Infor Enterprise Server Unicode Migration Guide

Release 10.7.x

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Contents

About this guide

This document describes the migration of an existing LN database within a single-byte, multibyte or (legacy) Unicode environment into the new Unicode standard.

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 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*
- *Infor LN - Performance, Tracing and Tuning Guide*

Contacting Infor

If you have questions about Infor products, go to Infor Concierge at https://concierge.infor.com/ and create a support incident.

The latest documentation is available from docs.infor.com or from the Infor Support Portal. To access documentation on the Infor Support Portal, select **Search > Browse Documentation**. We recommend that you check this portal periodically for updated documentation.

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

Chapter 1: Introduction

Unicode is the standard for Multi language support and provides a unique code for each character, regardless of language.

The conversion process will be described of an existing LN database will be described within a single-byte, multibyte or (legacy) Unicode environment into the new Unicode standard

The Enterprise Server implementation uses the fast parallel processing possibilities of bdbreconfig combined with a central session to easily execute and monitor the migration process.

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

Prerequisites

- Infor LN with Enterprise Server 10.5.1 or later.
- Porting set version 9.1b.01 or later.
- Check these last minute solutions:

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

- The supported database types:
  - Oracle Server
  - Microsoft SQL Server

  Other database types, such as DB2, must use the initial implementation of the Unicode migration. This remains applicable for these type of databases for Enterprise Server.

  Go to the Infor Support Portal and search for the *Infor Enterprise Server Technical Guide for Unicode Conversion*. You can find this document in LN 10.4 > Tools > Installation.

  See Infor Support Portal KB 1183466, for the latest version of the *Infor Enterprise Server Platform Support Matrix*
- Multiple database configurations are not supported.
- 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.

Check Integrity (BSE) environment

Check if all (pending) program domains and table definitions are converted to runtime, and if all LN tables are correctly reconfigured. Run these sessions:

- All table fields defined within the session **Binary Table Fields (ttaad2142m000)** must be of datatype raw. The active indicator must be selected for all tables.
- **Create Runtime Data Dictionary for Infor LN Server (ttadv5213m000)**. Select the **Also dump data definitions** check box. This is to actualize the tools data dictionary.
- **Create Runtime Data Dictionary (ttadv5210m000)**. Select at least the **Domains**, **Tables**, and **Reconfigure Tables** check boxes (for all package combinations). This is to actualize the application data dictionary.
- **Check Tables (ttaad4232m000)** to validate the table consistency.
- **Validate Data Integrity (ttaad4233m000)**. Clear the check boxes related with high ASCII to validate the integrity of the data.

Note: Correct all signaled errors. Data integrity issues must be corrected as much as possible.

Log service

The log service provides the logging functionality that is recommended for the migration process. This service is part of the BSE Services framework.

The BSE Services framework normally is up and running and no special actions are required.

Verifying that the log service is running

1. To verify that the log service is running, start the **BSE Services by Application Server (ttaad8111m000)** session.
2. Use the **Sort By** command to switch to the server view.

   This information is displayed:

   - Whether the BSE Framework is running for a specific server.
   - The status of each BSE Service.

3 Verify that the BSE Framework is running on the intended server and that the log service status is **`Started`**.

See the session help of these sessions:

- **BSE Services (ttaad8110m000)**
- **BSE Services by Application Server (ttaad8111m000)**

Chapter 2: Migration steps

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

Important notes:

- Before starting the migration, backup your database and Infor LN.
- All other users must log off. No other processes must be active, this can lock the database.
- Run all migration steps by one and the same user. Log in with the user who executed the initial installation. If this account no longer exists, use an account with super user authorization.
- User default values as stored by the **Save Defaults** option in the table **User Default** `(ttadv990)` can become useless in case max values are involved. The existing max values are based on the locale, and can change in Unicode mode (because of the selected high ASCII locale). The existing data must be checked/corrected manually or (recommended) removed. Use the session **Remove User Defaults (ttstpdeldeflt)**.
- All actions and results are logged by the log service as registered within the **BSE Services Framework**.

The migration steps are applicable for the migration from a:

- Single byte or Multibyte environment.
- Legacy Unicode implementation (HAT only) to the Unicode strict variant (HATS).

Preparation

The fast Unicode migration process is run and monitored with the **Easy Unicode Migration (ttcon8110m000)** session.

The first phase of the Unicode migration is the preparation part which consist of these steps:

The preparation steps:

1 Start the **Easy Unicode Migration (ttcon8110m000)** session.

During the startup of this session a question is displayed asking to confirm the initialization of the migration data. Click **Yes**.

The initialization includes:

- Defaulting the high ASCII support parameters
- Generating the database connection string

- Initializing the package combinations/companies which must be processed with the related processing steps and status fields.

