



# Trillium™ Global Address Verification Tables

## Installation Guide

Versions 14.0 and 15.0 through 15.7

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***Trillium™ Global Address Verification Tables Installation Guide  
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# Introduction

The 64-bit enabled Trillium™ Global Address Verification (GAV) tables are a critical part of the data quality process. GAV tables (previously called postal tables or postal directories) provide the address information used to validate and improve the name and address data in your records.

Periodically, the postal services of various countries issue updates to the tables. Trillium distributes the updates through the secure TSS File Portal FTP website from which you manually download tables and related files.

This installation guide describes how to install GAV-related files for Trillium Software® System Version 14.x and 15.0 through v15.7. It has the following sections:

- [File Naming Conventions on page 3](#)
- [EDQ GAV Tables on page 6](#)
- [Default Installation Locations on page 7](#)
- [Defining Alternative Table Locations on page 9](#)
- [Installing on Windows and UNIX on page 13](#)
- [Installing on IBM Mainframe on page 18](#)

The installation procedure is the same, whether you are installing for the first time or installing an update. See the *Trillium Software System Installation Guide* for procedures on installing other modules.

## **About Installing Basic Countries Address Verification Files and Geocoder (lat/long) Resource Files.**

The Basic Countries Global Address Verification Files and the resource files used by the Geocoder (latitude and longitude) process have always been installed using separate installers. As of the December 2018 quarterly update, these files and tables can also be installed alongside the GAV tables using the procedures described in this guide.

The separate installers will be available for the December 2018 quarterly update only. Starting with the March 2019 update they will be discontinued, after which all GAV, Geocoding, and Basic Countries files and tables will be installed using the common method described in this guide.

For more information about installing Geocoding and Basic Countries files and tables using the separate installers, see the *Geocoder (Latitude/Longitude) Resource Files Installation Guide* and the *Basic Countries Global Address Verification Files Installation Guide*.

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# File Naming Conventions

The GAV tables are delivered in a compressed format. The file extensions are .zip (for Windows and IBM Mainframe operating systems) and .tar (for UNIX operating systems).

- ① *For IBM Mainframe platform, the file names end in "eq" to indicate they are EBCDIC format. For example, CACJULeq.ext.*

The following file naming conventions are used:

## UTF-8 GAV Tables

*XXMMMq64.ext*, where *XX* is the 2-letter country code, *MMM* is the abbreviation for the month the GAV table was issued, and *ext* is either zip or tar. Valid for use on Windows and Linux 64-bit operating systems. Available for TSS v15.2 and later when you install EDQ (64-bit). For more information, see [EDQ GAV Tables on page 6](#).

- ① *Trillium Software ships two sets of Canadian GAV Directories. One set, which has the prefix CAC, is required for SERP certification and is limited to batch processing. The second set has the prefix CA; this set can be used in batch or real-time processing, but does not produce a SERP certificate.*

## General and Asian/APAC GAV Tables

*XXMMMq.ext*, where *XX* is the 2-letter country code, *MMM* is the abbreviation for the month the GAV table was issued, and *ext* is either zip or tar. For example, *AUJULq.zip* is the Australian GAV table for July.

- ① *The General GAV Tables are for 32-bit processing only and do not support UTF-8.*
- ① *Trillium Software ships two sets of Canadian GAV Directories. One set, which has the prefix CAC, is required for SERP certification and is limited to batch processing. The second set has the prefix CA; this set can be used in batch or real-time processing, but does not produce a SERP certificate.*

## ACE GAV Tables

*jpACEMMM.zip*, where *MMM* is the month the GAV table was issued.

- ① *ACE GAV Tables are used by the Japanese Address Code Edition (ACE) Postal Matcher. These tables provide address dictionaries to validate and enrich address data. They can be used to return standard address fields as well as address codes and bar codes.*

---

## Basic Countries Global Address Verification Files

BASMMMYY.zip, where *MMM* is the month the files were issued and *YY* is the year the files were issued.

Trillium™ Quality uses the Basic Countries Global Address Verification (GAV) files to provide city level (or better) correction and validation for over 150 countries. These files are used in conjunction with the Basic Countries project template (also referred to as the ZZ project).

## Geocoding (Lat/Long) Resource Files

GEOMMMYY.zip file where *MMM* is the month the files were issued and *YY* is the year the files were issued.

Geocoding directories are used by the Geocoder process. The Geocoder uses the address output for all countries except U.S. to determine latitude and longitude values.

