



Trillium Software® System

15 Release Notes

Version 15.7.4

This manual, as well as the software described in it, are furnished under license and may be used only in accordance with the terms of such license. The content of this manual is furnished for informational purposes only, is subject to change without notice, and should not be construed as a commitment by Trillium Software. Trillium Software assumes no responsibility or liability for any errors or inaccuracies that may appear in this manual.

The customer shall not disclose, copy, reproduce, distribute, or display any portion of the Trillium Software System or this manual in any form to any third person without the prior written consent of Trillium Software, nor allow third parties to do the same. The customer shall keep the Trillium Software System and all confidential information in the strictest confidence.

***Trillium Software® System 15 Release Notes
August 2018, 82718***

Trillium Software, Inc. owns all rights in and to the marks "TRILLIUM SOFTWARE" and "TRILLIUM SOFTWARE SYSTEM," which marks are registered in various countries throughout the world (including, without limitation, the United States Patent and Trademark Office).

All other trademarks are the property of their respective owners.

© 2014, 2018 Trillium Software, Inc. All rights reserved.

Trillium Software, Inc
1700 District Avenue, Suite 300, Burlington, MA 01803, USA
978-901-0000 (Worldwide Headquarters)
+44 (0) 118-940-7676 (European Headquarters)

Contents

PREFACE	9
Intended Audience.....	9
Cross-References to More Information	9
Trillium Software Resources.....	10
Regional Offices	10
Customer Support.....	10
Education Services	11
Trillium Consulting	11
CHAPTER 1	TSS Installation Information
	12
	TSS Important Changes.....
	12
	Supported Windows Platforms
	14
	Browser Support.....
	15
	Control Center (TSS Client).....
	15
	Administration Center and Discovery Center
	15
	Install Information.....
	15
	About Installing TSS
	16
	New Installations.....
	16
	Existing Instances
	16
	General Guidelines
	16
	Installation Package.....
	18
	Installing Standalone TS Web Server
	21
CHAPTER 2	TSS v15.0 User Interface Enhancements
	22
	General Enhancements
	22
	Expression Builder
	23
	New Functions.....
	23
	Views.....
	25
	Background Tasks View.....
	25
	List Views.....
	25
	Navigation Views.....
	25
	Icon Views
	26
	Summary Data View
	26
	Notifications.....
	26
	Environment Options
	26
	Ribbon.....
	27
	Quick Access Toolbar
	27
	E-R Diagrams
	28

CHAPTER 3	TSS v15.0 Data Discovery and Profiling Enhancements ...	29
	Profiling Unstructured Business Data	29
	Attributes	30
	Entities	32
	Business Rules Management	33
	Business Rule Library	33
	Join Projects	34
CHAPTER 4	TSS v15.0 Data Quality Enhancements	35
	Important: Read First	35
	General Enhancements	36
	Quality Projects	39
	Quality Processes.....	40
	Analysis Process.....	40
	Commonizer.....	40
	Database Read/Write	41
	Data Parsers	41
	Directory Browser	45
	Geocoder	46
	Global Data Router.....	46
	Name and Address Analyzer.....	48
	Parser Tuner	48
	Postal Directory Browser	48
	Postal Directories	48
	Postal Matchers.....	49
	Relationship Linker.....	53
	Schema Editor.....	54
	Set Selection Utility.....	54
	Transformer	55
	Window Keys.....	57
CHAPTER 5	TSS v15.0 Project Import/Export Enhancements	58
	Exporting Quality Projects.....	58
	Project Deployment.....	58
	Batch Deployment Tool	58
	Deploying/Exporting to Batch.....	58
	Exporting Project Definitions	59
	Real-Time Project Deployment.....	59
CHAPTER 6	TSS v15.0 Data Management Enhancements.....	61
	TS Case Management	61
	TS Reporting Adapter	62
	TSS Repository Manager.....	62

CHAPTER 7	TSS v15.0 Enterprise Integration Enhancements	66
	TS Director	66
	TS Director - CICS	67
	TS Web Services	68
	TS Connector for SAP Products	68
CHAPTER 8	TSS v15 Update 1 Enhancements	69
	Data Quality Enhancements.....	69
	Transformer Table Recode.....	69
	United Kingdom (GB) Postal Matcher.....	69
	Data Management Enhancements.....	70
	Local System Restricted Access Option.....	70
	64-bit Support for ODBC TS Reporting Adapter	71
	Enterprise Integration Enhancements	71
	Director .NET Wrapper API	71
CHAPTER 9	TSS v15 Update 2 Enhancements	73
	Control Center Minimum Requirements.....	73
	Supported Platforms	73
	Browser Support	73
	Trillium Cloud	74
	Expression Builder - New Date Functions	74
	Data Quality Enhancements.....	75
	City Changes File	75
	US Postal Matcher	75
	Data Management Enhancements.....	75
	Hadoop Hive Data Connection - Updated Support	75
	TS Reporting Adapter	76
	Enterprise Integration Enhancements	77
	TS Director.....	77
	TS Web Services	77
CHAPTER 10	TSS v15.1 Enhancements	78
	User Interface Enhancements	78
	Business Rules Manager	78
	Redesigned Expression Builder	79
	TO_INT64 Function	79
	DAYMONTHYEAR Function	80
	Data Quality Enhancements.....	80
	TS Quality for Hadoop Projects.....	80
	Customer Data Parser	80
	Geocoder	80
	Postal Matchers.....	81

	Transformer Data Reconstruction - Derived Attributes	82
	Repository Manager Enhancements	82
	Activating the Business Rules Manager.....	82
	TSS ODBC Loader Connection - Impala Support.....	82
	New Setting for config.txt File	82
	Enterprise Integration Enhancements	83
	TS Quality for Hadoop	83
CHAPTER 11	TSS v15.2 Enhancements	84
	EDQ 64-Bit Enabled TSQ Data Processing	84
	Running 64-bit TS Quality Projects.....	85
	Running 64-Bit and 32-Bit Concurrently	87
	UTF-8 Postal Tables.....	87
	Business Rules Center	89
	Data Quality Enhancements.....	90
	Postal Matchers.....	90
	Relationship Linker Results Analyzer	90
	UTF-8 Multiplication Rule.....	90
	Enterprise Integration Enhancements	91
	TS Connector for Siebel.....	91
	TS Director.....	91
	TS Quality for Hadoop	91
	TS Web Services	91
	SAP	92
CHAPTER 12	TSS v15.2 Update 1 Enhancements	94
	TS Web Services.....	94
CHAPTER 13	TSS v15.2 Update 2 Enhancements	96
	Data Quality Enhancements.....	96
	Basic Country Project	96
	Bulgaria Cyrillic	96
	Ireland Ericode.....	97
	Global Data Router	97
	Transformer - Web Service Map Files Changes.....	97
	Enterprise Integration Enhancements	98
	TS Web Service Manager.....	98
	SAP Add-On Support Package 01 for Add-On v8.5	98
CHAPTER 14	TSS v15.3 Enhancements	99
	Discovery Center	99
	Transformer Web Services Map Files Changes	100
	Postal Table Shipment Changes.....	100

	Trillium for SAP.....	101
	MDG 8.0 Support	101
	SAP HANA Certification.....	101
CHAPTER 15	TSS v15.4 Enhancements	102
	Discovery Center	102
	Quality Transformer.....	103
	Trillium Precise Web Services	103
	Legacy Plus (+) Operator	104
	Enterprise Integration.....	104
	Trillium for Siebel.....	104
	TS Director (32-Bit) Web Services.....	104
CHAPTER 16	TSS v15.5 Enhancements	105
	Discovery Center	105
	United States (US) Postal Matcher	106
CHAPTER 17	TSS v15.6 Enhancements	107
	Administration Center	107
	Discovery Center	108
	Data Quality Enhancements.....	108
	Certified Postal Matchers for 64-bit	108
	Customer Data Parser - Apartment Number Processing.....	109
	Business Data Parser - Attribute for Mixed Case.....	109
	Sort Utility - SyncSort Technology.....	109
	Data Management Enhancements.....	110
	Log File Management	110
	Enterprise Integration Enhancements	111
	Enterprise Data Quality (EDQ).....	111
	TS Web Services	111
	Security Note for Linux.....	112
CHAPTER 18	TSS v15.7 Enhancements	113
	Trillium Discovery and Collibra Integration	113
	Business Rule Analysis Results in Collibra.....	114
	Discovery Center	115
	Data Quality Enhancements.....	115
	Trillium™ Quality for Big Data	115
	LOOKUP Function	116
	Unique ID (UUID) Function.....	116
	Postal Directory Download	116
	Trillium Language Pack Locale Setting	117
	Trillium™ Discovery REST APIs and Documentation.....	117

	How the APIs are Used.....	117
	REST API Documentation	118
CHAPTER 19	TSS v15.7.4 Enhancements	119
	Apache Tomcat Upgrade	119
	Australian (AU) Postal Directories and AU Postal Matcher Changes ..	119
	AU Postal Directories Expiry Dates	120
CHAPTER 20	TSS Documentation	122
	TSS Documentation Set.....	122
	Changes and Updates	123
	Accessing Documentation	124
CHAPTER 21	Troubleshooting	126
	Setting the LD_LIBRARY_PATH Variable when Exporting Quality	
	Profiling Projects to Batch (UNIX)	126
	Connecting DB2 Adapter to iSeries	127
	Discovery Center Does Not Open	128
	Apache Tomcat server.xml is Missing if EDQ is Upgraded to v15.7.4	
	from v15.7.0 (Linux)	128
INDEX	129

Preface

This document describes the enhancements and changes incorporated into Trillium Software® System Version 15.0.0, cumulative through TSS v15.7.4, along with information about TSS installations, documentation, and troubleshooting.

Intended Audience

This document is intended for new and existing TSS customers who want to learn more about the latest versions of the software.

Cross-References to More Information

Throughout the release notes there are cross-references to TSS online help topics and technical manuals that describe in more detail many of the enhancements.

Cross references point to manuals or specific topics in the TSS and ECS Help, using the format Top Level Book > Topic > Sub-Topic. For example, for more information about N-way joins and Join Projects in the TSS Help, see Discover > Data Analysis Projects > About Join Projects.

Trillium Software Resources

For a comprehensive resource library of Trillium Software white papers, case studies, solution overviews, webcasts, education webinars, and related information, visit the Trillium Software website: trilliumsoftware.com

Scan code to access the
Trillium Software website:



Regional Offices

US	trlinfo@trilliumsoftware.com +1 (978) 436-8900
UK/EMEA	trillium.uk@trilliumsoftware.com +44 (0) 118 940 7676
Central Europe	trillium_de@trilliumsoftware.com +49 (0) 7031 714756

Customer Support

Trillium Software Customer Support is available Monday through Friday, 24 hours a day, to help you with any questions you may have about the Trillium Software System. This service is available to all customers who have active Trillium Software maintenance plans.

Email	■ TrilliumSupport@syncsort.com
Tel	■ 978-901-0000 (Worldwide Headquarters) ■ +44 (0) 118 940 7676 (European Headquarters)

Education Services

Trillium Software offers a variety of training services to get you started and incorporates advanced techniques to guide you through every implementation of the Trillium Software System:

- Classroom-based training
- Mobile training at customer sites
- Recorded webinars

For more information about selecting courses, requesting in-person training sessions, or to view webinars, visit the Trillium Software Education website at: www.trilliumsoftware.com/services/education.

Email Trillium Software Education directly at: trileducation@trilliumsoftware.com

Trillium Consulting

Trillium Software offers comprehensive and expedient technical consulting services that include:

- **Advisory Services**: Accelerate implementation, adoption, and ensure rapid time-to-value, with our best-practice guidance and sustainable data quality and data governance processes.
- **Implementation Services**: Drive ongoing data quality improvement with a proven approach that blends our methodology, technology, and expertise.
- **Customized Solutions**: Improve customer and reference data, and design and implement sustainable data governance processes.

To inquire about consulting services, call **+1 (978) 436-8900**.

CHAPTER 1

TSS Installation Information

This chapter describes the installation considerations for TSS depending on whether you are installing TSS for the first time or if you have an earlier version installed.

The chapter includes the following sections:

- [TSS Important Changes on page 12](#)
- [Supported Windows Platforms on page 14](#)
- [Browser Support on page 15](#)
- [Install Information](#)
- [About Installing TSS on page 16](#)
- [Installation Package on page 18](#)
- [Installing Standalone TS Web Server on page 21](#)

TSS Important Changes

Note the following changes:

- **Trillium™ Quality for Big Data.** For TSS v15.7, the solution Trillium Quality™ for Big Data is now available to deploy Trillium Quality projects to your Hadoop environment. Trillium Quality for Big Data integrates Trillium's data quality application with Syncsort DMX-h to cleanse and match your data in the Hadoop framework. For more information, see [Trillium™ Quality for Big Data on page 115](#).
- ① *As of v15.7, TS Quality for Hadoop is discontinued and is no longer installed with EDQ software.*
- **Trillium Discovery and Collibra Integration.** New for v15.7, this solution is installed with the TSS Windows and Linux repository server software and includes a Collibra-Trillium.zip file that contains the integration project files. The solution is installed in the following default location:

- Windows: C:\Program Files (x86)\Trillium Software\MBSW\15\svr\Collibra
- Linux: *install_path*/server/metabase/svr/collibra

For more information, see the *Trillium Discovery and Collibra Integration Administration and User's Guide* installed with the solution.

