Infor Enterprise Server Technical Guide for Unicode Conversion

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Contents

About this guide

This document describes the conversion process of an existing LN database with a single-byte, multibyte or Unicode locale into a new Unicode locale.

Intended audience

This document is intended for System Administrators. Profound knowledge is required of:

- Infor LN
- Database administration

Basic knowledge is required of:

- ASCII (American Standard Code for Information Interchange).
- Locales
- Collations
- Unicode

Related documents

You can find the documents in the product documentation section of the Infor Xtreme Support portal, as described in "Contacting Infor".

- *Technical Reference Guide for Oracle Database Driver (U7076 US)*
- *Technical Reference Guide for Microsoft SQL Server Database Driver (U8173 US)*
- *Technical Reference Guide for DB2 Database Driver (U7829 US)*
- *Infor LN - Installation Guide (U9498)*
- *Infor LN - Performance, Tracing and Tuning Guide (U9357)*

Contacting Infor

If you have questions about Infor products, go to the Infor Xtreme Support portal at http://www.infor.com/inforxtreme.

If we update this document after the product release, we will post the new version on this Web site. We recommend that you check this Web site periodically for updated documentation.

If you have comments about Infor documentation, contact documentation@infor.com.

Introduction

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Unicode is the standard for Multi language support and provides a unique code for each character, regardless of language. With the new Unicode locale, the characters in the database match the characters displayed in the UI. To support all languages available for LN in a single environment, you must install LN in Unicode mode.

Consider a sizing advise by Infor. Incorrect values can negatively impact performance.

For system tuning recommendations, see *Infor LN - Performance, Tracing and Tuning Guide (U9357)*.

Prerequisites

- Infor Enterprise Server 10.3. Install the latest weekly solution for package tt. For more information about the weekly tools solution see solution **1410283**.
- Minimal porting set version 8.9a03
- A Unicode enabled RDBMS. For more information about supported databases by Infor see the platform support matrix in solution **1183466**.
- The supported installation locales for high ASCII are:
  - ISO88591 : Latin-1 - Western European
  - ISO88592 : Latin-2 - Eastern European
  - ISO88595 : Latin/Cyrillic
  - ISO88596 : Latin/Arabic
  - ISO88597 : Latin/Greek
  - ISO99598 : Latin/Hebrew
  - ISO88599 : Latin-5 - Turkish
  - ISO8859B : Latin/Thai
  - ISO8859D : Latin-7 - Baltic Rim

Note: The locales are defined by Infor and are extensions on existing ISO locales.

LAST MINUTE SOLUTIONS

Solution	Description
22853405	Generic Unicode solution for Infor LN.
22923520	The latest porting sets for Infor LN

For more technical background information and guidelines related to the Microsoft SQL Server, Oracle or DB2 databases see *Infor LN - Installation Guide (U9498)* or for DB2 also "DB2 Universal Database and Unicode" on page 21

Migration Steps

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To run a correct migration, follow the migration steps. Depending on the number of companies and the amount of data, some migration steps can take a considerable amount of processing time.

Preparation

These preparations steps are generic for all conversions.

Caution:

Before starting the migration, it is highly recommended to backup your database and Infor LN.

All other users must log off and *no* other processes, except shared memory are active. Other active processes can lock the database and will obstruct the Unicode migration.

Run the preparation and actual migration steps by one and the same user. Log in with the user used with the initial installation. If this account no longer exists, use an account with super user rights. Ensure the user locale of the user matches the data that is most frequently used in the database.

The preparation steps:

1. Check the integrity of the BSE environment. Run session Check Tables (ttaad4232m000). Check the domain definition on the disk of the tables which cause errors and match them with the domain definition in the database.
2. Run the Binary Table Fields (ttaad2142m000) session to add raw columns. Ensure all records are set to active and create the runtime. Also run the Create Runtime Data Dictionary for Infor LN Server (ttadv5213m000) session and select the **Also Dump Data Definitions** check box.
3. Start the Validate Data Integrity (ttaad4233m000) session to check if high ASCII data is present in your tables.

   High ASCII characters are characters in 0x7f-0xff range. Single byte string fields cannot store Unicode characters, only ASCII. The high ASCII characters are ambiguous and must be known in the context of their locale. In a Unicode environment, storage of high ASCII characters is prohibited.