## Global (GA) GAV Tables

XXXMMMYY.ext, where *XXX* is the 3-letter country code, *MMMYY* represents the abbreviation for the month and year the GAV table was issued, and *ext* is either zip or tar. For example, [NORJAN15.zip](#) is the Norwegian GAV table for January 2015.

- ① *Global (GA) GAV Tables are a subset of international GAV tables that are invoked from within Trillium Software System. The GAV tables in this subset are: Austria, Brazil, Czech Republic, Denmark, Finland, Greece, Hungary, Ireland, Mexico, New Zealand, Norway, Poland, Sweden, and the Basic countries.*
- ① *Global (GA) GAV Tables are not available for Mainframe systems, nor are they supported on AIX 5.1.*

## US Census Directories

USCMMMq.ext. This is the name of the United States census table that includes the Interpolated Rooftop files. *MMM* is the abbreviation for the month the table was issued and *ext* is either zip or tar.

USXMMMq.ext. This is the name of the United States census table that includes the ZIP+4 Centroid files. *MMM* is the abbreviation for the month the table was issued and *ext* is either zip or tar.

USPMMMq.ext. This is the name of the file that contains only the Interpolated Plus table, where *MMM* is the abbreviation for the month the table was issued and *ext* is either zip or tar.

- ① *Census tables, which are available for the U.S. only, assign census geographic codes, such as county, tract, latitude and longitude, to address data. If you are interested in assigning latitude and longitude values to address data for other countries, contact your account manager for more information.*

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## DPV Table

USDMMMq.ext. This is the name of the United States Delivery Point Validation table. *MMM* is the abbreviation for the month the table was issued and *ext* is either zip or tar.

- ① *Delivery Point Validation (DPV) is a U.S. Postal Service technology that helps validate the accuracy of existing address information and identify inaccurate, incomplete, or erroneous addresses.*

## LACS<sup>Link</sup> Table

USLMMMq.ext. This is the name of the United States LACS<sup>Link</sup> table, where *MMM* is the abbreviation for the month the table was issued and *ext* is either zip or tar.

- ① *LACS<sup>Link</sup> is a product of the U.S. Postal Service that provides users with an automated method of obtaining a new address for locations that have been converted by local municipalities, usually when the community has implemented a 911 emergency system.*

## Suite<sup>Link</sup> Table

USSMMMq.ext. This is the name of the United States Suite<sup>Link</sup> table, where *MMM* is the abbreviation for the month the table was issued and *ext* is either zip or tar.

- ① *Suite<sup>Link</sup> is a product of the U.S. Postal Service that improves business address information by adding suite numbers to qualified records. Only business records that have been identified through CASS processing as having a high-rise default are candidates for Suite<sup>Link</sup> processing.*

## RDI Tables

USRMMMq.ext. This is the name of the Residential Delivery Indicator (RDI) table, where *MMM* represents the abbreviation for the month the RDI table was issued and *ext* is either zip or tar. For example, USRAPRq.tar.

- ① *Residential Delivery Indicator (RDI) is a data product available from the U.S. Postal Service (USPS) that identifies a USPS delivery point as being a residential or commercial.*
- ① *Trillium Software's license agreements with the U.S. Postal Service limit the shipment and transfer of DPV, LACS<sup>Link</sup>, Suite<sup>Link</sup>, and RDI directories to the United States and its territories. Customers who purchase these directories from Trillium Software must adhere to the same restriction.*

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## EDQ GAV Tables

With TSS v15.2, Trillium Software expanded support of 64-bit processing on Windows and Linux operating systems with Enterprise Data Quality (EDQ). EDQ is the 64-bit enabled implementation of Trillium Quality.

① *EDQ 64-bit supports GAV tables in UTF-8/Unicode format only.*

To enhance GAV table support for 64-bit environments, a set of UTF-8 encoded GAV tables are available. The UTF-8 tables are valid for ASCII data on Windows and Linux platforms. For the TSS Postal Matchers, the new UTF-8 GAV tables are required for EDQ processing for the following 16 countries: Australia, Belgium, Canada, France, Germany, Great Britain, Hong Kong, Italy, Luxembourg, Malaysia, Netherlands, Portugal, Singapore, Spain, Switzerland, and United States.