- **HP-UX Itanium.** As of TSS v15.4, HP-UX Itanium systems are no longer supported. TSS v15.3 was the last release to support HP-UX.

❗ *Support for HP-UX PA-RISC was previously discontinued.*

- **Apache Tomcat**

- As of v15.7.4, the version of Apache Tomcat installed with the TSS server has been upgraded to v8.5.32.
- After you install the TSS repository server, you must start Apache Tomcat server. For details, see the *TSS Installation Guide*.
- Set Apache Tomcat Ports (New Installations Only). The TSS server installation sets the Apache Tomcat start port to 8080 and the stop port to 8005. After you install the TSS server, if you install Enterprise Connectivity Solutions (ECS) and you plan to use 32-bit TS Web Services, verify (and change if needed) the Apache Tomcat start and stop ports in the *server.xml* file on your server system. *server.xml* is located in the following location:

Windows: C:\Program Files (x86)\Trillium Software\MBSW\15\Apache_Tomcat\conf

UNIX: *server_install_path*/metabase/Apache_Tomcat/conf

- If you have an existing instance of TSS v15 installed, and you have made changes to the 32-bit Apache Tomcat *server.xml* file, to retain these changes:
 - a. Before you upgrade, rename the existing *server.xml* file as a backup file (for example, *server.xml.bak*) for reference.
 - b. Install TSS. The server will install a new *server.xml* file.
 - c. After TSS is installed, update the new *server.xml* file with your modifications as needed.

For more information and the full procedure, see the *TSS Installation Guide*.

■ **Java**

- Java is no longer installed with the TSS server software.
- TSS requires Java 1.8. Before you install TSS v15.7, you must install Java/JRE (or JDK) 1.8, 32- or 64-bit version depending on the components you install:

Repository Server and Enterprise Connectivity Solutions/TS Director

- Windows JRE 1.8 32-bit
- Linux
- AIX

- Solaris Sun JRE 1.8 64-bit

Enterprise Data Quality (EDQ)

- Windows JRE 1.8 64-bit
- Linux

① *If you use the TS Director Software Development Kit (SDK) samples for Java, Java 1.6, 1.7, and 1.8 are supported. Ensure you select the correct version of the TrillGenClient.jar executable in the Trillium Software\ECS\15\samples\SDK\Java directory.*

- Install Java to the default install location on your server system. On Windows, the location is: C:\Program Files (x86)\Java. Restart your system after installation.
- Set the JRE_HOME environment variable to point to the default Java installation.
- **Solaris Sun.** If you have a TSS v15.3 (or earlier) server installed on a 32-bit Solaris Sun system and you are running 32-bit TS Web Services (part of TS Director/Enterprise Connectivity Solutions) you cannot upgrade to TSS v15.7 because Java 1.8 is unavailable for 32-bit Solaris Sun platforms.

Supported Windows Platforms

- Microsoft Windows 10
- Microsoft Windows 8
- Microsoft Windows 7
- Microsoft Windows Server 2016
- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2008

① *As of v15 update 2, Windows Vista and Windows Server 2003 are no longer supported.*

Browser Support

This section describes the browser support for the Control Center, the Trillium Administration Center and the Discovery Center client software.

Control Center (TSS Client)

Internet Explorer 10 and 11. If your client system is on Windows 10, you must use IE 11; Microsoft Edge is not supported. See the *TSS Installation Guide* for additional prerequisites and system requirements.

Administration Center and Discovery Center

Internet Explorer versions 10 and 11, Google Chrome, and Microsoft Edge.

Install Information

Note the following important information and install changes:

- **Java/JRE 1.8.** You must install Java/JRE 1.8 before running the TSS server installation. As of TSS v15.4, Java/JRE is no longer installed with TSS.
- **Enterprise Data Quality (EDQ).** In TSS v15.2, EDQ was introduced. EDQ is an installation package that includes TSQ 64-bit processing support for Windows and Linux systems. It installs 64-bit enabled TSQ core modules, TS Quality for Real Time, and TS Quality for SAP. (As of v15.7, TS Quality for Hadoop is no longer installed with EDQ.) For more information about EDQ and 64-bit, see [EDQ 64-Bit Enabled TSQ Data Processing on page 84](#). For additional information and requirements, see the Installing EDQ chapter of the *TSS Installation Guide*.

EDQ installation for Windows requires Microsoft Visual C++ 2013 Redistributable Package on the server system. Download from: <https://www.microsoft.com/en-us/download/details.aspx?id=40784>

- **SAP.** SAP for 32-bit operating systems is no longer installed with ECS. SAP for 64-bit is available when you install TSS EDQ. For more information, see [TS Quality for SAP \(SAP Connector\) on page 92](#).
- **SAP/Director.** For the Trillium™ Quality for SAP, and for any client using TS Director, after installation you must set the following environment variables:
 - TRILLDIRADDR: Name of the host or IP address (in dotted decimal format) of the node on which the Director listens. Set on client and cleansing/matching service machines.
 - TRILLDIRPORT: Port on which the Director listens for incoming requests. Set on client and cleansing/matching service machines.

About Installing TSS

This section includes important information about installing TSS.

New Installations

If you are installing Trillium Software System for the first time, see the *TSS Installation Guide* for guidelines and procedures. The PDF is installed with the product and is available as follows:

- On the Trillium Software FTP download site, in the Documentation folder.
- On the Trillium Software Customer Portal (see [Accessing Documentation on page 124](#)).

Existing Instances

Upgrades from earlier versions of v15 are supported with the release of v15.7.

Upgrades apply to the following TSS software:

- Repository server
- TS Quality core
- Client/Control Center
- TS Director/ECS
- Batch Deployment Tool
- Country Templates
- OLE DB Provider 64-bit (OLE DB Reporting Adapter)
- ODBC Provider 64-bit (ODBC Reporting Adapter)
- Enterprise Data Quality (EDQ) 64-bit

① *If you have a TSS v15.3 (or earlier) server installed on a 32-bit Solaris Sun system and you are running 32-bit TS Web Services (part of TS Director/Enterprise Connectivity Solutions) you cannot upgrade to TSS v15.7 because Java 1.8 is unavailable for 32-bit Solaris Sun platforms.*

General Guidelines

Note the following guidelines and information:

- The TSS v15 installation package has changed from pre-v15 versions as follows:
 - The country templates are now installed separately and are no longer a part of the TS Quality installation process. This allows more timely availability of country template updates. This is a change from previous versions where the 32-bit core and country templates were installed together.

- The TS Quality 32-bit core modules are installed with the TSS repository server. This is a change from previous versions where the 32-bit core and server were separate installs. (If you need to install only the TS Quality 32-bit core components, a separate install package is available for Windows and, for UNIX, separate core-only install command.)
- The 64-bit enabled core modules (introduced in TSS v15.2) are installed with EDQ.

① *For more information about changes to install paths and directory structures in TSS v15, see the technical bulletin **Install and Directory Structure Changes in TSS v15.0.0** available from the TSS software FTP site and the documentation page of the [Trillium Software Customer Portal website](#).*

- Most default port numbers for all TSS components are prepended with the product version number. For example, the default repository server port is 15040, the default repository server scheduler port is 15041, and so on. This simplifies installation of multiple versions of TSS components on the same server.
- After you install TSS, to use existing projects, import them into the latest Control Center. (Does not apply if you upgraded the client from a previous version of v15.)
- When you install TSS v15 and you have an existing instance of TSS from a pre-v15 release in your environment, you have the following options for handling existing data/repositories:
 - Create a new repository.
 - Convert a pre-v14 repository (that is, TSS Version 11.0.1, 11.5.2, 12.0.1, 13.0, or 13.5.1).
 - Upgrade a v14 repository (that is, TSS version 14.x).
 - Use an existing repository that is not associated with any previous TSS installation.

If you plan to re-use a repository server from a pre-v15 version, it must satisfy the following conditions:

- It must come from TSS Version 11.0.1, 11.5.2, 12.0.1, 13.0, 13.5.1 or 14.x.
- It must be complete and valid.
- It must be accessible from the server on which you are installing TSS v15.
- You do not need to disable User Account Control (UAC) to run the TSS installer, although you may encounter other situations where it must be disabled or lowered. See About User Permissions in the *TSS Installation Guide* for more information.

Installation Package

The TSS installation packages are available as downloads from the Trillium Software FTP download site.

① *The software is no longer available on CD/DVD.*

Table 1-1 describes the naming conventions and configurations for many of the TSS v15 installation packages available to you, depending on the license you purchased.

① *The software posted on the FTP site is subject to change.*

Table 1-1 TSS Installation Package Delivery

FTP Directory	Contents
Documentation (installed with the Control Center software unless otherwise noted)	PDFs of manuals and bulletins to help you install the software, including: <ul style="list-style-type: none">■ TSS Install Guide■ Standalone Web Server Install Guide (procedure also included in the TSS Install Guide)*■ ECS/TS Director Install Guide■ TSS Release Notes■ TSS Technical Requirements* *Available online only. ① <i>Additional documents and online help are installed with the software.</i>
TSS AIX Server	<ul style="list-style-type: none">■ ECS software for Windows and AIX■ Batch Deployment Tool■ Country Templates■ TSS Server■ TSS Standalone Web Server. Install on a Windows system to allow the web server to communicate with the repository server.
TSS Case Management	<code>tss_case_mngmt_version.build_win.exe</code>
TSS for SAP MDG	SAR file that contains MDG software package.

Table 1-1 TSS Installation Package Delivery (Continued)

TSS Linux Server	<p>ECS ECS executables for Windows and Linux:</p> <ul style="list-style-type: none"> ■ <code>tss_ecs_15.n.n.build#_linux.bin</code> ■ <code>tss_ecs_15.n.n.build#_win.exe</code> <p>EDQ EDQ executable:</p> <ul style="list-style-type: none"> ■ <code>tss_edq_15.n.n.build#_linux.bin</code> <p>Top level files:</p> <ul style="list-style-type: none"> ■ Batch Deployment Tool executable: <code>tss_bdt_15.n.n.build#_linux.sh</code> ■ Country Templates executable: <code>tss_ct_15.n.n.build#_linux.bin</code> ■ Repository Server executable (includes 32-bit Quality core): <code>tss_server_15.n.n.build#_linux.sh</code> (To install Quality 32-bit core only, use the <code>./setup -coreonly</code> command.)
TSS SAP Add-Ons	<p>Zip file that includes the following add-ons:</p> <ul style="list-style-type: none"> ■ CRM600 ■ CRM700 ■ CRM701 ■ CRM702 ■ CRM703 ■ SAP700
TSS SunOS Server	<ul style="list-style-type: none"> ■ ECS software for Windows and SUN ■ Batch Deployment Tool ■ Country Templates ■ TSS Server ■ TSS Standalone Web Server. Install on a Windows system to allow the web server to communicate with the repository server.
TSS Windows Control Center	<p>TSS_Windows_Control_Center_Client_15.n.n.zip file that contains the following:</p> <ul style="list-style-type: none"> ■ Batch Deployment Tool executable: <code>tss_bdt_15.n.n.build#_win.exe</code> ■ Control Center client executable: <code>tss_client_15.n.n.build#_win.exe</code> ■ ODBC Reporting Adapter (32-bit version of the TS Reporting Adapter for ODBC) software: <code>Odb32_15.n.n.build#.zip</code> ■ OLEDB64 Reporting Adapter software: <code>tss_Odb64_15.n.n.build#.zip</code> <p>i <i>The 32-bit version of the OLE DB TS Reporting Adapter is installed automatically when you install the Control Center.</i></p>

Table 1-1 TSS Installation Package Delivery (Continued)