2 Select **Actions > Unicode Migration Parameters**.

The **Unicode Migration Parameters (ttcon8100m000)** session contains all configuration data for the migration process. Validate the (defaulted) data and change if required.

a High ASCII support

The storage of high ASCII characters in single byte fields can cause problems because a code point can have different meanings in different locales.

For example:

ISO8859-1 locale (Latin-1) decimal code point 233 interprets the character 'Latin Small Letter E with Acute' (é). ISO8859-7 locale (Latin/Greek) interprets the same code point as a 'Greek Small Letter Iota' (ι) character.

Because of this ambiguous encoding we do not recommend to use high ASCII characters in single-byte fields. However it is not forbidden.

If table data contains high ASCII and you cannot clean up this data, you must enable the support for high ASCII. Select the Infor locale in which the high ASCII characters must all be valid.

b Database connection string

The connection string specifies how to connect the source database.

Besides a conversion of the data within the same database (in-place conversion) also the movement of the data from one database to another is supported.

The connection string is already generated during the initialize of the migration data but can be changed manually. Click **Generate** to initialize the connection string again.

See Source and Target Database Configuration on page 15 and Database connection strings on page 16.

3 Link Locale to Companies

All users within an LN environment must have the same locale, in fact the only configuration supported but not enforced by the software. You can define a different locale for each user through the **User Data Template (ttams1110m000)** session. A configuration can exist where each company has its own locale, or even have multiple locales used within a single company. Although not supported, the Unicode migration takes these configuration possibilities into account. Therefore per company the source locale must be specified which will be used for the interpretation of the data.

Note: During the initialization of the migration data the locales are defaulted when possible. If the user locale defined in the **User Data Template (ttams1110m000)** session of all users linked to the specific company in the **User Data (ttaad2500m000)** session is the same, this locale is used as a default value. Else the locale remains blank.

4 Select **Actions > Unicode Generate Code Point Mapping Files**

A question is displayed asking to confirm to generate the code point mapping file. To continue this action. Click **Yes**.

After the process is successfully finished, a message is displayed. Click **OK**. Within the **Easy Unicode Migration (ttcon8110m000)** session the **Mapping** field is set to completed by checkmark and timestamp.

Based on the high ASCII settings and the linked company source locales a so called code point mapping table must be created. This is a plain ASCII file which maps each code point, a unique numeric identifier for each character, in the database to its Unicode equivalent. For each unique locale linked to a company a code point mapping table is required. The mapping files are used during the actual data conversion.

Note: In the **Easy Unicode Migration (ttcon8110m000)** session, code point mapping file(s) can also be generated for the linked locales of marked companies.

Mapping files are stored in this folder: `<BSE_TMP>/uni/maps`

5 Select **Actions > Check High ASCII**

A question is displayed asking to select the companies of, ALL package combinations or the SELECTED package combination. This is the actual displayed package combination in the **Easy Unicode Migration (ttcon8110m000)** session to be checked for high ASCII validation. If the process finishes a report is displayed with the validation results. If the report indicates `No (invalid) high ASCII present`, within the session **Easy Unicode Migration (ttcon8110m000)** the **High ASCII** field is set to completed by checkmark and timestamp.

Run a validation of present high ASCII characters. Based on the selected support high ASCII settings present or invalid, remove or change high ASCII characters when not valid according to the selected high ASCII locale. In case high ASCII characters are present in the Tools company 0 data, use the **Remove High ASCII Characters (ttcor0008m000)** session for an initial cleanup. Correct the application data manually.

Note: When invalid high ASCII characters cannot be corrected set the related status indicator manually to *completed*. The migration process will then continue. This approach is not recommended. The not corrected or invalid characters are displayed as question marks.

In the **Easy Unicode Migration (ttcon8110m000)** session the high ASCII validation can also be checked for marked companies only.

High ASCIIi related (result) files are stored in this folder: `<BSE_TMP>/uni/data`

6 **Actions > Generate Tools Conversion Script Files**

A question is displayed asking to confirm to generate a command line script for the data conversion of the Tools company 0. To continue this action, click **Yes**. If the process finishes successfully , click **OK**. Within the "Easy Unicode Migration" (ttcon8110m000) session the **Tools Conversion Script** field (present in the view of the company 0 migration data) is set to completed by checkmark. To ensure a smooth migration the conversion of the Tools company 0 data is not run within the **Easy Unicode Migration (ttcon8110m000)** session. It runs outside LN from the command line by a script. The generated script is stored in this directory: `<BSE_TMP>\uni\tools`

Note: Do not run the script yet. First convert the (BSE) environment to Unicode. The Tools conversion script is stored in this folder: `<BSE_TMP>/uni/tools`

Conversion

After the preparation part is completed the actual conversion to Unicode can be started.