For these Postal Matcher countries there are two versions of the GAV tables available—one for 32-bit TS Quality processes, and a UTF-8 version to support EDQ 64-bit. However, all other countries (APAC, Global Postal Matcher, and so on) need only one instance of the `ACE_tables`, `aptables`, `census_tables`, and `gatables` GAV tables as they are already compliant with UTF-8 and/or Unicode data.

① *Previously only 32-bit versions of these GAV tables were available for use with TS Quality. Continue to use the 32-bit supported tables for TS Quality project testing in the Control Center and to export batch scripts to 32-bit systems.*

## EDQ Tables Directory

When you install EDQ, a default `\tables` directory is created containing sub-directories for GAV tables, code pages, parser rules, and general process files.

Install the appropriate GAV tables in the following sub-directories:

- `ACE_tables`. Tables for the JP Postal Matcher Address Code Edition (ACE) Postal Matcher.
- `ap_tables`. Asian/APAC Tables for the Postal Matcher for China, Japan, Korea, and Taiwan.
- `census_tables`. Tables for US Census Geocoder used with the US Postal Matcher.
- `gatables`. Tables and files for countries used by the Global Postal Matcher, Geocoder, and the Basic Countries Global Address Verification Files.
- `postal_utf8`. Tables for 64-bit UTF-8 GAV.

The following sub-directories are populated during the EDQ install:

- `code_pages`. Code page tables.
- `general_resources`. General process files, including rule, table, ddx, ddl, and map files.

- 
- parser\_rules. Parser rule file.

## Default Installation Locations

By default, GAV-related files and directories are installed to the locations shown in this section. (Windows paths are shown. For Linux, the top-level path is `/install_path/tables`.)

### 64-bit UTF-8 GAV Tables

TSS 15 EDQ (64-Bit):  
C:\Program Files\Trillium Software\EDQ\15\tables\  
postal\_utf8

### General GAV Tables

TSS 15: C:\Program Files (x86)\Trillium Software\MBSW\  
15\tsq\tables\postal\_tables  
TSS 14: C:\Program Files (x86)\Trillium Software\TSQuality\  
14\tables\postal\_tables

### Asian/APAC GAV Tables (China, Japan, Korea, Taiwan)

TSS 15: C:\Program Files (x86)\Trillium Software\MBSW\  
15\tsq\tables\aptables  
TSS 15 EDQ (64-Bit):  
C:\Program Files\Trillium Software\EDQ\15\tables\aptables  
TSS 14: C:\Program Files (x86)\Trillium Software\TSQuality\  
14\tables\aptables

### ACE GAV Tables (Japanese Address Code Edition dictionaries)

TSS 15: C:\Program Files (x86)\Trillium Software\MBSW\  
15\tsq\tables\ACE\_tables  
TSS 15 EDQ (64-Bit):  
C:\Program Files\Trillium Software\EDQ\15\tables\  
ACE\_tables  
TSS 14: C:\Program Files (x86)\Trillium Software\TSQuality\  
14\tables\ACE\_tables

### Basic Countries Address Verification Files

TSS 15: C:\Program Files (x86)\Trillium Software\MBSW\  
15\tsq\tables\gatables\datastore  
C:\Program Files (x86)\Trillium Software\MBSW\  
15\tsq\tables\gatables\license  
TSS 15 EDQ (64-Bit):  
C:\Program Files\Trillium Software\EDQ\15\tables\  
gatables\datastore  
C:\Program Files\Trillium Software\EDQ\15\tables\  
gatables\license  
TSS 14: C:\Program Files (x86)\Trillium Software\TSQuality\  
14\tables\gatables\datastore  
C:\Program Files (x86)\Trillium Software\TSQuality\  
14\tables\gatables\license

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14\tables\gatables\license

### **Census Tables**

TSS 15: C:\Program Files (x86)\Trillium Software\MBSW\  
15\tsq\tables\census\_tables

TSS 15 EDQ (64-Bit):  
C:\Program Files\Trillium Software\EDQ\15\tables\  
census\_tables

TSS 14: C:\Program Files (x86)\Trillium Software\TSQuality\  
14\tables\ACE\_tables

### **Geocoder (Latitude and Longitude) Resource Files**

TSS 15: C:\Program Files (x86)\Trillium Software\MBSW\  
15\tsq\tables\gatables\datastore  
C:\Program Files (x86)\Trillium Software\MBSW\  
15\tsq\tables\gatables\license