TSS Control Center Client and Server	<p>ECS ECS executables for Windows:</p> <ul style="list-style-type: none"> ■ <code>tss_ecs_15.n.n.build#_win.exe</code> <p>EDQ EDQ executable:</p> <ul style="list-style-type: none"> ■ <code>tss_edq_15.n.n.build#_windows.exe</code> <p>TSS_Rep_Server_Control_Center_Windows_15.n.n.zip file that contains the following:</p> <ul style="list-style-type: none"> ■ Batch Deployment Tool executable: <code>tss_bdt_15.n.n.build#_win.exe</code> ■ Control Center client executable: <code>tss_client_15.n.n.build#_win.exe</code> ■ Country Templates executable: <code>tss_ct_15.n.n.build#_win.exe</code> ■ ODBC Reporting Adapter (32-bit version of the TS Reporting Adapter for ODBC) software: <code>Odb32_15.n.n.build#.zip</code> ■ OLEDB64 Reporting Adapter software: <code>tss_Odb64_15.n.n.build#.zip</code> ■ Repository Server executable (includes Quality core): <code>tss_server_15.n.n.build#_win.exe</code> (A core-only software package for Windows is also available.) <p>i <i>The 32-bit version of the OLE DB TS Reporting Adapter is installed automatically when you install the Control Center.</i></p>
TSS Windows ODBC64 Reporting Adapter	<p>setup.exe and associated files for 64-bit version of the TS Reporting Adapter for ODBC.</p>
TSS Windows Quality Core Only	<p><code>tss_quality_core_15.n.n.build#_win.zip</code> file that contains the core executable file <code>tss_quality_core_15.n.n.build#_win</code>.</p>
TSS SAP Field Extensions CRM	<p>Zip file that contains the software package.</p>
TSS SAP Field Extensions ERP	<p>Zip file that contains the software package.</p>
TSS Windows Vendor ODBC Adapter	<p>Zip file that contains the TSS vendor-supplied ODBC Setup.msi (for configuring this TSS repository loader connection)</p>
Trillium Quality for Big Data	<p>Two Apache Ambari service packages, one for the Big Data solution which includes DMX-h and Trillium Quality, and one for the TSS Postal Directories:</p> <ul style="list-style-type: none"> ■ Trillium Quality for Big Data: <code>tsqbd-version-linuxOS.ambari-service.bin</code> ■ Postal Directories: <code>tss_directories-client_name.date-linuxOS.ambari-service.bin</code> <p>where:</p> <ul style="list-style-type: none"> ■ <i>version</i> = the Trillium Quality for Big Data version number. For example, 15.7.0.17306.bd. ■ <i>linuxOS</i> = Linux OS version. For example, el7 for RHEL7.x. ■ <i>client_name.date</i> = Client name and the date (YYMM) when the directories were built.

Installing Standalone TS Web Server

The TS Web Server allows communication between the TSS repository server system and web-based TSS applications like the Administration Center and Discovery Center (formerly, Business Rules Center).

In Linux and Windows environments, when you install the TSS repository server, it automatically installs the TS Web Server. When you install the TSS server on AIX and Sun SPARC systems, the TS Web Server is not installed, therefore you must install the TS Web Server as a standalone application on a Windows system to allow the web server to communicate with the repository server.

ⓘ *Do not install the standalone web server on any Windows system that also has the TSS repository server installed.*

The standalone web server is available with the TSS installation software as a Windows install. Run the installer and follow the directions in the InstallShield Wizard. For the full procedure and guidelines, see Appendix B of the *TSS Installation Guide*.

CHAPTER 2

TSS v15.0 User Interface Enhancements

This chapter describes the enhancements and updates incorporated into the Control Center and Repository Manager interface, including:

- [General Enhancements on page 22](#)
- [Expression Builder on page 23](#)
- [Views on page 25](#)
- [Notifications on page 26](#)
- [Environment Options on page 26](#)
- [Ribbon on page 27](#)
- [Quick Access Toolbar on page 27](#)
- [E-R Diagrams on page 28](#)

General Enhancements

- **Close warning.** When working on a process in the Control Center, if you click the X button to close the window a message displays confirming that you want to close the window without saving any changes.
 - **Locale Setting.** The Control Center can display numeric values conforming to locale settings in the repository server. For example, if you set the locale option as German in the repository server, you will see the numeric value of one thousand displayed as 1.000,00. For more information in the TSS Help, see: Welcome to Trillium Software System > Locale View.
- ① *The repository administrator configures the locale setting when adding a repository. See [TSS Repository Manager on page 62](#).*

Expression Builder

This section describes new and modified functions available throughout the Control Center from the Expression Builder. For more information about using functions in the TSS Help, see: Discover > Data Compliance Using Business Rules > Expression Builder > Expression Elements > Expression Builder Functions.

- **When Using with Quality Conditionals.** You can now select input and/or output attributes whenever you specify conditions or attribute transformations using the Expression Builder within a Transformer's Output Conditionals. The input attribute names will be preceded by the entity name associated with the input. For more information in the TSS Help, see: Develop > TS Quality Processes > Expression Builder > Expression Elements > Expression Builder Attributes.
- **TCASE.** The TCASE function converts a string to title case (initial cap). TCASE now has an optional argument named ANY. When used, the first character of each word plus the first alpha character after any non-alpha character within the word will be returned in uppercase.
- **Modifying Offsets.** Offsets are used for the following three string functions in the Expression Builder:
 - **INSSTR**—Insert one string into another string at the specified offset.
 - **OCCSTR**—Parses a string to find the location of a substring and returns a numeric value equivalent to the position of the substring occurrence counted from the left of the string.
 - **SUBSTR**—Returns a substring which describes characters at the beginning, middle, or end of a string.

By default, the offsets for these functions in the Expression Builder are 1-based (offset by 1), unless you are working with a project created in a legacy (pre-Version 13) Quality project, in which case the results are 0-based. You can change the offset base value by editing the TSS configuration file, `config.txt`, located in the server install directory on your TSS server system. On Windows this directory is `C:\Program Files(x86)\Trillium Software\MBSW\15/etc`.

For example, when you are importing a project created in pre-Version 13.0, or you know that your project is 0-based, you can change the offset base value from 1 to 0 by editing the configuration file.

New Functions

The functions described in this section are new functions now available in the Expression Builder.

- **DEDUPE.** There is a new Quality function called DEDUPE, for use in the Transformer process and in the Set Selection utility. DEDUPE separates the value in an attribute into tokens and returns the deduped and delimited list of tokens.

- **Mathematic.** Eleven new mathematical functions have been added to the Expression Builder to support the implementation of fixed-point decimal arithmetic for numeric operations. TSS now supports 41 significant digits and 20 digits after the decimal place for improved precision.
 - **DIVIDEINT.** Returns the integer part of the result of a division operation. Non-numeric values will return no results.
 - **MAX.** Returns the larger of two numbers.
 - **MIN.** Returns the smaller of two numbers.
 - **ROUND_05UP.** Rounds up a decimal number to its nearest integer only if the number to be rounded is either 0 or 5.
 - **ROUND_CEILING.** Rounds up a decimal number to the nearest integer with a bias towards infinity.
 - **ROUND_DOWN.** Rounds down a decimal number to its nearest integer with a bias towards 0.
 - **ROUND_FLOOR.** Rounds down a decimal number to its nearest integer with a bias towards negative infinity.
 - **ROUND_HALF_DOWN.** Rounds down a decimal number to the nearest integer. If equidistant (0.5), rounds down.
 - **ROUND_HALF_EVEN.** Rounds a decimal number to the nearest integer. If equidistant (0.5), rounds so the result is an even number.
 - **ROUND_HALF_UP.** Rounds up a decimal number to the nearest integer. If equidistant (0.5), rounds up.
 - **ROUND_UP.** Rounds up a decimal number to its nearest integer with a bias away from 0.
- **Statistical.** The following eight new statistical functions have been added to the Expression Builder in support of the percentiles and standard deviations statistical analysis:
 - **ISOUTLIER.** Returns true (1) for all numeric data whose deviation is equal to or greater than the deviation level specified with the function. The function returns false (0) for all numeric values with deviation less than the deviation level specified with the function.
 - **MEAN.** Returns the numeric average of the values in an attribute, determined by the sum of values in the attribute divided by the number of values.
 - **MEDIAN.** Median is the numeric value separating the higher half of a data set from the lower half. This function returns the median value of the specified attribute.
 - **PERCENTRANK.** Returns the rank of a specified numeric value in a data set. The percent rank represents the location of the percentile in a value. For example, halfway in a value the percentrank would be 50%.
 - **QUARTILE.** A quartile is used to rank numeric data into quarters. The function returns the requested quartile of a value in an attribute as a percentage of the attribute.

- **STDDEV**. Returns the standard deviation of an attribute. Standard deviation is used to measure how widely values are removed from the average value in an attribute. Use the results of this function to run the ISOUTLIER function.
 - **TOTAL**. Returns the total of a specified attribute.
 - **VARIANCE**. Returns the variance of a specified attribute. Use this function to determine how far values in an attribute are spread out.
- ① *Statistics functions are not supported for Quality processes. Use functions on real entities in a test environment.*

Views

Background Tasks View

- **Delete Multiple Background Tasks**. You can now delete multiple background tasks at a time from a Background Tasks List View.
- **Schedule Library Entity Import as Background Task**. When you import entities into the Business Rule Library, you now have the option of scheduling the job. When scheduled, the import job will display as a background task. This allows you to better track the status of the import job and is useful in situations where you are importing hundreds of entities into the Library.
- **Rename Task**. In the Background Tasks List View, a short-cut menu option is available to modify a job name: right-click a job, select **Rename Task**, make the necessary changes, then save the changes.

List Views

- **Edit User-Defined Columns**. When you add columns in a List View using the Choose List View Columns window, you can now edit these user-defined columns. For more information, see the TSS Help: Tour of the Control Center > List Views > Organizing Information in List Views > Creating a Column in a List View.
- **Exporting List Views**. Information displayed in a List View can be saved by exporting the data to an external file either on your local drive or on the repository server. The procedure for exporting to the server has changed: Now you can only export to the /export directory on the server system. For more information in the TSS Help, see: Tour of the Control Center > List Views > Exporting Data in List Views.

Navigation Views

- **Sort Entities and Attributes**. You can sort the order of the entities that display in the Entities tab in ascending and descending order. You can also sort the attributes contained in an entity. By default, entities and attributes display in order based on the object identity numbers.

Icon Views

- **Setting Icon View Options.** The Control Center now allows you to change the size of icons (either large or small) displayed in Icon Views of projects, library entities, and library attributes. For more information, in the TSS Help see: Getting Started > Customizing the User Interface > Setting Icon Options.
- **Quality Process Icons.** The TS Quality processes are now visually represented in a Quality Process Flow in one of two ways, either as arrows or as unique icons. For more information, see [General Enhancements on page 36](#).

Summary Data View

- The Summary Data View has been enhanced to include graphs and charts that display profiling statistics analysis, including percentile and standard deviation metadata.

Notifications

The following information now displays in the Control Center in a notification bar under the command tabs and Ribbon:

- **Message, error, and warnings.** Information messages display when a task or process successfully finishes. Errors and warnings display when a TSS problem is detected.
- **Task progress.** When you insert a TS Quality process, add a process branch, or add an input to a Quality project, a progress notification bar displays information about the task in progress.
- **Scheduled tasks.** When you perform a scheduled task (for example, running a Quality process/project and creating an entity), the scheduler notification bar displays. You can either schedule the job to run now or later. You can also change the default name of the job when running one job at a time.

For more information about working with notifications and setting notification options, in the TSS Help see: Tour of the Control Center > Notifications.

Environment Options

- **Server Connection Timeout Interval.** Due to some TSS server systems running many processes concurrently, the response time to a client request (for example, connecting to a repository when you sign into the Control Center) can be slow to the point of timing out before the request is accepted.

There is a new Environment Options setting called **Server Connection Timeout Interval**. This option allows you to customize the number of seconds before the Control Center's connection to the TSS server times

out. Getting Started > Customizing the User Interface > Setting Environment Options.

Ribbon

The Ribbon in the Control Center and the Repository Manager has been updated as follows:

- The Data Command set has been removed from the Ribbon.
- The **Refresh** icon has been moved to the View command set.
- In the Control Center, the Create Entity icon has been moved to the Create command set and is now labeled **Entity**.

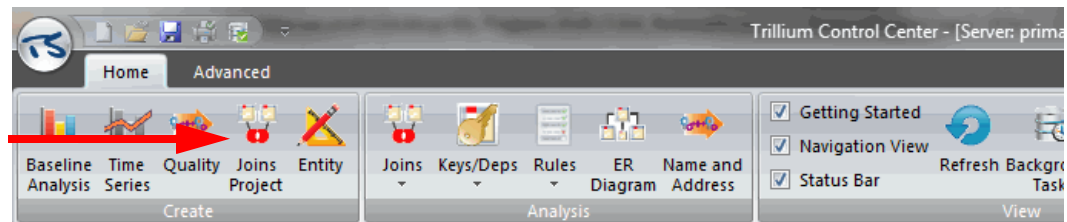
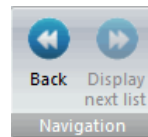


Figure 2-1 Control Center Ribbon

- When you open a List View, a new command set called **Navigation** displays on the Home tab, with **Back** and **Display next list** icons.



This allows you to navigate through List Views without having to click the List View tab.