The Migration steps:

1 Stop shared memory and log on again.

Shared memory must be disabled to avoid loading old program domains from this service.

A way to stop shared memory is to create a backup of the `<BSE>/lib/srdd_tab6.2` file, and create an empty `<BSE>/lib/srdd_tab6.2` file.

For more information regarding shared memory, see the *Infor Enterprise Server - Administration Guide*.

2 Select **Actions > Convert (BSE) environment to Unicode**

A question is displayed, asking to confirm to convert the environment to Unicode.

Caution: This step starts the Unicode migration process. You cannot rollback to the current environment within the **Easy Unicode Migration (ttcon8110m000)** session. The environment is not accessible.

3 Click **Yes** to continue.

The environment (BSE) is converted to Unicode. The process included:

- Updating the environment settings.

  The environment is set to Unicode with the corresponding multibyte factor (value: 4). The settings are stored in the table 'Multibyte Parameters' (ttadv406).

- Updating `BSE/lib/tss_mbstore6.2`

  This file contains the mode whether legacy TSS or UTF-T is produced.

  When migrating to Unicode with high ASCII support, the setting is:

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

  When migrating to Unicode without high ASCII support, the setting is:

  `Format: UTF-T:0:ISO88591`

- Updating BSE/lib/defaults/all

  The high ASCII settings are controlled by the resources `high_ascii_tolerance` and `high_ascii_tolerance_strict_mode`. When migrating to Unicode with high ASCII support, the setting is:

  `high_ascii_tolerance:1 high_ascii_tolerance_strict_mode:1`

  When migrating to Unicode without high ASCII support, the setting is:

  `high_ascii_tolerance:0`

- Updating `BSE/lib/defaults/db_resource`

  The row versioning concept is enabled.

  `Format: bdb_use_row_version:1`

- Dumping program domains (pd-files).

  Based on the updated environment settings the program domains of all present package combinations are dumped to runtime. All multibyte string datatype domains are rescaled according the updated multibyte factor (4).

4 Run the database configuration procedure on the database server.

Note: Before changing the collation ensure that:

- You are logged off from LN and the logic service.

- Shared memory and the job daemon are stopped.

For Microsoft SQL Server the collation of the database must be set to:

`Latin1_General_100_CS_AS_KS_WS`

For Oracle Server no configuration changes are required.

For general information regarding collation see these guides:

- *Infor LN - Installation Guide*
- *Infor Enterprise Server - Technical Reference Guide for Microsoft SQL Server Database Driver*

How to set or change the database collation, see the Microsoft knowledge base.

5 Run and check the conversion of the Tools data manually.

Start the generated script on the command line as administrator. If the conversion of the Tools data has successfully completed the application companies are ready to be converted.

a Tools data conversion

First, run the conversion of the Tools company 0 data. Run the generated script that is described in the preparation phase from the command line.

- Navigate to `<BSE_TMP>\uni\tools`

  On UNIX run this command:

  `./cTools.sh`

  On Windows run this command:

  `cTools.bat`

  The output of the conversion is logged in this folder: `<BSE_TMP>\uni\data`

  See for explanation of the files in the "Directory Structure":

  `c000_<source locale>.out`: Contains the conversion result of all processed tables

  `c000_<source locale>.err`: Contains possible errors of not correctly processed tables.

  In the **Easy Unicode Migration (ttcon8110m000)** session, the <source locale> is the locale that is linked to company 0.

  After the tools conversion has completed, log on again and start the **Easy Unicode Migration (ttcon8110m000)** session. Verify if the **Data Conversion** field of company 0 is set to *Converted*. The status indicator can also be set manually.

b Select **Actions > Data Conversion Application**

A question is displayed, asking to select the companies to be converted of ALL package combinations or the SELECTED package combination. The selected package combination is the actual displayed package combination in the **Easy Unicode Migration (ttcon8110m000)** session.

c Click **Yes** to continue.

d Click **OK** when the process has finished successfully.

In the **Easy Unicode Migration (ttcon8110m000)** session the **Data Conversion** field of the successfully processed companies is set to *Converted* with a time stamp. In case the conversion for a company failed the field for the concerning company is set to *Failed* with a time stamp.

You can also run the data conversion for marked companies only in the **Easy Unicode Migration" (ttcon8110m000)** session.

6 Close Infor LN and stop shared memory, when all companies are converted successfully.

7 Move back the saved `$BSE/lib/srdd_tab6.2` and restart shared memory.

8 Restart all previously stopped processes, such as:
   - Job daemon
   - Printer daemon (UNIX)

9 Restart Infor LN.

10 Start the **Support Information Tool (ttsit0100m000)** session.

   Verify if the **Unicode** field on the **General** tab is selected.