   Select one of these options:

   - **Check High ASCII**. This option checks if high ASCII characters are present in the data.

A log file containing a list of the specific tables is created in `$BSE/log/log.aad4233_<Package combination>_<company>`

Run this check when:

- Searching for data containing high ASCII characters.
- Migrating Unicode to Unicode. The log file indicates exactly which tables to migrate. For Unicode to Unicode you only need to export and import the tables listed in the log file.
- Migrating from single-byte/multibyte to Unicode and no tables with high ASCII characters must be migrated.

- **Check High ASCII by Locale**. Checks if there are high ASCII characters present in the data that is not present in the selected installation locale.

  Run this check when migrating single-byte/multibyte to Unicode and you want to migrate tables with high ASCII characters.

High ASCII characters that are discovered during the Validate Data Integrity check by locale must be removed or replaced with other characters, otherwise the conversion will fail.

Perform these actions:

- Run correction program Remove high ASCII characters (ttcor0008m000) when high ASCII characters occur in tools tables.

  A log file containing a list of the specific tables is created in `$BSE/log,log.cor0008`.

  > **Caution:** Do not run the correction program in case of a conversion from a Unicode environment to another Unicode locale.

- Manually replace high ASCII characters in application tables.

Continue with the next step when all character issues are solved.

4. When clicking **Save Defaults** can cause useless default values in case the maximum upper-range form a **To** field is saved. The maximum upper-range in the new installation locale can differ from the maximum upper-range in existing installation locale. The upper-range depends on the high ASCII tolerance session. We recommend either to remove all user defaults or to manually check them. To remove user defaults, use the Remove User Defaults (ttstpdeldeflt) session.
5. Run theValidate Data Integrity (ttaad4233m000) session again.

   After the session has completed you can start the migration.

Migration of single-byte/multibyte to Unicode

The entire migration process is logged in:

- `${BSE}/log/log.unicode`
- `${BSE}/log/log.unicode.stat`

Do not delete or remove these files during the migration process.

Note: In case of multiple application servers (AS/MAS), run the conversion sessions on the Master Application Server (MAS).

The Migration steps:

1 Stop shared memory to avoid old domain definitions reloading from shared memory.

Perform these tasks:

- Copy the original `$BSE/lib/srdd_tab6.2` file, and create an empty `$BSE/lib/srdd_tab6.2` file.
- Stop the job daemon and printer daemon (UNIX).
- Disable auditing. Auditing will block dropping tables during the import of the data from the sequential dumps. Copy the original `$BSE/lib/audit_cols` file, and create an empty `$BSE/lib/audit_cols` file.

2 Restart shared memory.

3 Log on to LN with the initial installation user (see "Preparation" on page 9. No other users and/or processes (except shared memory) must be active.

4 Start the Unicode Migration (ttcorunicode) session.

As stated in the message, no undo option for the migration process is available. Ensure all prerequisites are met, and all preparation steps are completed, see ""Prerequisites" on page 7".

During the migration process, the Unicode Migration (ttcorunicode) session is the main session. This session directly runs some of the migration steps and keeps track of the status of the entire process. After a successful completion of the process, you must start the Unicode Migration (ttcorunicode) session.

- To start the process, click **Start**.

  A question appears asking to confirm whether you want to migrate to Unicode.

- To start the process, click **Yes**.

  The first step the Unicode Migration (ttcorunicode) session performs is the update of the Unicode-related parameters.

  If the process successfully finishes, a message displays and indicates the next step to run.

- Click **OK**.

  The Create Sequential Dump of Table (ttaad4226m000) session starts. This session exports the data from the database tables to sequential files.

5 In case you are not using Workflow, clear the workflow options in Create Sequential Dump of Table (ttaad4226m000) session. Otherwise you can accept the default values when they are not mentioned in the next steps. For more online help on this session click **Help**.

a Select the maximum range for the **Company**, **Package**, and **Table** fields and click the **Files** tab.

b Specify a **Basic Name for Dump File(s)** and the **Name of the Error File**. For each company you select, a separate dump file is generated. The session automatically adds a company number extension to the **Basic Name for Dump File(s)**.

c To start the process, click **Create**. When the process finishes, check the content of the **Name of the Error File** for possible errors. Check log messages in either the EventViewer (Windows)

or log files in `$BSE/log` (UNIX). Before you continue with the next step, ensure you resolve any errors.