- The Control Center **Analysis** command set on the Home tab has two new icons:
 - Click the **Rules** icon to access business rule management options:
 - Search business rules
 - Assign and manage business rules categories
 - Assign and manage business rules priorities
 - Open and view saved library business rule searches
 - Click the **Name and Address** icon to open the Name and Address Analyzer.

Quick Access Toolbar

When you open a List View or Icon View, the menu items on those tabs are added to the Quick Access Toolbar drop-down list, and are available until you close the List or Icon View. This allows you to access these options regardless

of which Command set tab is active.

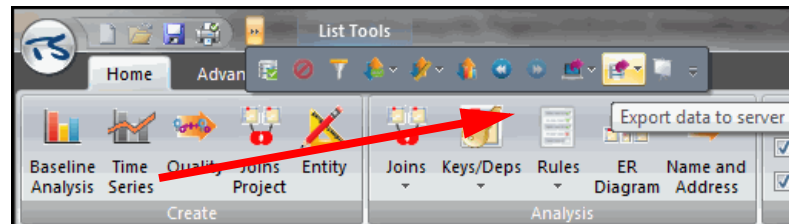


Figure 2-2 Quick Access Toolbar with List View Menu

E-R Diagrams

Printing Diagrams. You can now print an Entity Relationship (E-R) Diagram.

CHAPTER 3

TSS v15.0 Data Discovery and Profiling Enhancements

This chapter describes the enhancements and changes incorporated into the Control Center profiling and discovery functionality, including:

- [Profiling Unstructured Business Data on page 29](#)
- [Attributes on page 30](#)
- [Entities on page 32](#)
- [Business Rules Management on page 33](#)
- [Join Projects on page 34](#)

Profiling Unstructured Business Data

After you analyze words and phrases in the input attribute, you can create your own business data categories, along with the word and phrase definitions, that tell the Business Data Parser (BDP) process how to identify and standardize your business data. Word definition tables created in profiling are stored in the Library and can be imported for use in the BDP process.

There are multiple ways to access to a word definition table during profiling activities.

- Attribute List View of phrases. Right-click the phrase and select Add to word definitions table.
- Attribute List View of values. Right-click the value and select Add to word definitions table.
- Value's Details View. Right-click the value and select Select Show wide value, and then select Open Word Table.

For more information in the TSS Help, see: Discover > Data Analysis > Data Content > Word Definition Tables.

Attributes

- **View and Search Large Attributes.** When working with large attribute values (those wider than the current resolution can display), you can now open the contents of individual cells in a List View and view them in a separate window. The window allows you to search for specific text in the value, change text size to better visualize the contents, and copy text into another application. You can also add words and phrases in a large attribute to an ignore words table.

For more information in the TSS Help, see: Tour of the Control Center > List Views > Organizing Information in List Views > Displaying Wide Values in a List View.

- **Statistics Analysis.** When you run an analysis of an attribute that contains numeric data (decimals and integers), there is now the option to analyze statistics including percentiles and standard deviations.
 - **Percentiles.** A percentile is a rank which indicates the position of an attribute value in terms of percentage in a particular attribute in sorted order. For example, if the attribute values are sorted, a value at percent rank 20% is the value below which 20 percent of the attribute values are found.
 - **Standard Deviation.** A standard deviation is a measure of how widely numeric values are dispersed from an attribute's mean (numeric average). The dispersion range is measured in levels. Deviation levels start at 0, 1, 2 and so on, continuing to the maximum found in the corresponding data. For example, if you have input data of 1 2 3 4 3 2 1 2 3 5 6 1, a standard deviation of 1.534 will be the result. Data that falls toward the maximum range of deviations are called outliers.

For more information in the TSS Help, see: Discover > Data Analysis > Data Content.

- **Phrase Analysis**
 - **Analyze Metaphones.** The Attribute Properties window now includes the option to analyze metaphones against phrases found

during phrase analysis for an attribute. You can drill down to similar phrases and to data that contains the selected phrase.

- **Ignore Word Tables.** When you run a phrase analysis for one or more attributes, words may be included which make it difficult to fully understand the results. For example, words that make it hard to identify identical phrases in your data.

You can now create or import ignore word tables in the Library that you customize to include words you want the phrase analysis to ignore when generating the results. These tables are a way for you to instruct the analysis to ignore small or insignificant words or phrases that obscure the results. Customized ignore word tables can be imported for use into the Business Data Parser.

For more information in the TSS Help, see: Discover > Data Analysis > Data Content > Ignore Words.

- **Attribute Properties.** The Attribute Properties window has been modified. It now includes two tabs, General and Analysis.

From the General tab (Figure 3-1) you edit an attribute's name, business description, Include in Joins check box, and Create Index check box.

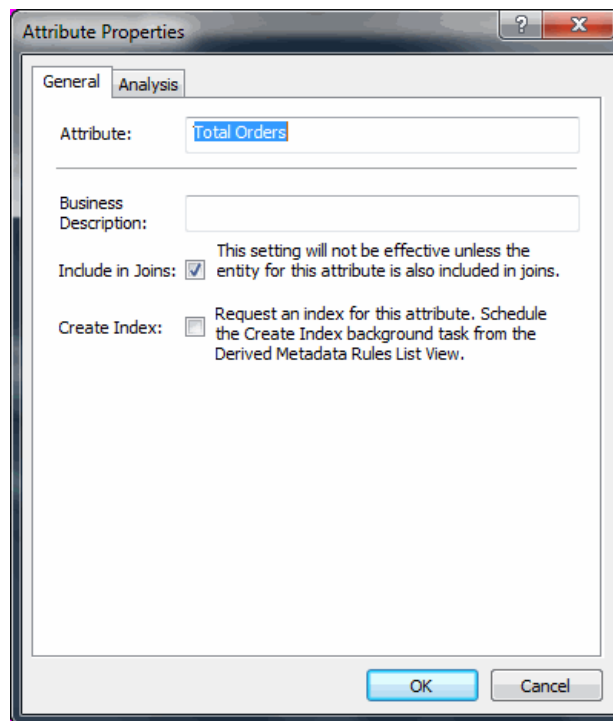


Figure 3-1 Attribute Properties - General Tab

From the Analysis tab, you configure and run analysis on derived metadata rules such as masks, metaphones, patterns, soundexes, percentile, and standard deviation. You also configure and run phrase

analysis, classify phrases on the basis of metaphones, and configure ignore words.

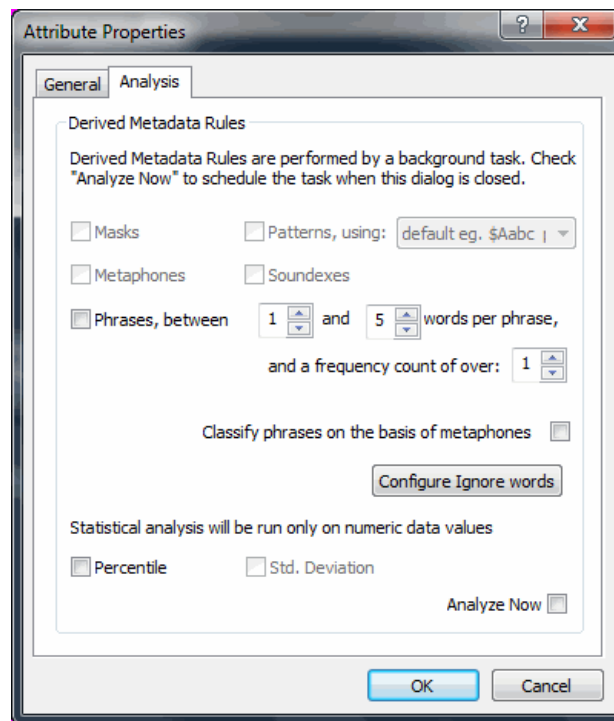


Figure 3-2 Attribute Properties - Analysis Tab

To open the Attribute Properties window and analyze attributes, do one of the following:

- To analyze a single attribute, right-click an attribute anywhere in the Control Center and select **Attribute Properties**.
- To analyze multiple attributes, right-click an entity and select **Drill down to derived metadata rules**. In the Derived Metadata Rules List View, highlight all attributes whose properties you want to modify, right-click and select **Selected Attributes Properties**.

Entities

You can copy entities created during profiling activities and paste them in your Quality projects. For more information in the TSS Help, see: Develop > TS Quality Projects > Copying an Entity from Profiling.

Business Rules Management

This section describes enhancements made around the organization and management of business rules in the Control Center.

- **Business Rules Analysis—No Rule Limit.** You can now select more than 30 rules at a time when analyzing rules using the Re-analyze selected rules option.
- **Manage Rules from the Ribbon.** The Control Center Analysis command set on the Home tab now has a Rules icon that is used to access business rule management options:
 - Search business rules.
 - Assign and manage business rules categories.
 - Assign and manage business rules priorities.
 - Open and view saved library business rule searches.

Business Rule Library

- **Enable/Disable Standard ABRs.** The Repository Manager has a new option that allows TSS administrators to control whether attribute business rules in the Standard library attribute are automatically copied to attributes when entities are created.
- **Rule Groups.** There is a new library folder called Rule Groups which allows you to group rules for better management and organization. Rule groups allow you to:
 - Analyze multiple grouped rules at a time, in top-level folders (affects all contained sub-folders) or in sub-folders.
 - Drill-down to rule results in an Icon View.

For more information in the TSS Help, see: Discover > Data Compliance Using Business Rules > Business Rules Library > About Rule Groups.

- **Saved Search.** Create a library business rule search and save it in a new library folder called Saved Search. You create searches using functions and operators available in the Expression Builder, allowing a more targeted filter on which to search results. Saved searches allow you to:
 - Execute the saved search against a view of all entity and attribute business rules.
 - Re-analyze a rule or drill-down to see where the rule is used and the rule results.
 - Copy a search to create a new search, then modify as needed.

For more information in the TSS Help, see: Discover > Data Compliance Using Business Rules > Business Rules Library > About Saved Searches.

Join Projects

- **Copying Join Projects.** You can now copy a Join Project for situations where you want to reuse a project configuration. When you copy the project, you have the option of adding new input entities.
- **Exporting/Importing Join Projects.** Join Projects can now be exported to and imported from local systems and server systems. This allows you to move a Join Project to a different machine or repository.
- **Editing Join Output Entity.** When you create or modify a Join Project, you can now select columns to be included in a join entity. Use this feature when you want to hide attributes not needed for join analysis.

Find more information about using N-way joins and Join Projects in the TSS Help: [Discover > Data Analysis Projects > About Join Projects](#).

CHAPTER 4

TSS v15.0 Data Quality Enhancements

This chapter describes the enhancements and changes incorporated into TS Quality standardization and cleansing processes and projects.

The enhancements are grouped into the following categories:

- [General Enhancements on page 36](#)
- [Quality Projects on page 39](#)
- [Quality Processes on page 40](#)

Important: Read First

When configuring the Global Data Router process, countries associated with Basic Countries (zz) template will not be available for processing through the zz country flow under the following conditions:

If you select the **Display all countries** check box and also choose to use all available countries for processing, countries associated with basic countries processing will not be available for selection in the Basic Countries edit window.

You must click back to the Create Quality Projects - Countries window and remove **Basic Countries (zz)** from the Selected Countries list to proceed.

General Enhancements

This section describes general data quality changes and enhancements in TSS v15.

- **Data Browser.** The Data Browser is a stand-alone tool that allows you to quickly view data in a file. It is not tied to any entities, schemas, or projects and is accessed from outside the Control Center. Use the Data Browser to examine any data file (for example, TSQ output files that are produced by running a project in batch) to verify its contents and format. For more information in the TSS Help, see: Develop > Data Browser.
- **Regenerate TSQ Data.** When you regenerate input TSQ data on a dynamic entity created using a ODBC connection, each attribute in the dynamic entity will be updated with new schema information from the source database.
- **Viewing Large Parser Customization Log File.** When you try to view the Parser Customization log file which is larger than 2 MB, you will get a message that says the file is too large to view. You then have the option of downloading the file for viewing on the client. For more information in TSS Help: Develop > TS Quality Processes > Viewing Process Results > Viewing Process Report Files.
- **Additions to Basic Country List.** The following countries have been added to the list of basic countries that display in the Control Center:
 - **Kosovo (KV KOS)**
 - **Hong Kong - Traditional Chinese (CP950), native language version.**
 - **Macao - Traditional Chinese (CP950), native language version.**
 - **Thailand - Thai (CP874), native language version.**

❗ *To use the native versions of Hong Kong, Macao, and Thailand, the input data must be in multi-byte native language. If the input data is in Latin-1 or English, use the Latin-1 versions such as Hong Kong (Latin-1) and Macao (Latin-1). For more information in the TSS Help, see the topic Basic Countries (ZZ Template).*
- **Changes to Basic Country List.** Figure 4-1 describes updates to the list of basic countries in the Control Center. These are changes to only the names that are displayed within the Control Center; the support for these countries has not changed.