TSS 15 EDQ (64-Bit):  
C:\Program Files\Trillium Software\EDQ\15\tables\  
gatables\datastore  
C:\Program Files\Trillium Software\EDQ\15\tables\  
gatables\license

TSS 14: C:\Program Files (x86)\Trillium Software\TSQuality\  
14\tables\gatables\datastore  
C:\Program Files (x86)\Trillium Software\TSQuality\  
14\tables\gatables\license

### **Global (GA) GAV Tables**

TSS 15: C:\Program Files (x86)\Trillium Software\MBSW\  
15\tsq\tables\gatables\datastore  
C:\Program Files (x86)\Trillium Software\MBSW\  
15\tsq\tables\gatables\license

TSS 15 EDQ (64-Bit):  
C:\Program Files\Trillium Software\EDQ\15\tables\  
gatables\datastore  
C:\Program Files\Trillium Software\EDQ\15\tables\  
gatables\license

TSS 14: C:\Program Files (x86)\Trillium Software\TSQuality\  
14\tables\gatables\datastore  
C:\Program Files (x86)\Trillium Software\TSQuality\  
14\tables\gatables\license

If you want to use a different location for the tables, follow the instructions in the section [Defining Alternative Table Locations](#), to specify the location.

---

## Defining Alternative Table Locations

Depending on your needs, you may want to install the tables to a location other than the specified default directories. For example, installing the entire Geocoder resource library requires approximately 10 GB of disk space, therefore, you may prefer to use an alternative directory with significant disk space.

If you plan to install some or all of the tables in a non-default location, you must first define those alternative locations before you install the GAV tables and Geocoder resource files. (See [Default Installation Locations on page 7](#) for more information.)

The procedure varies, depending on whether you are defining locations for tables used for EDQ 64-bit processing or 32-bit processing.

① *For the 16 countries that have both the 32-bit GAV tables and 64-bit UTF-8 GAV tables, these tables cannot reside in the same directory. Tables for other countries (APAC, Global Postal Matcher, and so on) can reside in the same directory.*

When defining alternative locations, ensure that tables for Global Postal Matcher, Geocoder, and Basic Countries are copied to the same alternative location.

If you are installing the tables in their default locations, skip this section and go to [Installing on Windows and UNIX on page 13](#) or [Installing on IBM Mainframe on page 18](#).

## Defining EDQ 64-Bit Table Locations

Use this procedure to define an alternative location for tables used for EDQ 64-bit processing. For example, you might want to configure EDQ to point to a single instance of the ACE\_tables, aptables, census\_tables, and gatables tables on your network (that is, one set of tables used for both 32-bit and 64-bit processing) instead of copying those country tables to the default EDQ tables directory.

### About EDQ.ini and Config64.tbl

The location of your EDQ tables is defined in an initialization file, `EDQ.ini`. By default, `EDQ.ini` identifies the path to your tables as `/install_path/tables` (Linux) or `\install_path\Trillium Software\EDQ\15\tables` (Windows).

The following subdirectories are found in the tables directory:

- aptables
- census\_tables
- code\_pages
- gatables
- general\_resources
- parser\_rules

---

postal\_utf8

When you run a 64-bit batch script for an exported Trillium Quality project for the first time, the settings in the `EDQ.ini` file are used to create a configuration file called `Config64.tbl` in the project's `/conf` folder.

After you run your project and `Config64.tbl` has been created, if you go into `EDQ.ini` and make changes, for those changes to be recognized by your project, you must manually run the `Config64.exe` to regenerate `Config64.tbl`. The next time you run the project the new table location will be recognized.

- ① *Do not change the location of the ACE\_tables. ACE tables must reside in the default location.*
- ① *On Linux, you must create a symbolic link to the alternative directory, which can be on any mounted drive.*

## Changing the Global (GA), Basic Country, and Geocoder Tables Location

When changing the tables location for Global (GA) tables, Geocoder tables, and Basic Country files, you must also change the `gaserver.ini` file.

### ► To change table locations

1. With a text editor, open the table `gaserver.ini` file, which is located in the `\conf` directory. On Windows: `C:\Program Files\Trillium Software\EDQ\15\conf`. For UNIX: `/install_path/conf`.
2. Set the **CountryDataDirectory** entry to point to the alternative location of the `datastore\rdata` directory.
3. Set the **KnowledgeBaseDirectory** entry to point to the location of the `datastore\kbase` directory.
4. Locate the **LicenseDirectory** entry and point it to the `license` directory.