   Note: Running the **Check Tables (ttaad4232m000)** session to validate the table consistency after the migration can result in a 512 error on the table ttaad401 Fast Unicode migration temp table. You can ignore this error.

Appendix A: Source and target database configuration

With easy Unicode migration you can move the data from one database to another. The databases must be from the same vendor. For example, from an Oracle server database to another Oracle Server database. You can migrate one (BSE) environment and also from multiple (BSE) environments.

Single (BSE) environment

Basically the procedure of the migration with a source and a target database equals the in-place conversion.

Preparation

Run all preparation steps within the source database linked to the (BSE) environment as described in Preparation on page 9.

Conversion

Follow the conversion process up to step 2 in Conversion on page 11. After this step you must:

1. Create the new (target) database.

   Note the database configuration as mentioned in step 3 in Preparation on page 9.

   Grant the same database privileges to the user which was used during the preparation part.

   For configuration information see the latest version of these guides

   - *Infor Enterprise Server - Technical Reference Guide for Oracle Database Driver*
   - *Infor Enterprise Server - Technical Reference Guide for Microsoft SQL Server Database Driver*
2. Link the new database to the (BSE) environment. Modify the name of the service in the `<BSE>\lib\tabledef6.2` file.

   For Oracle: `<service_name> / SID ID <oracle_sid>`

   For Microsoft SQL Server name of the server: `<server>`

   See Database connection strings on page 16
3. Continue with step 4 up to the last step of the process in Conversion on page 11.
4. After the conversion of all companies is successfully completed:
   a. Update the database configuration (parameter) in the **Database definitions (ttaad4110s000)** sesion. It must match the processed runtime change mentioned earlier in the `<BSE>\lib\tabledef6.2`
   b. Grant all LN users the appropriate access to the new database.

Appendix B: Database connection strings

A connection string contains all information to establish a connection to a database. The format of the connection string differ per database.

For the supported database type Oracle Server the format of the connection string is:

```
ORACLE:[service_name:<service_name>][sid:<sid>];<user>;<passwd>
```

For Oracle Server a <service_name> or a <sid> can be defined.

String	Description
<service_name>	Name of the service The name can be found in the table: 'Databases' (ttaad410.para; resource: ORACLE_SERVICE_NAME). On runtime present in <BSE>\lib\tabledef6.2
<sid>	System ID The ID can be found in the table 'Databases' (ttaad410.para; resource: ORACLE_SID). On runtime present in the <BSE>\lib\tabledef6.2 For example: *:*:oracle8(ORACLE_SID=insttst):N
<user>	Name of the user group Based on the current LN user, the database user (ttdba010), database group (ttdba015), and password (ttdba020) can be retrieved. On runtime present in <BSE>\lib\ora\ora_groups (first segment).
<passwd>	The encrypted password of the user group, see <user>. On runtime present in <BSE>\lib\ora\ora_groups (second segment).

For the supported database type Microsoft SQL Server MSQL the format of the connection string is:

```
<server>;<database>;<user>;<passwd>
```

String	Description
<server>	Name of the server The name can be found in the table: 'Databases' (ttaad410.para; resource: MSQL_SERVERHOST). On runtime present in `<BSE>\lib\tabledef6.2` For example: `*:*:msql7(MSQL_SERVERHOST=NLBAWAPPSDEV1)`
<database>	Name of the database Same as <user>
<user>	Name of the user group Name of the user group. Based on the current LN user, the database user (ttdba010), database group (ttdba015), and password (ttdba020) can be retrieved. On runtime present in `<BSE>\lib\msql\msql_groups` (first segment).
<passwd>	The encrypted password of the user group, see <user>. On runtime present in `<BSE>\lib\msql\msql_groups` (second segment).

Appendix C: Directory structure

During the migration process the `<BSE_TMP>\uni` directory and its content is generated. This table shows its content:

Folder	Description
\data	Contains the individual bdbvalidate and bdbreconfig related data files. Format: `<type>[<company>][<pacc][< source_locale>[_<target locale>].<extension>` <type> c=conversion, h=high ASCII <extension> in=input file, out=output file, err=error file
\log	Contains the central log files of: • bdbvalidate (uniValidate.log) • bdbreconfig (uniReconfig.log) All bdbvalidate and bdbreconfig related actions during the Unicode migration process are stored in these files.
\maps	Contains the generated code point mapping files. Format: `m< source_locale>[_<target locale>]`
\tools	Contains the generated Tools company 0 data conversion script.