Table 4-1 Updates to Basic Country List

Country Listing	Updated To
Heard	Heard and McDonald Islands
Pitcairn	Pitcairn Islands
Republic of Macedonia	Macedonia

Table 4-1 Updates to Basic Country List (Continued)

Saint Vincent	Saint Vincent and the Grenadines
South Georgia	South Georgia and South Sandwich Islands
Svalbard	Svalbard and Jan Mayen Islands
Virgin Islands	British Virgin Islands

- **Quality Process Icons.** The TS Quality processes are now visually represented in a Quality Process Flow one of two ways, either as arrows or as unique icons. Figure 4-1 shows each unique icon and its corresponding process. Icons can be enabled or disabled in the Environment Settings option window in the Control Center. For more information, in the TSS Help see: Getting Started > Customizing the User Interface > Setting Icon Options.






























Analysis		Merge/Split	
Business Rules		Postal Matcher	
Business Data Parser		Relationship Linker	
Commonizer		Reference Matcher	
Customer Data Parser		Resolve	
Decision Point		Sort for Postal Matcher	
Dependencies		Sort for Linking	
Transformer Data Reconstruction		Transformer	
File Update		Database Write	
Geocoder		Set Selection	
Global Data Router		User-Defined Sort	
Keys		User-Defined Process	
Transformer Label Lines		Transformer Unified Output	
Load		Window Key Generator	
Transformer Pre Postal Matcher			

Figure 4-1 Quality Process Icons

- **Entity Groups.** Entity groups have been enhanced as follows:
 - **Naming Entity Groups.** When you create an entity group, you can now give the group a name. This helps label and organize the groups within a single project. If you do not name the group, TSS gives the group a default name. You can modify an entity group name at any time.
 - **Country Flow Entity Groups—Default Names.** When you create a project and include entity groups for country flows in multi-country projects, the name of the group now includes the associated country code; for example, US Process Flow.

Quality Projects

This section describes the changes and enhancements made to TS Quality projects.

- **Country Templates:**
 - **Business Projects.** Creating a business project no longer requires a county template and customers are not required to purchase any country templates if they plan to implement customized business projects only. A generic template (WW template) is used out of the box.
 - **build.txt File.** Starting with TSS v15, a new file called `build.txt` will be installed in the country templates directory. It contains information about which version of the templates are installed.
 - **all_country_recode table.** A new table called `all_country_recode.tbl` is now delivered with the country templates for reference purposes. The table contains a list of all supported countries and their respective 2- and 3-character ISO codes. For example, for Armenia the country codes are AM and ARM.

This table is located in `C:/Program Files (x86)/Trillium Software/MBSW/15/tsq/tables/general_resources`.

- **Dynamic Entities.** If you select a dynamic entity that has over 500 rows and has not been regenerated, by default, the first 500 data rows in the source are used to generate the associated flat file. This flat file can be regenerated with a lesser or greater number of rows by regenerating the input data.
- **Profiling Entities.** You can copy entities created during profiling activities and paste them in your Quality projects. For more information in the TSS Help, see: Develop > TS Quality Projects > Copying an Entity from Profiling.
- **WW_PROJECT.** The `ww_project`, along with the `ww city` table, are now installed automatically for all customers. This template is necessary to create user-defined projects.

Quality Processes

This section describes the changes and enhancements made to processes, applications, utilities, and postal directories used in TS Quality projects and workflows, including the following (in alphabetical order):

- [Analysis Process on page 40](#)
- [Commonizer on page 40](#)
- [Database Read/Write on page 41](#)
- [Data Parsers on page 41](#)
- [Directory Browser on page 45](#)
- [Geocoder on page 46](#)
- [Global Data Router on page 46](#)
- [Name and Address Analyzer on page 48](#)
- [Parser Tuner on page 48](#)
- [Postal Directory Browser on page 48](#)
- [Postal Directories on page 48](#)
- [Postal Matchers on page 49](#)
- [Relationship Linker on page 53](#)
- [Schema Editor on page 54](#)
- [Set Selection Utility on page 54](#)
- [Transformer on page 55](#)
- [Window Keys on page 57](#)

Analysis Process

- **Export to Batch.** When you export a project containing an Analysis process into a batch script, the Analysis process will run as part of the batch execution. For more information in the TSS Help, see: Develop > TS Quality Processes > Profiling Processes > Using the Analysis Process.

Commonizer

- **Common Attributes.** The Commonizer's Common Attributes designate the decision routines (rules) used to copy data from one attribute into other attributes in the records linked by a match key. Now there is no limit to the number of rules you can add when editing Common Attributes in the Commonizer process.
- **Survivor Rules—New Option.** When you designate a survivor record in the Commonizer, there is a new option called **Always Create Survivor**. This option determines how the Commonizer handles the survivor when none of the records match the decision routine. For more information in the TSS Help, see: Develop > Survivorship and Commonization > Designating the Survivor Record.

- **No Copy Option.** When you specify the decision routines for commonizing or survivor selection, you can optionally select the non-blank (NB), non-zero (NZ), and non-blank/non-zero (NBZ) options for certain routines.

The no copy option is used in conjunction with the non-blank and/or non-zero options to prevent the Commonizer from selecting the first row when all rows contain either a blank or zero-filled values in the test attribute. For more information in the TSS Help, see: Develop > Survivorship and Commonization > Designating the Survivor Record.

Database Read/Write

- **Commit Frequency Option.** There is a new option for the Database Write process called **Commit Frequency**. The numeric value you enter for Commit Frequency controls the frequency of the records committed to the database. This allows you to track progress of the Database Write process and is useful when you want to locate process hangs. For more information in the TSS Help, see: Develop > Database Read/Write > How to Write Back Data to a Database.
- **Maximum Attribute Size.** The maximum attribute size is now 32KB for the Database Read/Write process when exported in batch. Attributes that are bigger than 32KB, such as Text fields in a SQL Database, are truncated.
- **Final Output Delimiter Option Unsupported.** The Database Write process does not write to an output file, it writes directly back to the database. Therefore, when the last process in a Quality project is Database Write, and upon exporting the project to a batch script you select a delimiter character for the Final Output Delimiter, when you run the batch script it will fail at the last step, which is creating the output delimited file.

To avoid this, do not select any delimiter character for the Final Output Delimiter option.

- ① *This only applies to projects that have Database Write as the last process in the project flow.*

Data Parsers

This section describes changes and enhancements to the Business and Customer Data Parsers, along with general parser enhancements.

- **Parsing Exceptions File.** If you do not need the parsing exceptions file, select the check box named **Exceptions file not required**. This option is available when you specify output settings for the CDP and BDP.

This option is useful because the parsing exceptions file can become very large and have an impact on processing. By default, this option is not selected and the parsing exceptions file will be generated.

Business Data Parser

- **New Option.** By default, the BDP converts all plus signs (+) to ampersands (&). There is a new option called **Turn off conversion of plus signs to ampersands**. Check this option if you do not want the BDP to convert all plus signs to ampersands.

This option is available on Options tab when you edit the BDP process.

- **Category ID.** When you use the BDP Word Definitions Tool to define the business data categories, each category is now automatically assigned a unique ID number which is displayed in the Control Center for reference.
- **Import Customized Table.** You can now import customized word definitions tables and ignore word tables from either the Library or from the client system.
- **Rename Output Attributes.** In v15, the BP_USER1-500 attributes are now renamed using the corresponding category name when you import a word definition table into the BDP, as follows:

The Single type category names will replace BP_USER1 - 25 and the Multi type category names will replace BP_USER26 -500. All related BP_USERx, BP_USERx_DISPLAY and BP_DATA_PRESENT_USERx attribute names will be replaced with the format of category_RECOURSE, category, and category_DATA_PRESENT, respectively. For example, if you have a category called "YEAR," the output attribute names will be YEAR_RECOURSE, YEAR, and YEAR_DATA_PRESENT.

- **Remove Output Attributes.** When you import a word definition table from the Library or client you have the option to remove unneeded output attributes.

For more information about the BDP in the TSS Help, see: Develop > About Business Data Parser.

Customer Data Parser

Options:

- The advanced option called **Use a spelling algorithm when matching city names** is now called **Spelling algorithm for matching city names**. There is now a choice of three algorithms to be used for matching the input city name against the city table. Corresponds to the CDP APPLY_CITY_SPELLING_ALGORITHM setting.
- Use City Changes File**. When **Spelling algorithm for matching city names** is set to **Enhanced spelling algorithm**, the new option **Use city changes file** becomes available.

The screenshot shows the 'Advanced Parser settings' dialog box. The 'Spelling algorithm for matching city names' dropdown menu is set to 'Enhanced spelling algorithm'. To the right of this dropdown is a checkbox labeled 'Use city changes file', which is checked. A red arrow points to this checkbox. Other settings visible include 'Assign gender option', 'Attribute to identify rows in exceptions file', 'Pre-processing option for house numbers' (set to 'Minimal pre-processing'), 'Split hyphenated house numbers into two attributes', 'Street ordinal options' (set to 'Add street ordinals to street lines'), and 'Maximum length for user definitions'.

In the Advanced Rules section of the CDP you then have the option to copy a city changes file to your system, customize it by adding entries to the REPLACE_CHARACTER and SWAP_WORDS parameters, and upload it again for use in the process.

These entries instruct the process to use the specified characters and words to look up city names. By using this secondary table, the process can obtain better matching in table lookup. (The city changes file is also available in the Global Data Router.)

For more information in the TSS Help, see: Develop > Customer Data Parser > Setting Up the Customer Data Parser > Editing Advanced Rules Files.

- Additional Geography Lookup**. There is a new option called Additional Geography Lookup which validates province/city/postcode combinations against the auxiliary city table and updates or appends information in the output. This option will return the flag (Y/N) in the pr_verified_geography attribute. For Hong Kong, this option also returns ISLAND for some cities in the pr_sub_city attribute. (This option is associated with the new xxAUXCIT.ben/1en file, described below.)

i *This option is not available for the following countries: Basic Countries (ZZ), China (CN), United Kingdom (GB), Japan (JP), Korea (KR), Singapore (SG), and Taiwan (TW).*

❶ *For Canada (CA), Netherlands (NL), and Portugal (PT), the flag in the pr_verified_geography attribute is not available.*

- **Lookup All City Combinations.** There is a new option called Lookup All City Combinations which looks up all word combinations for city when the city lookup process is performed for a multi-word input. By default, the lookup is not performed for all combinations when the initial full string is not a city.
- **Output All Name Data.** Select this option if you want to write out any name data that does not match the found name pattern. The unmatched name data is stored in the pr_name_relation attributes.
- **Street Ordinal Options - Do Nothing.** The street ordinal option Do nothing (keep inputs) (which does not add or remove street ordinal) is now the default selection for all countries except US.
- **Use TSS city table.** Select this option if you want to use the city table provided by Trillium Software. This option is used when you create a user-defined template using a dummy city table (wwcity), and then subsequently purchase the country-specific city table.
- **Write misc data to neighborhood Option.** Select this new option if you want to obtain neighborhoods when there is miscellaneous data identified between a street line and a geography line. The output is stored in the pr_neigh1 and pr_neigh2 attributes. (The option is selected by default for India (IN) and Hong Kong (HK).)

For more information in the TSS Help, see: Develop > Customer Data Parser > Setting Up the Customer Data Parser > Options > Specifying Advanced Customer Data Parser Settings > Advanced Customer Data Parser Settings.

- **xxAUXCIT.ben/len File.** In v15.0.0 there is a new optional ben/len file called `xxAUXCIT` (xx is the country code) which helps the Customer Data Parser verify that your input city/postcode is a valid combination.

❶ *Basic Countries (ZZ), China (CN), United Kingdom (GB), Japan (JP), Korea (KR), Singapore (SG), and Taiwan (TW) do not support the xxAUXCIT file.*

The `xxAUXCIT` file will be delivered with the TSS country projects on a yearly basis and be included with the postal directory deliveries.

Use the optional `xxAUXCIT` file to do the following:

- Update/append province, city, and/or postcode information.
- Validate province, city/postcode values and set additional flag (pr_verified_geography) for most countries except CA/Canadian, NL/Netherlands, and PT/Portugal (for which the `xxAUXCIT` table does not contain the full postcode).
- For Hong Kong, if ISLAND name is available in the Province of NT, put the ISLAND name in the PR_SUB_CITY field.

The optional parameter `AUXILIARY_CITY_FILE_NAME` is exposed in

the Control Center through the **Additional Geography Lookup** option (see description above). For the US, this new check box will always be disabled and checked. For all countries other than US, if `xxAUXCIT` exists in the postal tables directory, the check box will be enabled and checked by default. If it does not exist, the check box will be disabled and unchecked.

If `AUXILIARY_CITY_FILE_NAME` is present and the `xxAUXCIT` file exists, the new functionality will be applied to the Customer Data Parser. The `AUXILIARY_CITY_FILE_NAME` table will be enhanced to support countries that have at least two levels of geography (City, Province, and Postal Code).