Figure 1-1 shows an example of a modified `gaserver.ini`.

```
[Server]
UserName=user
CompanyName=companyname
CountryDataDirectory=//server1/driveA/tsq/gaserver_area/datastore/rdata
KnowledgeBaseDirectory=//server1/driveA/tsq/gaserver_area/datastore/kbase
LicenseDirectory=//server1/driveA/tsq/gaserver_area/license

[Logging]
Level=CRITICAL, ERROR, WARNING, INFO, CLIENT
LogToFile=Yes
LogToScreen=No
```

**Figure 1-1 Sample of Modified EDQ gaserver.ini**

5. Save and close the file.

---

## Defining 32-Bit Table Locations

Use this procedure to define an alternative location for GAV tables and Geocoder resource files used for 32-bit (non-EDQ) processing so that TSS repositories are able to access the tables.

① *You cannot define an alternative directory for ACE GAV Tables.*

### ► To define an alternative location for the 32-bit (non-EDQ) tables

1. Shut down TSS, including all TSS clients.
2. Stop the TSS Scheduler service.
3. Create the alternative table installation directory.
  - ① *On UNIX, you must create a symbolic link to the alternative directory, which can be on any mounted drive.*
4. Start the TSS command line utility.
  - On Windows, select **Programs > Trillium Software > version > Repository Administration Command Prompt**.
  - On UNIX, type `./mtb_admin`.
5. When prompted, supply your username, password, and repository name.
  - ① *Use the `_control` repository name to apply the alternative location to all repositories.*
6. Ensure that changes have not already been made to the table installation locations by typing the following commands, individually.

```
define postal_directory
define apac_postal_directory
define census_directory
define ga_directory
```

The commands should each return a failure message of the form "No setting with name '`nnn_directory`' found in table '`default_settings`'." For example, "No setting with name '`census_directory`' found in table '`default settings`'."

If a value is returned, you need to remove the current setting before defining a new one. For more information, see [Removing Table Directory Definition on page 13](#).

7. At the `mtb_admin` prompt, type:

```
expert
```

- 
8. Issue one or more of the following commands, pressing **Enter** after each one:
    - For non-Asian/APAC GAV tables:  
`define postal_directory [file join {d:\newpostal}]`
    - For Asian/APAC GAV tables:  
`define apac_postal_directory [file join {d:\newpostal}]`
    - For Census tables:  
`define census_directory [file join {d:\newpostal}]`
    - For Global (GA) tables, Basic Country tables, and Geocoder resource files:  
`define ga_directory [file join {d:\newpostal\datastore}]`  
 where `d:\newpostal` is the path of the alternative directory and `datastore` is the required name of the subdirectory.
      - ① *On Windows systems, the path must be specified as a UNC path, not a mapped drive.*
  9. Type `exit` to close the command prompt window.
  10. Move any installed `xxCITY.ext` files (where `ext` is either `len` or `ben`) from the default installation directory to the new, alternative directory.
    - ① *These files were copied to the default GAV directories when TS Quality project templates were installed. They must be in the same location as the GAV tables.*
  11. Remove the default directories (or leave them empty).
  12. For Global (GA) tables, Geocoder tables, and Basic Country files there is an additional step:
    - a. With a text editor, open the **gaserver.ini** file, which is located in the `/Software/bin` directory.
    - b. Set the **CountryDataDirectory** entry to point to the alternative location of the `datastore\rdata` directory.
    - c. Set the **KnowledgeBaseDirectory** entry to point to the location of the `datastore\kbase` directory.
    - d. Locate the **LicenseDirectory** entry and point it to the `license` directory.

Figure 1-2 shows an example of a modified `gaserver.ini`.

```
[Server]
UserName=user
CompanyName=companyname
CountryDataDirectory=//server1/driveA/tsq/gaserver_area/datastore/rdata
KnowledgeBaseDirectory=//server1/driveA/tsq/gaserver_area/datastore/kbase
LicenseDirectory=//server1/driveA/tsq/gaserver_area/license

[Logging]
Level=CRITICAL, ERROR, WARNING, INFO, CLIENT
LogToFile=Yes
LogToScreen=No
```

**Figure 1-2 Sample of Modified gaserver.ini**

- 
- e. Save and close the file.
  13. Restart Trillium Software System and the Scheduler.
    - ① *On Windows operating systems, if you installed the GAV tables on a network drive, you must change the Scheduler and inetd service to run as a Windows domain account instead of a system account.*
  14. Install the tables as described on page 13 for UNIX and Windows and on page 18 for IBM Mainframe.