Note: do not drop table(s) after the dump.

d Click **Close** to close the Create Sequential Dump of Table (ttaad4226m000) session.

A message appears asking you whether all companies are exported.

6 Click **Yes** to automatically dump the program domains.

7 Click **Ok** to import the database for all companies with `bdbpost`.

The session dumps the program domains and updates these files:

- `${BSE}/lib/tss_mbstore6.2`
- `${BSE}/lib/defaults/all`

This process takes some time. Do not click **Cancel**. If the process successfully finishes, a message which indicates that you can continue with the import of the database for all companies is displayed.

8 Close Infor LN and stop shared memory.

9 Check and when necessary update the content of these files:

- `${BSE}/lib/tss_mbstore6.2`

  The format of the file is:

  ```
  UTF-T:<0>:<installation locale>
  ```

  The installation locale is the locale of the new Unicode environment. When migrating to a Unicode environment with high ASCII, the installation locale is one of the locales as specified in "Prerequisites" on page 7. When migrating to a Unicode environment without high ASCII, the installation locale is `ISO88591`.

- `$BSE/lib/defaults/all`

  The high ASCII settings of the Unicode migration are controlled by setting the `high_ascii_tolerance` and h`igh_ascii_tolerance_strict_mode` parameters.

  When migrating to a Unicode environment without high ASCII characters specify this setting:: `high_ascii_tolerance:0`

  Remove the high_ascii_tolerance+strict_mode parameter.

  When migrating to a Unicode environment with high ASCII characters set these settings:

  - `high_ascii_tolerance:1`
  - `high_ascii_tolerance_strict_mode:1`

- `$BSE/lib/defaults/db_resource`

  For oracle databases the `nls_sort` resource must be manually changed.

  For oracle version 12 databases add the value: `UCA0610_DUCET_S3_VN_BN_NY_EN_FN_HN_DN_MN`

  For oracle version 11 databases add the value `infor_generic_m`

When you add value `infor_generic_m` you must also install the Infor solution **22853480**. Install this solution during the Database specific configuration step.

Note: When you install solution **22853480**, you must run the steps mentioned in the attached document *Deployment of the Oracle database collation "INFOR_GENERIC_M*. Do not run this step: "Rebuild all Indexes having a text part".

10 Database specific configuration steps:

- **Oracle Database**

  Ensure the national character ALT16UTF16 is selected as NLS_NCHAR_CHARACTERSET.

  To check the correct value run this command: `SQL> select * from v$nls_parameters`

  For more information, see the *Infor LN - Installation Guide (U9498)* and the *Infor Enterprise Server - Technical Reference Guide for Oracle Database Driver (U7076)*.

- **Microsoft SQL Server**

  Change the collation of the database to 'Latin1_General_100_CS_AS_KS_WS'. For more information, see the *Infor LN - Installation Guide (U9498)* and the *Infor Enterprise Server - Technical Reference Guide for Microsoft SQL Server Database Driver (U8173)*

- **DB2 Universal Database**

  1 Save the properties and privileges of your existing database.

  2 Create a Unicode database with the correct Unicode collation. The used collation depends on the DB2 version. For information, see the *Infor Enterprise Server - Technical Reference Guide for DB2 Database Driver (U7829)* and "DB2 Universal Database and Unicode" on page 21.

  3 Adjust the properties and privileges of the newly created database according to the saved settings of the original database.

11 Import the database for all companies (ensure you set the BSE environment variable beforehand).

To import the data from the sequential files, run the command from the command line:

- **On UNIX**:

  ```
  bdbpost6.2 -m -k -n -o -f -I <exportdump> -G -E <errorlog>
  ```

- **On Windows**:

  ```
  bdbpost -m -k -n -o -f -I <exportdump> -G -E <errorlog>
  ```

For more information about the bdbpost parameters use the **bdbpost -U** command.

The `<exportdump>` file is a company specific file previously created. You must run the command separately for each company. The `<errorlog>` points freely to choose a new file name.