- **CDP Rule Change for India.** Name patterns for the India CDPRUL table have been adjusted in v15 as follows: The CDPRUL contains a list of names which are always used as SURNAMES in the Northern and Central parts of India (names of people from the southern half of the country do not carry a SURNAME). If a name is a SURNAME it will be parsed as a SURNAME, otherwise it will be parsed as a GVN-NM.

Example Patterns:

- 'ALPHA SURNAME' will be parsed as 'GVN-NM1 SURNAME'
- 'ALPHA ALPHA' will be parsed as 'GVN-NM1 GVN-NM2'

- **CDP Rule Table Updates.** When applicable, the CPDRUL tables have been updated to include Province information to help with an improved Province/City validation routine.
- **Japanese Customer Data Parser.** When parsing Japanese data using the Japanese Customer Data Parser, the additional option **One Person per Input Record?** is now selected by default.

When this option is selected, after the process runs the `PNP_SINGLE_PERSON_MODE` setting will be set to Y. If you run the process without selecting **When One Person per Input Record?**, the `PNP_SINGLE_PERSON_MODE` will be set to N.

Directory Browser

For v15, the Directory Browser (formerly named the Postal Directory Browser) has been enhanced. In addition to allowing you to view detailed information about addresses in your postal directories, you can now also browse your geocoding directories. The application has been renamed to Directory Browser.

The Directory Browser can also be opened outside of the Control Center as a stand-alone application. This allows you to browse the postal or geocoding directories for a selected country without opening the Control Center.

The Directory Browser can be launched from both the Start menu and from the Control Center.

- From the Start menu, select **All Programs > Trillium Software > TSS 15 > Directory Browser**. Select the country and browsing type,

Postal or Geocoding. When launched from the Start menu, you can browse the directories for all countries for which you are licensed.

- From the Control Center, in the Navigation or Project View right click the **xx Postal Matcher** (xx = country code) or **xx Geocoder**, select **Edit Process**, select the **Tools** tab, and click **Launch Directory Browser**. (For the zz Postal Matcher and zz Geocoder, a list of Basic countries displays. Select the country and click **Continue**.) Select the browsing type, Postal or Geocoding. When launched from the Control Center, you can browse the directories for the country from which the browser was launched.

For more information in the TSS Help, see: Develop > Directory Browser.

Geocoder

- **New Input Attributes.** There are three new input attributes for the Geocoder process:

New Input Attribute	Description
Sub City	Sub city, district, suburb, neighborhood
Principality	Administrative region
Extra City	Small region (for example, Cedex in France)

For more information in the TSS Help, see: Develop > Geocoder > Specifying Geocoder Options.

- **US Census CBSA Changes.** Notification was provided by Trillium Software's data supplier that there are changes to the Core Based Statistical Areas (CBSA) data that was delivered in January 2014. As a result of this, you may see differences in your results and these are expected.

The changes include:

- 51 new Core Based Statistical Areas
- 77 retired Core Base Statistical Areas
- 80 changes to Core Based Statistical Area Names
- 130 new counties included in 100 Core Based Statistical Areas
- 86 Counties removed from 76 Core Based Statistical Areas
- 22 changes from Micropolitan to Metropolitan Statistical Areas
- 2 changes from Metropolitan to Micropolitan Statistical Areas

Global Data Router

- **Create empty output files for countries with no rows.** This advanced setting now defaults to Y so that the Router generates zero byte output files when there are no output rows. This new setting prevents batch jobs from failing.

- **Evaluate All Countries Option.** If you want to evaluate the input entity against all possible countries and obtain the country codes, select the new Evaluate All Countries option. When selected, the Global Data Router will first evaluate the selected countries for the project, and then evaluate the rest of the countries defined in the Country Rules Table (`rtrules2.win/unix`) in alphabetical order. If it finds a record that would be routed to one of these countries, it will go to the No Match output with the real country code. For more information in the TSS Help, see: Develop > TS Quality Projects > Creating a Name and Address Project.
- **Remove Customized Rule File.** If you have uploaded and used your own advanced settings customer rules file, you can now remove it if it is no longer needed. This removes it from the settings file so that it will not be used the next time the process runs.
- **Routing Country Flows.** The Global Data Router now allows for routing of any country flow to another country flow, including individual basic countries and No Match countries. This "country flow override" feature can be used at creation of a Name and Address project, or applied later from the Global Data Router's country adjustment option.

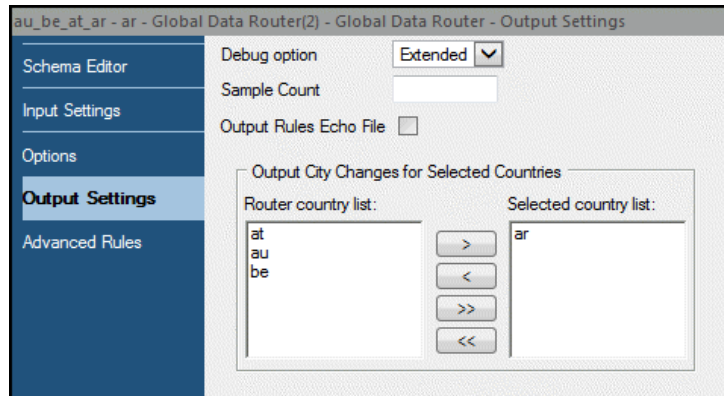
This is useful when you want to process a certain country's records using another country's process flow while maintaining the initial country code to identify the country of origin. For more information in the TSS Help, see: Develop > TS Quality Projects > Routing Country to Another Country.

- **Use City Changes File Option.** There is a new advanced option called use city changes file. When selected, in the Advanced Rules section of the GDR you then have the option to copy a city changes file to your system, customize it by adding entries to the `REPLACE_CHARACTER` and `SWAP_WORDS` parameters, and upload it again for use in the process.

These entries instruct the process to use the specified characters and words to look up city names. By using this secondary table, the process can obtain better matching in table lookup. (The city changes file is also available in the Customer Data Parser.)

For more information in the TSS Help, see: Develop > Global Data Router > Editing Advanced Rule Files.

- **Output City Changes for Selected Countries to Extended Debug File.** In the Output Settings window, if you have selected Extended for the Debug option, you can optionally select a country or countries in the Output City Changes for Selected Countries section to dump the city changes to the debug file. Extended debug files contain information, such as dumping variables, used for troubleshooting purposes.



For more information in the TSS Help, see: Develop > Global Data Router > Specifying Global Data Router Input and Output Settings.

Name and Address Analyzer

- You can now open the Name and Address Analyzer without having to open a TS Quality project.

Parser Tuner

- **Open Error Log.** The Open Error Log menu option allows you to open the log, stats, and exceptions files from within the Parser Tuner. You no longer need to navigate to the appropriate file directory on your system; the File Open window now uses the appropriate default file locations. For more information in the TSS Help, see: Develop > Parsing Rules Customization > Customizing the Parsing Rules > Reviewing Errors in Parsing Customization.
- **Ignore Words Table.** You can now open and work with an Ignore Words Table in the Parser Tuner.

Postal Directory Browser

The Postal Directory Browser has been renamed Directory Browser. See [Directory Browser on page 45](#).

Postal Directories

- **Australia Postal Tables Delivery Schedule Changes.** Trillium Software has increased the delivery frequency of the Australian postal files from four times per year to eleven times per year, February through December.
- **Hong Kong Postal Directory Changes.** Beginning in June 2013, Trillium Software transitioned data sources for the Hong Kong postal directory. As a result, the new postal directories distributed by Trillium

Software will no longer include the Beat Number and Delivery Office fields which will be replaced by District Name.

- **Singapore Postal Directory Changes.** Updates to the Singapore Postal Directory were made available in June, 2013. The update includes how data is written to the Tq_gout_ext_key_1 attribute.
- **US Delivery Point Validation (DPV) Hash File.** Starting with the July 2013 delivery of the US postal directory for DPV processing, you will have the option to use a new single DPV hash file or the current 100 DPV hash files. (See [US Postal Matcher on page 53.](#))
- **US RDI Files.** The USPS has made available their RDI product to vendors, including Trillium Software. Therefore, as of June 2013, Trillium Software started delivering US RDI files along with the regular release of the US Postal Directory files. Note the following:
 - RDI identifies residential versus commercial delivery points to allow you to make an informed decision about the most cost effective way to ship a package to that address.
 - For a record to be processed through RDI, it must have matched the zip+4 directory and receive a zip+4 code.
 - RDI can be run in a TS Director environment, but is not supported for CICS customers on the Mainframe.
 - DPV/LACS does not need to be enabled to run RDI processing.
- **US Residential Delivery Indicator (RDI) Files Available.** Residential Delivery Indicator (RDI) is a data product available from the United States Postal Service (USPS) that identifies a USPS delivery point as residential or commercial.

Postal Matchers

- **TS_NEIGHBORHOOD.** TS attributes are standard output attributes generated by the Postal Matcher process. There is a new TS attribute called TS_NEIGHBORHOOD. It has a length of 30 and its US source attribute is us_gout_urban_city_name.

Asian Countries Postal Matcher

- **Delete/Reset Review Groups.** The Postal Matchers for China, Japan (standard), Korea, and Taiwan generate fail level codes (pr_geocode_fail) for each row to indicate any potential problems. The fail level codes are associated with the review groups. For example, the fail level code 5 (postcode failure) is generated when the review groups are 012 or 013.

If you do not want particular fail codes to be generated by the Postal Matcher, you can now disable them by deleting the corresponding review groups. For example, you can remove the fail code 4 by deleting the review group 001.

- **pr_block_number_display_full.** There is a new attribute called pr_block_number_display_full, with a length of 30, that contains block

number and block number indicators. Supports China, Korea, and Taiwan.

Canada (CA) Postal Matcher

- New Data Encoding Option.** There is a new option called **Do not update house number when matching LVR addresses**. By default, house number information is updated when the record matches an LVR (Large Volume Receiver) address. If you want to keep the original house number information, select this option. For more information in the TSS Help, see: Develop > Postal Matchers > Canadian (CA) Postal Matcher > How to Specify CA Postal Matcher Options.
- New Output Attributes.** There are four new output attributes for the CA Postal Matcher, described in Table 4-2.

Table 4-2 CA Postal Matcher Output Attributes

Attribute	Length	Description
CA_GOUT_BASE_FORMAT_FLAG	1	French or English formatting indicator based on the information in ca_gout_base_street_type. Values are: 1—English formatting (Street Name, Street Type, Street Direction) 2—French formatting (Street Type, Street Name, Street Direction) ⓘ <i>This attribute is used in the default Transformer Data Reconstruction process. Canadian projects that were created in the previous version did not include this attribute. If an old Canadian project is imported or migrated and a new Transformer Data Reconstruction process is added, the user may need to add this attribute manually.</i>
CA_GOUT_BASE_STREET_DIR	2	Base street direction for alias street information.
CA_GOUT_BASE_STREET_NAME	30	Base street name for alias street information.
CA_GOUT_BASE_STREET_TYPE	6	Base street type for alias street information.

Custom Postal Matcher Options

- TQ_GIN_RECORD_TYPE.** The Custom Postal Matcher attribute TQ_GIN_RECORD_TYPE now returns E (Unknown street pattern) when the Customer Data Parser review code is 026.
- Equal Priority Option Removed for PO Box/Street priority.** When working with the setting PO Box/Street priority (ADDRESS_PRIORITY) note that the third option (Equal Priority) has been removed. If you used Equal Priority in a previous version of TSS, the Postal Matcher now treats it as though it were the 1st option (PO Box gets priority over Street). This change affects the following countries:

- Belgium (BE)
- France (FR)
- Malaysia (MY)
- Netherlands (NL)
- Portugal (PT)
- Singapore (SG)
- Spain (ES)
- Switzerland (CH)
- Luxembourg (LU)

France (FR) Postal Matcher

- **New Output Attribute.** There is a new France-only output attribute, **TQ_GOUT_DELIVERY_ADDRESS_2**, that stores the secondary address if a dual address is detected (for example, a CEDEX record). To use this attribute you must add it manually using the Schema Editor. The attribute length is 120.

Global Postal Matcher

- **New Options.** There are two new options available in the Global Postal Matcher:
 - **Delivery Type.** Specifying this option determines the type of delivery address. There are six types to choose from:
 - Pre-V15 functionality (default) - Delivery address and change flags will not be filled.
 - Street name, house number, sub building
 - House number, street name, sub building
 - Sub building, street name, house number
 - Sub building, house number, street name
 - Basic countries
 - **Return Primary Alias.** Specifying this advanced option returns aliases in the output. For example, with Austria, if you want to return the full sub building name which is available with the new Austria Post directory, select **Sub Building**. If the input is "HÜTTELDORFER STRASSE 127, 2 1140 WIEN, " the full sub building name "STIEGE 2" will be stored in the sub building attribute instead of just '2' in the output.
- **Default Global Postal Matcher Inputs.** For v15, the **Specify Input Lines** section of the Global Postal Matcher is filled automatically, as follows:

By default, the Global Postal Matcher now uses Postcode, City, Region, Company (if any), plus the output address attributes from the Customer Data Parser such as Premise, Street, and PO Box as inputs. Specifying your own input attributes will override this default setting. Therefore, if you do specify input attributes, you must specify key

address attributes such as premise, street, and neighborhood to obtain satisfactory results.