## Removing Table Directory Definition

If you want to change a table location that has already been defined, you must first remove the current setting before defining a new one.

### ► To remove a table directory definition

1. Shut down Trillium Software System, including all TSS clients.
2. Stop the TSS Scheduler service.
3. Start the TSS command line utility, as described on page 11.
4. When prompted, log on to the `_control` repository.
5. Issue the appropriate command:

```
undefine postal_directory
undefine apac_postal_directory
undefine census_directory
undefine ga_directory
```

## Installing on Windows and UNIX

The installation procedures for Windows and UNIX are generally the same and apply to all versions. Where there are differences, they are clearly noted.

- ① *EDQ 64-bit tables are supported on Windows and Linux systems only.*

The installation procedure has multiple parts:

1. Install the files in a temporary directory. This procedure is recommended so that the file integrity can be validated before being implemented by your Trillium Quality production system.
2. Validate the integrity of the files.
3. Install the files into the production directory.

---

## Installing the Files into a Temporary Directory

There are two procedures you can run, one for non-ACE GAV tables and Geocoder resource files and one for install ACE GAV tables.

### ► To install/update non-ACE table files

1. Stop the TSS Scheduler and the cleansing services (32-bit, non-EDQ tables only).
2. Create a temporary directory. The temporary location is recommended so that the file integrity can be validated prior to being implemented by TS Quality production processes.
3. Copy the compressed file to the temporary location. Download this file from the TSS File Portal FTP website. See [File Naming Conventions on page 3](#) for a description of the file name formats.
4. Unzip or explode the file using the appropriate command (for example, `WinZip` or `tar`). The expanded files are placed into the temporary location.
5. (UNIX only) Review the list of files for any that have a `.Z` extension, indicating that they have been compressed. If necessary, uncompress files by entering the following command:

```
uncompress *.Z
```

ⓘ *Due to the size of some files, the `uncompress` command may produce the error message "MAX FILE LIMIT EXCEEDED." If this occurs, talk to your System Administrator about resetting the `ULIMIT` environment variable to `UNLIMITED` in the UNIX Bourne shell.*

### ► To install ACE GAV directory files

1. Stop the TSS Scheduler and the cleansing services, if not already stopped (32-bit, non-EDQ tables only).
2. Copy the `jpACEMMM.zip` file to a temporary directory. This file is provided by Trillium Software from the TSS File Portal FTP website.
3. Uncompress the `.zip` file.
4. Copy the appropriate file(s) from the temporary directory to the `install path\tables\ACE_tables` directory:
  - For Windows operating systems, copy all the files under the `len` directory.
  - For Linux operating systems, copy the `len.tar` file to the `ACE_tables` directory and uncompress it.
  - For UNIX operating systems, copy the `ben.tar` file to the `ACE_tables` directory and uncompress it.

- 
- ① *The ACE tables must be installed in the default location to be recognized by Trillium Software System.*

## Validating File Integrity

It is strongly recommended that you check the file integrity of GAV tables before using them in your projects. The process uses a Trillium Software-provided utility to determine the hash value of the newly installed files. To complete the validation, you compare that value to the one provided in a text file that was delivered with the tables.

Note the following guidelines:

- There are no hash files for ACE tables, Geocode tables, and Basic Country files.
- If you have purchased Global (GA) GAV tables, hash files are available for rdata (country data) but not for kdata (knowledge base data).

## About the Hash File

Every GAV table you install includes a text file named `xxHASH.txt`, where `xx` is the 2- or 3-character table identifier. For example, the file `CAHASH.txt` contains the hash values for each of the files in the Canadian GAV table; the file `USCHASH.txt` contains the hash values for each of the files in the US census table.

## About the Hash Utility

The `tuhash` utility performs a byte-by-byte evaluation of the input file and returns a resulting numerical value (called the hash value) to the screen. You use this utility to generate values for monthly updates that are delivered with updates. You then compare the values to the ones provided. If the values match, the GAV directories are installed properly. This process can be applied to any file.