12 Restart shared memory and log on to Infor LN with the same user account as used at step 3.

13 Start the Unicode Migration (ttcorunicode) session.

- Click **Start**. A question appears, asking you to confirm whether you successfully completed the previous step.
- Click **Yes** when the database was imported correctly. The Create Runtime Data Dictionary for Tools process starts. When the process is completed, a message will inform you.

- A message appears informing you about rebuilding the data, indices and referential integrity.
- Click **OK** to start the Reorganize Tables (ttaad4225m000) session.

  Select the maximum range for the **Company**, **Package**, and **Table** fields.

  Select these Reference Integrity options:

  - Check Validity of Reference.
  - Repair Reference Counter.

  Do not select:

  - Data and Indices.
  - Repair Indices only.

- To start the process, click **Reorganize**.

  This process can take some time.

14 Close Infor LN and log on again.

15 Run the Unicode Migration (ttcorunicode) session. Click **Start**.

- A window is displayed asking you to confirm whether you successfully completed the previous step. Click **Yes**.
- You are asked to run `ttcoruni_l2u`. Click **Ok**.
- Run the conversion program. Click **Convert**.
- When the process has finished click **Ok** and **Close**.
- Start the Unicode Migration (ttcorunicode) session. Click **Start**. A window is displayed asking to confirm whether you successfully completed the previous step.
- Click **Yes** when you successfully completed the relevant processes.
- Click **OK** to end the Unicode migration.
- You must run the `ttcoruni_l2u` session for every package combination you want to migrate. Connect those package combinations to the user you just used during the migration process.

16 To check the domain constraints, we strongly recommend that you run Validate Data Integrity (ttaad4233m000) session.

Note: Clear both **Check High ASCII** check boxes.

17 Close Infor LN and stop Shared memory.

18 Ensure to restart all previously stopped processes, such as:

- Job daemon
- Printer daemon (UNIX)
- Shared Memory Manager (UNIX) or Shared Memory Service (Windows)

Move back the saved `$BSE/lib/srdd_tab6.2` and `$BSE/lib/audit_cols` files.

19 Restart Infor LN.

Migration Unicode to Unicode

Note: In case of multiple application servers (AS/MAS), you must run the conversion sessions on the Master Application Server (MAS).

The Migration steps:

1 Stop shared memory to avoid old domain definitions reloading from shared memory.

Perform these tasks:

- Copy the original `$BSE/lib/srdd_tab6.2` file, and create an empty `$BSE/lib/srdd_tab6.2` file.
- Stop the job daemon and printer daemon (UNIX).
- Disable auditing. Auditing will block dropping tables during the import of the data from the sequential dumps. Copy the original `$BSE/lib/audit_cols` file, and create an empty `$BSE/lib/audit_cols` file.

2 Restart shared memory.

3 Log on to LN with the initial installation user.

See "Preparation" on page 9. No other users and/or processes, except shared memory, must be active.

4 Start the Create Sequential Dump of Table (ttaad4226m000) session. This session exports the data from the database tables to sequential files.

In case you are not using Workflow, clear the workflow options in Create Sequential Dump of Table (ttaad4226m000) session. Otherwise you can accept the default values when they are not mentioned in the next steps. For more online help on this session click **Help**.

a Specify the **Company**, **Package**, and **Table** fields. Only export the tables containing the high ASCI data and click the **Files** tab.

b Specify a **Basic Name for Dump File(s)** and the **Name of the Error File**. For each company you select, a separate dump file is generated. The session automatically adds a company number extension to the **Basic Name for Dump File(s)**.

c To start the process, click **Create**. When the process finishes, check the content of the **Name of the Error File** for possible errors. Check log messages in either the EventViewer (Windows) or log files in `$BSE/log` (UNIX). Before you continue with the next step, ensure you resolve any errors.

5 Log off to close LN.

6 Check and when necessary update the content of these files:

- `${BSE}/lib/tss_mbstore6.2`

  The format of the file is:

  ```
  UTF-T:<0>:<installation locale>
  ```

  The installation locale is the locale of the new Unicode environment. When migrating to a Unicode environment with high ASCII, the installation locale is one of the locales specified in prerequisites.

When migrating to a Unicode environment without high ASCII, the installation locale is `ISO88591`.

