tables with Language Information</i>
	Create and Execute Vocabulary Hints
	Manually assign a language to remaining words
	Run scan <i>INDX Table Repair</i>

Database Check: Final Steps (SPUMG)

✓	Action
	Run scan <i>Reprocess</i>
	Examine repair log files in <i>Reprocess Repair Log</i> and <i>INDX Repair Log</i>
	Assign language to entries in repair log files

Non-Unicode System: Additional Preparation Steps

✓	Action
	Update Worklist
	Update Log
	Delete entries from the Unicode nametab tables DDNTF_CONV_UC and DDNTT_CONV_UC on database level
	Log on to your source system
	Run report TWTOOL01
	Run report RADCUCNT (SAP Note 837173)
	Update database statistics
	Make sure that tables DDXTT, DDXTF, DDXTF_CONV_UC and DDXTT_CONV_UC are empty!
	Convert Proposal Pool if you use Translation Workbench Data

Database Export, Conversion and Import

✓	Action
	Perform Database Export
	Copy R3load log- and XML-files to new Unicode server
	Perform data file transfer to target host
	Adapt the tablespace sizes before the database import by editing the file DBSIZE.XML.
	Install target (Unicode) system

Unicode System: Conversion Completion Phase

✓	Action
	Run UMG_HISTORY
	Run report UMG_POOL_TABLE (SAP Note 813445)
	Run report RUTTTYPACT
	Run report RSCPINST to empty table TCPDB
	Import Proposal Pool if you use Translation Workbench Data
	Adapt Parameters according to SAP Note 790099
	Generate text file which contains the names and paths of the R3load log- and XML-files
	Run report UMG_SCAN_STATISTICS

	<p>Please send an e-mail which contains the following information to internationalization@sap.com:</p> <ul style="list-style-type: none">• the XML-file UMG_STATS_<SID>.xml which results from UMG_SCAN_STATISTICS• database size before and after the conversion• export and import runtimes
	Perform automatical completion in SUMG worklist
	Perform manual completion in SUMG

8. Troubleshooting

For problems and errors during Single Code Page and MDMP system conversion please refer to SAP Note [765475](#).

If you don't find a solution in this Note, please create an OSS message and assign it to component BC-I18-UNI.