The syntax of the `tuhash` command is:

```
tuhash -i <input_file> -l <lrecl>
```

- |                              |  |
|------------------------------|--|
| <b>-i &lt;input_file&gt;</b> | Specifies the input file name.   |
| <b>-l &lt;lrecl&gt;</b>      | Specifies the record length of the file. The default record length is 1. For larger files, using a record length of 1 makes the hash program run very slowly. We recommend that you specify the logical record length of the file if it is known. Otherwise, specify a number that can be divided evenly into the file size. |

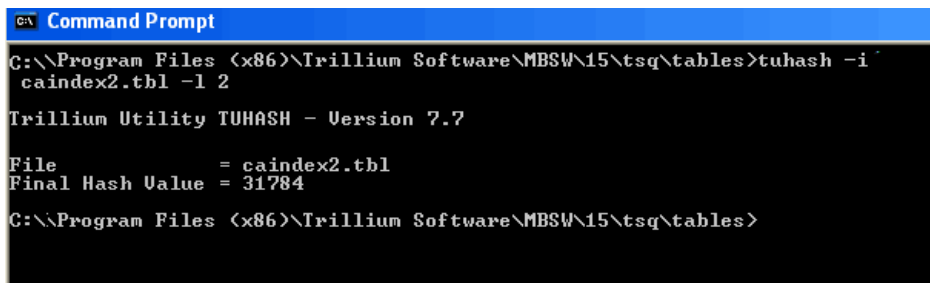
---

### ► To run the hash utility

1. Go to a command prompt.
2. Change to the directory that contains the files you want to validate.
3. Enter the tuhash command for the first file you want to validate. For example:

```
tuhash -i CAINDEX2.tbl -l 2
```

4. Press **Enter**. The utility returns the final hash value as shown in Figure 1-3.
5. Open the appropriate hash text file with a text editor.
6. Locate the line that corresponds to the file to which you applied the hash utility.
7. Compare the value in the file with the value in the command window.
8. If the values match, the file integrity is valid. If the values do not match, contact Trillium Support at [TrilliumSupport@syncsort.com](mailto:TrilliumSupport@syncsort.com).
9. Repeat the process for each file included in GAV table you installed.



```
Command Prompt
C:\Program Files (x86)\Trillium Software\MBSW\15\tsq\tables>tuhash -i
caindex2.tbl -l 2
Trillium Utility TUHASH - Version 7.7
File = caindex2.tbl
Final Hash Value = 31784
C:\Program Files (x86)\Trillium Software\MBSW\15\tsq\tables>
```

**Figure 1-3 Sample TUHASH Results**

## Error Codes for TUHASH

The following table describes the tuhash error codes.

Code	Description
0	Program completed successfully.
1	<b>The error code '1' can reflect any of the following errors:</b> <ul style="list-style-type: none"><li>■ Input file name not specified</li><li>■ Unable to open input file</li><li>■ Missing or invalid (less than zero) record length</li><li>■ Unable to allocate enough memory – try smaller record length</li></ul>
91	Invalid command line option – check spelling.

---

## Installing the Files into the Production Directory

Once you have validated the integrity of the GAV files, you can move them into the production directory.

- Ensure the Global (GA) tables, Basic Country tables, and Geocoder resource files all reside in the following `gatables` sub-directories:

```
\datastore\kbase  
\datastore\rdata  
\license
```

- The delivery of Global (GA) tables includes a series of dump files, named `xxxL1DUMP.txt` (where `xxx` is the 3-character country code).

## Copying City Tables

TSS uses city tables in conjunction with the GAV tables to validate and enhance address data. City tables are installed with country templates. Updated city tables are also delivered with GAV table updates.

## Naming Conventions

There are two city tables per country. The naming conventions are `xxxCITY.ext` where `xxx` is the 2- or 3-character country code and `.ext` is either `len` or `ben`. For example, the city tables for Austria are `ATCITY.len` and `ATCITY.ben`.

- ① *There are no city tables associated with the Geocoder resource files and Basic Country tables.*

## City Table Install Location

City tables are stored in the same location as the GAV tables. For example, when you receive new GAV files for the U.S., you copy both the GAV tables *and* city tables into the default tables directory, `install path\tables\postal_tables` or `\postal_utf8` (or the alternative directory you have set up).

An exception are city tables associated with Global GAV Tables (see [Geocoding \(Lat/Long\) Resource Files on page 4](#)); these tables are generally stored in the same directory as the standard GAV tables (also referred to as non-Asian/APAC GAV tables). For example, when you receive new GAV files for Finland (or one of the other Global GAV countries), you copy the *GAV tables* to the `install path\tables\gatables\datastore` directory (or the alternative directory you have set up); then you copy the *city tables* to the `install path\tables\postal_tables` or `\postal_utf8` directory (or its alternative).