- `$BSE/lib/defaults/all`

  The high ASCII settings of the Unicode migration are controlled by setting the `high_ascii_tolerance` and `high_ascii_tolerance_strict_mode` parameters.

  When migrating to a Unicode environment without high ASCII characters specify this setting: `high_ascii_tolerance:0`

  Remove the `high_ascii_tolerance+strict_mode` parameter.

  When migrating to a Unicode environment with high ASCII characters specify these settings:

  - `high_ascii_tolerance:1`
  - `high_ascii_tolerance_strict_mode:1`

- `$BSE/lib/defaults/db_resource`

  For oracle databases the `nls_sort` resource must be manually changed. For oracle version 12 databases add the value `UCA0610_DUCET_S3_VN_BN_NY_EN_FN_HN_DN_MN` For oracle version11 databases, add the value `infor_generic_m`.

  When you add value `infor_generic_m` you must also install the Infor solution **22853480**. Install the solution before importing the database.

7 Import the database for all companies (ensure you set the BSE environment variable beforehand).

To import the data from the sequential files, run the bdbpost command from the command line:

- **On UNIX**:

  ```
  bdbpost6.2 -m -k -n -o -f -I <exportdump> –G –E <errorlog>
  ```

- **On Windows**:

  ```
  bdbpost -m -k -n -o -f -I <exportdump> –G –E <errorlog>
  ```

For more information about the bdbpost parameters use the **bdbpost -U** command.

The **<**exportdump**>** file is a company specific file previously created. You must run the command separately for each company. The **<**errorlog**>** points freely to choose a new file name.

The **–m** option is required to bypass domain constraints. Some domain constraints in Unicode mode can be different. For example, some characters can have an uppercase variant, which did not exist in native mode. This issue will be solved in a later migration step.

8 Restart shared memory and log on to LN with the same user account as used at step 3.

- Start the Reorganize Tables (ttaad4225m000) session.

  Select the maximum range for the fields **Company**, **Package**

  Select the tables from the `$BSE/log/ttaad4233.<company_nr>` files, which are created during the Validate data process. For a Unicode to Unicode migration reorganizing all tables is not required.

  Select these Reference Integrity options:

  - Check Validity of Reference.
  - Repair Reference Counter.

Do not select:

- Data and Indices.
- Repair Indices only.

- To start the process, click **Reorganize**.
  This process can take some time.

9 Check the domain constraints, it is strongly recommended to run Validate Data Integrity (ttaad4233m000) session.

Note: Clear both **Check High ASCII** check boxes.

10 Close Infor LN and stop Shared memory.

11 Ensure to restart all previously stopped processes, such as:

- Job daemon
- Printer daemon (UNIX)
- Shared Memory Manager (UNIX) or Shared Memory Service (Windows),

Move back the saved `$BSE/lib/srdd_tab6.2` and `$BSE/lib/audit_cols` files.

12 Restart Infor LN.

Additional Tasks

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After you successfully complete the procedure described in "Introduction" on page 7 and "Migration Steps" on page 9, you must perform several additional tasks.

Correction program for Finance

Immediately after the migration steps, you must run a correction program called tfcorunicode. The correction program provides Unicode support for the ACP and GLD modules in LN SP1 Finance.

`tfcorunicode` is available in LN FP3 and later.

From FP7 onwards this correction program is called `tfgld0200m000`.

When to run the correction program

You must run this program after installation and only if you use data ranges with `ZZZZ` values (but this depends on the locale used before the migration was performed).

The correction program will change these tables:

- Dimension Ranges by Ledger Account:
  - Dimension Ranges by Ledger Account
- Elements by Ledger Mapping:
  - Elements by Ledger Mapping (tfgld470)
  - Elements by Ledger Mapping -Active (tfgld489)
- Elements by Dimension Mapping:
  - Elements by Dimension Mapping (tfgld472)
  - Elements by Dimension Mapping - Active (tfgld491)
- Dimension Ranges by Financial Statement:

  - Statement Ledger/Dimension Accounts (tffst121)
  - Statement Ledger/Dimension Accounts by Column (tffst122)
  - Alternate Financial Statement Account Groups (tffst130)
- Cross Validation Rule Elements:
  - Cross validation rules elements (tfgld052)
- Cross Validation Rule Elements by Ledger Account:
  - Cross validation rules elements by ledger account (tfgld054)

The correction program replaces the maximum value of a string in the tables mentioned before. It ensures that, when a full data range was used in a non-Unicode system, a full range is also defined in the Unicode system.