- **Performance Improvements.** The parsing engine in the gaserver for V15 includes significant improvements for the Global Postal Matcher countries. To ensure backward compatibility, you have an option to use the pre-V15 parsing engine. To keep the same results as the pre-V15 projects, add a line "UseNewParser = 0" to the Server section after the license directory line in the `gaserver.ini` file. The `gaserver.ini` file is located in `/Software/bin`.

Hong Kong (HK) Postal Matcher

- **Change to HK Output Attributes.** As of June 2013, the following output attributes are no longer generated in the Hong Kong Postal Matcher:
 - `HK_GOUT_DELIVERY_OFFICE`
 - `HK_GOUT_BEAT_NUMBER`
 - `HK_GOUT_MATCHED_BLDG_ON_STREET`
 - `HK_GOUT_POSTAL_CODE_CHANGED`

Instead, the attribute `HK_GOUT_CITY_NAME` is used to write the postal district name output.

Japan (JP) Postal Matcher (ACE)- New Stats File

- There is a new statistics file available for the JP Postal Matcher for ACE. This new file expands the summary data returned by the Postal Matcher, identifying the conditions found during the process by reporting normalization results and details of normal and error addresses.

Luxembourg (LU) Postal Matcher

- **Street type match.** The setting Street type match for LU has been changed from N (off) to Y (on) by default. This new default enhances performance results.

Netherlands (NL) Postal Matcher

- **New Custom NL Postal Matcher Option.** There is a new custom Postal Matcher option available for Netherlands (NL) called **Validate address using postal code and house number**. When this option is checked in the NL Postal Matcher, a match is performed using the postal code and the house number.

Singapore (SG) Postal Matcher

- Updates to Singapore Postal Directory files were released in June, 2013. If you are using the updated postal directories, and you have defined the attribute `Tq_gout_ext_key_1`, the way the first byte populates has

changed. For more information in the TSS Help, see: Reference Material > Postal Matcher Attributes > Custom Postal Matcher Attributes.

UK (GB) Postal Matcher

- **New Attributes.** There are two new attributes for the GB Postal Matcher:
 - **gb_gout_delivery_address.** Stores the first line of delivery address.
 - **gb_gout_delivery_address_2.** Stores the second line of delivery address.

For more information in the TSS Help, see: Reference Material > Postal Matcher Attributes > United Kingdom (GB) Postal Matcher Attributes

US Postal Matcher

- **City Centroid Option.** The US Postal Matcher now returns latitude and longitude coordinates accurate to the center point (centroid) of a city. This feature is enabled on the US Postal Matcher's Options tab by selecting **City Centroid**.
- **DPV Source File Arrangement Option.** The US Postal Matcher has a new DPV option called **DPV Source File Arrangement**. This option has two choices, **Multiple** and **Single**:
 - The Multiple option uses the standard 100 DPV files (`dph.hsa.z00-z99`—100 segmented DPV hash tables).
 - The Single option uses the single DPV file (`dph.hsa`—single hash table). This file was introduced in the July 2013 delivery of the US postal directory for DPV processing.

For more information in the TSS Help, see: Develop > Postal Matchers > United States (US) Postal Matcher > Specifying US DPV Options.

- **Include DPV PO Box Street Address Table Option.** The US Postal Matcher has a new Delivery Point Validation (DPV) option called **Include DPV PO Box Street Address Table**. Select this option when using the PO Box street addresses (`dph.hsp`) table. This tells the Postal Matcher to add the new `US_DPV_PBSA` attribute to the output schema.
- **Street Latitude and Longitude.** The US Postal Matcher interpolates latitude and longitude coordinates for a specific house number based on the house number range for the street. This feature is now enhanced to return the latitude and longitude of the beginning of the street if the house number is not within the house number range.

Relationship Linker

- **New Modifiers.** To ensure compatibility with Series 7, the new modifier **S7** has been added to the Relationship Linker. The S7 modifier applies the same algorithm as in Series 7 to the Partial2 and Soundex routines.

Use the new modifiers when you want to obtain the same linking results as Series 7. For more information in the TSS Help, see: Reference Material > Relationship Linker Comparison Routines.

- **Update to PARTIAL2 With Modifier (STATUS) Routine.** The STATUS modifier is used with the PARTIAL2 routine to compare fields of two (2) different records for a specified literal value. The syntax of the PARTIAL2 With Modifier (STATUS) routine has been modified if you use this modifier with the MATCH function in the Expression Builder as follows:

```
MATCH("PARTIAL2", attribute1, attribute2, "STATUS=literal_value")
```

where

- *attribute1* is the attribute whose value you want to compare.
- *attribute2* is the attribute against which attribute1 is compared.
- *literal_value* is the value to check.

Schema Editor

- **Auto Adjust Max Width.** There is a new option in the Edit Output Attribute window called **Auto Adjust Max Width**. The Auto adjust 'Max width' option affects the behavior of the attribute redefinition operation depending on whether the option is checked or cleared. (This option is cleared by default.) For more information in the TSS Help, see: Develop > TS Quality Processes > Schema Editor > Redefining Attributes > Redefining Attributes by Drag-and-Drop.
- **Encodings.** EBCDIC has been added to the list of supported encodings in the Schema Editor.
- **Input/Output Attribute Filter.** In the Schema Editor, you can now search and filter attributes and substrings in attributes to display the input and output schemas.
- **Redefining Attributes with Drag and Drop.** When an input attribute is mapped to an output attribute smaller in width, a message box displays. Click **Yes** to use the new, larger width. Click **No** to continue using the original smaller width. If you choose to use the original width, the value of the output attribute may be truncated.

Set Selection Utility

- **DEDUPE.** There is a new Quality function called DEDUPE, for use in the Transformer process and in the Set Selection utility. DEDUPE separates the value in an attribute into tokens and returns the deduped and delimited list of tokens.
- **New Output Option.** Set Selection output settings enable you to customize the values that the utility uses to output records. There is a new output option for group sequence numbering called **Attribute to use for group sequence** which sets the attribute that will be

populated with the group sequence number within the current set. The parameter for this option is **SET_SEQUENCE_FIELD_NAME**.

Transformer

- **DEDUPE**. There is a new Quality function called DEDUPE, for use in the Transformer process and in the Set Selection utility. DEDUPE separates the value in an attribute into tokens and returns the deduped and delimited list of tokens.
- **If Statements**. The maximum number of IF statements allowed for each settings file is now 4000. The following guidelines still apply:
 - An IF condition must be defined as a test within parentheses.
 - There is a maximum of 100 nested IFs allowed in each IF statement.
 - Adding multiple IF keywords to the top level of a single conditional section is not supported. Include only one top-level IF (head-if) per section.
- **Output Conditionals**. You can now select input and/or output attributes whenever you specify conditions or attribute transformations using the Expression Builder within a Transformer's Output Conditionals. The input attribute names will be preceded by the entity name associated with the input.
- **PROCESS_SAMPLE_COUNT**. If a PROCESS_SAMPLE_COUNT value is specified for a Transformer that has been configured to produce delimited output, the value will be used for both the fixed and the delimited output.
- **Run Statements**. When the Control Center groups multiple RUN statements for attribute scans and table recodes into a single RUN statement, it now uses commas to separate items and hyphens to indicate ranges. This allows a more robust and efficient method to group multiple RUN subroutines for running in sequence.

The following example shows a RUN statement before and after grouping using commas and hyphens:

Before:

```
IF (ALWAYS) IF (ALWAYS) RUN FIELD_SCANNING(2) RUN FIELD_SCANNING(4) RUN FIELD_SCANNING(5) RUN FIELD_SCANNING(7) RUN FIELD_SCANNING(8) ENDIF ENDIF
```

After:

```
IF (ALWAYS) IF (ALWAYS) RUN FIELD_SCANNING(2,4-5,7-8) ENDIF ENDIF
```

- **Table Recode—Maximum Attribute Length**. The maximum attribute length for table recodes has been expanded to 2000 bytes (1000 characters in UCS2).
- **Table Range Function**. The new Table Range function in the Transformer allows you to validate data by performing a look-up on up

to five attributes, followed by a range check on an attribute if the look-up is successful. You can also recode up to five attributes if both the look-up and the range check are successful. Recoding is optional. This function is useful when you are testing $A + B = C$ where C is in a range. Find more information in the TSS Help, see: Develop > Transformer > Validating Data Using Table Range.

- **Table Range and Table Recode—New Option.** When generating a file-based recode table or validating data using the table range function, there is a new option called **Character to use as a comment indicator** which instructs the Transformer to ignore any lines in the recode table that start with the character specified in this option. For more information in the TSS Help, see: Develop > Transformer > Validating Data Using Table Range > Using Table Range and Develop > Transformer > Recoding Data Using Tables > File-based Recode Tables.
- **Trace Key Setting.** The Trace Key setting has been removed from the Transformer. Note the following behavior:
 - For newly created and imported projects, the entry FILE_TRACE_KEY will no longer be included in the tsd or stx file.
 - For legacy projects (projects created before TSS v14.4), the entry FILE_TRACE_KEY still remains in the tsd and stx file. It can be removed by exporting and importing the project.
- **Transformer Data Reconstruction.**
 - **New Derived Attributes.** Derived attribute values are determined by the country's Transformer Data Reconstruction process. The following new derived attributes have been added to all country templates:
 - **dr_Neighborhood**
 - **dr_Country Code**
 - **Business Data and Empty Projects.** The Transformer Data Reconstruction process is not included by default in Business Data and Empty projects, but you can now insert it into these project types. The process is configured without any default rules and you can enter your own conditional logic.
- **Transformer Unified Output - Saved Country Output Attribute.** In previous versions of TSS, the Saved Country output attribute generated by the Global Data Router was not included in the output of the Transformer Unified Output and had to be manually added to the output schema in every country's Transformer Unified Output. Now it is included in all country templates so you don't have to manually add this attribute.

 *The Saved Country attribute contains the country code such as US and CA.*

- **Web Service Calls.** The Transformer allows you to call certain XML-based web services in the Control Center, batch and real-time environments. For example, using the Transformer you can call a third-party web service to obtain GPS coordinates or you can call a web service to generate reverse phone and address information.

Note the following guidelines:

- You select the web services attributes to be generated in the output schema by mapping the input attributes of the web services to output attributes.
- By inserting the Transformer process into your Quality project, you can also use the output of the web service as the input for the next process in the project.
- Map files are required to use web services. They contain all the information required to define a specific web service call and its corresponding response. (Map files are encrypted, external files provided by Trillium Software and installed with the TSS software.) You need one map file for each web service for which you have a valid subscription.
- Supports REST calls only (SOAP calls are not supported).

For more information in the TSS Help, see: Develop > Web Service Calls.

Window Keys

- **New Rules.** To ensure compatibility with Series 7, four new window key rules (OS2, IS2, ROS2, and RIS2) have been added. Use the new rules for the primary and secondary window key codes when you want to keep the same window keys as Series 7. For more information in the TSS Help, see: Develop > Window Keys > Selection (Primary/Secondary Field Code).
- **SOUNDEX Routines.** All SOUNDEX-related routines are limited to working with attribute sizes of 256 characters. Now when the attribute length exceeds 256 characters, the algorithm will be applied to the first 256 characters for all SOUNDEX routines. For all RSOUNDEX routines the algorithm will be applied to the last non-blank 256 characters.

Window Key Generator

- **vcnmask.win/unx Mask Files.** The mask files `vcnmask.win/unx` used by the Window Key Generator process (variations: `grvcnmask`, `trvcnmask`) include encoding specific entries such as Latin1, Latin2, Greek, and so on. `grvcnmask` and `trvcnmask` files are the same as `vcnmask` and are provided for backward compatibility with pre-v15 functionality.

CHAPTER 5

TSS v15.0 Project Import/Export Enhancements

This chapter describes the enhancements and changes incorporated into the following functionality used to import and deploy TS Quality projects:

- [Exporting Quality Projects on page 58](#)
- [Real-Time Project Deployment on page 59](#)

Exporting Quality Projects

Project Deployment

- Quality project deployment is now run as a background task.
- Project deployment will only run if TS Quality is installed on the client system. Attempting to run deployment on a system where TS Quality is not installed will generate a message alerting you to this.

Batch Deployment Tool

- The Batch Deployment Tool (BDT) will only run if TS Quality is installed on the client system. Attempting to run the BDT on a system where TS Quality is not installed will generate a message alerting you to this.