- ① *Whenever you receive updated city tables, you must copy the updated tables to the appropriate directories.*

---

# Installing on IBM Mainframe

The installation procedure has multiple parts:

- Install the GAV-related files.
- Validate the integrity of the files.

① *After files are unloaded, space allocation should not exceed one extent.*

① *Valid for TSS v14.0 only.*

## Installation Procedures

### ► To install/update GAV files

1. Stop any running GAV and geocoding jobs.
2. Open a command window and locate the GAV tables you want to install. The GAV tables are provided by Trillium Software from the TSS File Portal FTP website.
3. If the GAV tables you are installing are not zipped, copy the files to your hard drive.
4. If the tables are zipped, complete these steps:
  - a. Locate the zipped file. Copy the zipped file to your hard drive.
  - b. Double-click the file to open WinZip.
  - c. Click **Extract** and, in the **Extract to:** window, enter the location to which you want to extract the files.
  - d. Click **Unzip**. The GAV table files are unloaded to the specified location.
  - e. Validate the files' integrity, as described in the next section (page 19).
  - f. FTP the files to your target system.
    - i. At the command prompt, change to the location the files were copied to.
    - ii. Connect to your target system using ftp. For example:

```
d:\ftp Main
```

where `Main` is the name of your Mainframe system
    - iii. At the ftp> prompt enter:

```
ftp> bin  
ftp> put file 'target_location'
```
    - iv. Repeat for the other files.
    - v. Enter `bye` to exit the ftp session.

- 
5. Repeat for each zipped file.

## Validating File Integrity

It is strongly recommended that you check the file integrity of GAV files before using them in your projects. The process uses Trillium Software-provided utilities to determine the hash value of the newly installed files. To complete the validation, you compare that value to the one provided in a text file that was delivered with the table.

- ① *Validation must be completed before you FTP your files to the mainframe.*

## About the Hash File

Every GAV table you install includes a text file named `xxHASH.txt`, where `xx` is the 2- or 3-character table identifier. For example, the file `CAHASH.txt` contains the hash values for each of the files in the Canadian GAV table; the file `DPVHASH.txt` contains the hash values of the files in the DPV table.

## About the Hash Utility

The `tuhash` utility performs a byte-by-byte evaluation of the input file and returns a numeric value (called the hash value) to the screen. You use this utility to generate values for GAV tables delivered by Trillium Software. You then compare the generated values to the ones provided in the hash files. If the values match, the directories are installed properly. This process can be applied to any file.

The syntax of the `tuhash` command is:

```
tuhash -i <input_file> -l <lrccl>
```

- |                        |   |
|------------------------|---|
| <b>-i</b> <input_file> | Specifies the input file name.  |
| <b>-l</b> <lrccl>      | Specify the actual record length of the file. The default record length is 1. |

### ► To run the hash utility

1. Change to the directory that contains the files you want to validate.
2. Enter the hash command for the first file you want to validate. For example:

```
tuhash -i CAINDEX2 -l 2
```
3. Press **Enter**. The utility returns the final hash value.
4. Open the appropriate hash text file with a text editor.
5. Locate the line that corresponds to the file to which you applied the hash utility.
6. Compare the value in the file with the value in the command window.

- 
7. If the values match, the file integrity is valid. If the values do not match, contact Trillium Customer Support.
  8. Repeat the process for each file included in the GAV directory you installed.

## Error Codes for TUSHASH

The following table describes the **tushash** error codes.

Code	Description
0	Program completed successfully.
1	<b>The error code '1' can reflect any of the following errors:</b> <ul style="list-style-type: none"><li>■ Input file name not specified</li><li>■ Unable to open input file</li><li>■ Missing or invalid (less than zero) record length</li><li>■ Unable to allocate enough memory – try smaller record length</li></ul>
91	Invalid command line option – check spelling.

## Note About City Tables

When installing on IBM Mainframe, ftp the city table file (xxCITY.ben) and the auxiliary city table file (xxAUXCIT.ben) from your local Windows or UNIX system to the target Mainframe system. The city table file and the auxiliary table file must be in the Mainframe system before you can use them in the Customer Data Parser module. You should not overwrite the city table file or the auxiliary table file delivered with GAV directories with the city table file or the auxiliary table file delivered with projects.