Starting the correction program

Complete these steps:

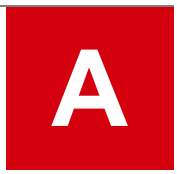
1. From the Run Program window, start the tfcorunicode /tfgld0200m000 session.
2. Select the financial company for which the session must be run.
3. Specify the **Old Character of Maximum Range Value**. For example, this is a `Z` for ISO-8859-1 locale, but can differ for other locales (in other words, the locale used before the Unicode migration was started).
4. Clear the **Update** check box, when the program must be run in test mode and no updates must be made. You can select the check box when you validate the test output and when the actual updates must be carried out.
5. Select the **Dimension Ranges by Ledger Account** check box. when the correction program must repair entries in the tfgld009 table,
6. Select the **Elements by Ledger Mapping** check box, when the correction program must repair entries in the tfgld470 and tfgld489 tables,
7. Select the **Elements by Dimension Mapping** check box when the correction program must repair entries in the tfgld472 and tfgld491 tables. By default, these check boxes are selected.

Jobs

Jobs created on a non-Unicode environment can have incorrect “From-To” values in the sessions defined for the job. On a Unicode environment, the maximum value for a “From-To” field is calculated in a different way from a single-byte/multibyte environment.

Therefore, if ranges are incorrect, recreating the jobs after the migration from single-byte/multibyte to Unicode can be required.

DB2 Universal Database and Unicode



Some background information is described on the LN DB2 Universal Database driver and guidelines to prepare a Unicode-enabled database in DB2.

For more detailed information, see *Technical Reference Guide for DB2 Database Driver (U7829 US)*.

Unicode in DB2

LN uses a GRAPHIC data type to store Unicode data in the DB2 database. DB2 requires the database to have a Unicode collation, otherwise errors occur such as SQL1216N. You cannot change a collation of an existing database or reuse the native database for Unicode data.

A new database must be created. After the migration to Unicode is completed, the native database cannot be used.

The database must be dropped after dumping all data with the Create Sequential Dump of Table (ttaad4226m000) session. For more information, see "Migration Steps" on page 9. Dropping the database is an irreversible change. Backup your data before dropping the database.

First, save all properties of the current database including database configuration and authorizations. Create a new database using same names for all table spaces. For detailed information on how to retrieve current DB2's DB configuration and retrieve all database properties, see the documentation of IBM.

Create a Unicode database with the correct Unicode collation. The used collation depends on the DB2 version:

- CLDR181_NX (DB2 version V10.1 or later)
- UCA500R1_NX (DB2 version V9.7 or later)
- UCA400_NO (DB2 version 9.5)

Creating a Unicode database

Caution: It is assumed that the same DB2 instance is used for all actions listed here.

Retrieve the required information. Additional commands can be required depending on your DB2 configuration and version.

To create a Unicode database:

- CREATE DATABASE <database> USING CODESET UTF-8 TERRITORY en_US COLLATE USING <collation> PAGESIZE 8K <user definable data, tempspace, catalog and file locations>.
- Create all table spaces. Use the identical names as before the migration.
- Update database configuration parameters using the earlier saved settings. For more information see *Infor LN - Performance, Tracing and Tuning Guide for DB2 Server (B0077)*
- Grant authorizations.
- Update db cfg using `LOCKTIMEOUT 15`

  update db cfg using `DLCHKTIME 60000`

The page size of the new database must be 8k or more, otherwise the row size of some LN tables might not fit into the database codepages. This will cause a DB2 error (SQL0670N).

Information about the syntax for the required commands to drop and create a database, see IBM's DB2 documentation.

After creation of the new Unicode database, you probably have to change configuration settings/parameters.

Import

The LN data which is dumped during the steps described in "Migration Steps" on page 9 is used to fill the new (currently empty) Unicode database. To import the data to the DB2 Unicode database, see "Migration Steps" on page 9.