Deploying/Exporting to Batch

- **Analysis Process.** When you export a project containing an Analysis process into a batch script, the Analysis process will run as part of the batch execution. For more information in the TSS Help, see: Develop > TS Quality Processes > Profiling Processes > Using the Analysis Process.
- **Batch Delimiters.** ESC has been added to the list of input and output delimiters in the batch export window.

- **Deploying Legacy Quality Projects.** You cannot deploy the following types of legacy projects (created before TSS v13) to real-time, only to batch:
 - Name and Address
 - Empty
 - Business Data
- **Specifying Quote Characters.** If your input entity contains delimited data, upon batch export quote characters will be set to the quote character you specified when you created the entity in the Create Entity Wizard.
- **Original Input Delimiter—New Quotes Option.** For batch project exports there is a new option called **Quotes** which, when set, allows using unmatched quotes as qualifiers for delimited input file. For more information in the TSS Help, see: Deploy > Exporting a Project to a Batch Script.
- **UCS2 Encoding Option.** For purposes of efficiency, when you export a project to batch, in the Export Project Options window, under Script Options, there is a new option Use UCS2 Encoding. If you select this option, all files, apart from inputs and final outputs will use UCS2 encoding.
- **UTF8.** Batch exports no longer apply the UTF-8 multiplication factor to the attribute lengths in the input ddx file(s) when the input data is fixed length.

Exporting Project Definitions

- **Server Build Information.** The TSS server version build information is now included in the project.xml file in an exported Quality project. To see the information, uncompress the .prj file using a compress/uncompress tool such as Winzip and open the project.xml file in a text editor. The build stamp is displayed in the <server_build> entry.

Real-Time Project Deployment

- **Automatic Reference or Window Match.** The default Name and Address project template includes a Relationship Linker process. When you deploy a project for real time, the deployment process automatically prepares the project to perform either a reference match or a window match, depending on how your client calls the matcher.

For example, if you call the match() method, a window match is performed. If you call the matchCandidate() method, a reference match is performed.
- **Deploying Non-Legacy Projects.** You can now publish and deploy non-legacy empty and/or business data projects to real-time. When working in the Project Deployment Manager, the project type is identified in the Project Deployment Form under Connector Type.

- **Projects Unsupported for Deployment.** You cannot deploy the following types of legacy projects (created before TSS v13) to real-time:
 - Name and Address
 - Empty
 - Business Data
- **MATCHER_USER_KEY Attribute.** The real-time project deployment process now automatically creates the MATCHER_USER_KEY attribute, which is used to uniquely identify records during the match process.

CHAPTER 6

TSS v15.0 Data Management Enhancements

This chapter describes the enhancements and changes incorporated into the following TSS data management products:

- [TS Case Management on page 61](#)
- [TS Reporting Adapter on page 62](#)
- [TSS Repository Manager on page 62](#)

TS Case Management

TS Case Management is an add-on that extends Trillium Software's data quality management capability by providing the ability to open and manage data exception cases for data remediation, process modification, and issue management. Pre-built and administrator-defined projects help organize your cases depending on your business needs.

The TS Case Management process involves:

- Finding:
 - targeted data conditions (business rule exceptions) by running entity business rules (EBRs).
 - data anomalies through regular data analysis review.
- Creating a case based on the results of the findings and associating it with a Case Management project.
- Managing the case from a browser-based dashboard.

For information about installing and using TS Case Management, see *TS Case Management Installation & User Guide*.

TS Reporting Adapter

The TS Reporting Adapter (formerly the TS Insight Connector) is a callable data reporting provider designed to run TSS table queries that extract the contents of a TSS repository and import the data as a table into supported third-party applications and dashboards.

The reporting adapter has been enhanced as follows:

- Supports both OLE DB and ODBC data connections.
- Dozens of queries have been added, increasing the range of data that you can extract from a TSS repository and import into a third-party application.
- Each adapter now has a separate license which has removed the dependency on the availability of sufficient user, reporting, repository, and task tokens to properly run queries over configured data connections.
- Ten customized TSS Excel sample reports are available for use with OLE DB Data Provider.
- The TS Reporting Adapter supports the following applications and dashboards:
 - OLE DB Data Provider: Excel, QlikView Business Discovery Platform dashboard, Query Express, and SQL Server.
 - ODBC Data Provider: Any 32-bit software that supports ODBC connectivity, including Excel, QlikView Business Discovery Platform dashboard, and Tableau.

Guidelines

Note the following:

- The ODBC Data Provider for 32-bit is available with the TSS software package although it is installed separately. The OLE DB Data Provider is installed with the TSS client software.
- If you are planning to use the OLE DB Data Provider with a 64-bit version of Excel, you must install the 64-bit version of the OLE DB Provider. The OLE DB Provider (64-bit) is available with TSS software package, although it is installed separately.
- The TS Reporting Adapter supports Excel 2010 and 2012.
- For more information about using the TS Reporting Adapters, see the *TS Reporting Adapter for Excel User's Guide*.

TSS Repository Manager

This section describes enhancements and changes to the Repository Manager as well as scripts and commands run in Repository Administrator Command Prompt.

① *For additional information about TSS administrator tasks and working with the Repository Manager, see the TSS Repository Administrator's Guide.*

- **Customized Note Classes and Subclasses.** The TSS repository administrator can now create customized classes and subclasses for Control Center notes. When creating notes in the Control Center, users can select from the user-defined class and subclasses created by the administrator or from the default class and subclasses. For more information, see the *TSS Repository Administrator's Guide*.
- **Berkeley Database Utilities.** A set of command-line utilities is installed in the server's bin directory. These are available to help troubleshoot the Berkeley database, which stores TSS data, metadata, and associated database files.

These utilities should be used in conjunction with Trillium Software Customer Support. For more information and a document describing how to use each utility, contact Customer Support (see [Trillium Software Resources on page 10](#)).

- **Change Default Job Name.** TSS administrators have the option to run an `mtb_admin` command to change a default name. The syntax is:
`renamejob job_ID new_job_name`

Where

- `job_ID` represents the unique reference number for the job as displayed in the Background Tasks List View.
- `new_job_name` is the new job name.
- **DB2 10 Relational Data Source.** DB2 10 is now a supported database client.
- **Export Command—New Parameter.** There is a new, optional parameter for the `mtb_admin` export command called `parent_eid`. Use this parameter to specify the ID of the entity parent of the entity you want to export. For example,
`export failing_rows entity 1 br_name test filename /export/
testfile filetype txt parent_eid 2`
- **Fix Rule `mtb_admin` Command.** Running this command will update every rule in the current repository, and will return the rule IDs whose expressions have been changed. Every rule in the repository will become out-of-date and will need to be re-analysed.

The `fixRules` command has two optional parameters:

-verbose. Prints to the console every rule ID being checked, so you can monitor progress.

-quiet. Prints nothing to the console.

By default it will show the rule IDs that have been changed.

- Hadoop Hive Data Connection.** You can now load data into the TSS repository with a TSS ODBC (Trillium-supplied) Hadoop Hive driver. Table 6-1 describes the Hadoop environments supported by the TSS v15 Hadoop Hive driver.

Table 6-1 Supported Hadoop Hive Environments

Environment	Distribution Version	Hadoop Hive Version
Amazon Elastic MapReduce (Amazon EMR)	N/A	Hive 0.8.x Hive 0.11.x
Apache Hadoop Hive	N/A	0.8.x 0.9.x 0.10.x 0.11.x 0.12.x
Cloudera's Distribution Including Apache Hadoop (CDH)	CDH3 update 4 CDH4.0x CDH4.1 CDH4.2 CDH4.5	Hive 0.7.1 Hive 0.8.x Hive 0.9.x Hive 0.12.x
Hortonworks Distribution for Apache Hadoop	HDP 1.3	Hive 0.11.x
	HDP 2.0	Hive 0.12.x
MapR Distribution for Apache Hadoop	MapR 1.2	Hive 0.7.1
	MapR 2.0	Hive 0.9.x

Note the following guidelines:

- The Hadoop connection is read only, you cannot write back to the database using a Hadoop connection.
- The TSS 15 Hadoop Hive Driver supports both Windows and UNIX systems.
- Locale Repository Setting.** When adding a repository, there is a new option called Locale which allows you to select a desired locale (your unique language or region identifier) to use for your collation method. Keep the default option as Original if you use the non-collated sort method.
- New Load Connection Settings:**
 - Run Statistics at Load Time.** There is a new loader connection setting called Run Statistics at Load Time (selected by default). When selected, during data import TSS automatically performs statistical analysis of attributes with numeric values to calculate the standard deviation value. If statistical analysis is not run during data import, users can manually run the analysis for one or more attributes in the Control Center.
 - Enable/Disable Standard ABRs.** The Standard library attribute in the Control Center contains ABRs that act as universal compliance checks for attributes. There is new a loader connection setting called **Copy standard attributes business rules to attributes** (cleared

by default). When selected, attribute business rules in the Standard library attribute are automatically copied to attributes when entities are created for the current repository.

- **Updated Load Connection Terms.** To better align the available data load connections, the following changes to terminology have been made to the Add Loader Connection window:

Table 6-2 Load Connection Term Changes

Old Term	New Term	Description
COBOL	COBOL Flat Fixed Length Files	This option allows you to connect to flat, fixed-length files described by COBOL copybooks. The data must match copybook layout.
DB2	DB2 (Vendor Supplied)	This option allows you to connect to DB2 databases.
Delimited	Delimited Files	This option allows you to connect to any delimited files with ASCII, extended ASCII, or hexadecimal delimiters. Also with or without ANSI SQL DDL.
ODBC	ODBC (Vendor Supplied)	This option allows you to connect to a number of databases using ODBC drivers supplied by database vendors. Choose this option if you are connecting to a data source which is unavailable through TSS ODBC. For more information about supported databases, see the <i>TSS Repository Administrator's User's Guide</i> .
Oracle	ORACLE (Vendor Supplied)	This option allows you to connect to Oracle databases. This connection requires the Oracle client to be installed.
Trillium	Trillium Flat Files	This option allows you to connect to flat files created by TSS modules when they process data.
Generic	TSS ODBC (Trillium Supplied)	This option allows you to directly connect to the widest selection of external databases, including Oracle, DB2, SQL Server, Informix, Teradata, Sybase, Greenplum, Hadoop Hive, and many others, without having to install vendor-supplied drivers.

CHAPTER 7

TSS v15.0 Enterprise Integration Enhancements

This chapter describes enhancements and updates for the following TSS enterprise data products:

- [TS Director on page 66](#)
- [TS Director - CICS on page 67](#)
- [TS Web Services on page 68](#)
- [TS Connector for SAP Products on page 68](#)

For information about real-time deployment, see [TSS v15.0 Project Import/Export Enhancements on page 58](#).

TS Director

This section describes enhancements and changes to the TS Director components, including the Project rule Analyzer. For more information about TS Director, see the *TS Director User's Guide*.

- **Default Component Port Numbers.** Default port numbers for all ECS components have been changed and are now prepended with the product version number. For example, the default Director port is 15000, the default Monitor port is 15005, the default SDK Cleanser port is 15010, and so on. This simplifies installation of multiple versions of ECS components on the same server.
- **Identify Component Version Numbers.** The version number of each ECS component is now displayed. For user interface components, the version number displays in the title bar of the main window. For servers, the version number is displayed with the Director System Manager's Investigate option and Properties option.
- **View Street Names and Street Details.** For GB and US projects that include the Display street details in real-time and/or the Display detail

buffer in real-time options, you can now view the content of these buffers in the Project Rule Analyzer (PRA).

- **Clone Cleanser and Matcher Servers.** In the Director System Manager you can create multiple cleanser and matcher servers for a project by cloning a server. Using multiple cleansers and matchers improves performance and allows for failover if a server becomes unavailable.

Cloned servers will share project resources (settings files, DDLs, postal directories, and so on) but will use separate log and exceptions files. The Director System Manager will create a separate connector configuration file (`trillium.cfg`) and token configuration file (`config.tbl`) for each server.

- **Director SDK Documentation.** The information in the *TS Director SDK Reference Guide* has been modified as follows: the XML-over-HTTP, NET Web Services, and J2EE chapters have been removed and are now available in three separate documents:
 - *TS Director XML-Over-HTTP Developer's Guide*
 - *TS Director IIS .Net Web Services Developer's Guide*
 - *TS Director J2EE Interface Developer's Guide*
- **Integrated Configuration Manager (ICM).** The Integrated Configuration Manager (ICM) sample text has been removed from `TrilXML.cfg` and the configuration button has been renamed to remove reference to ICM.
- **Real-Time Projects.** The `TrilXML.cfg` XML mapping file has been changed to include a new Update Object Section, `XMLAddress1`, which contains only one entry. This change enhances performance when running a large record set combined with a large set of fields.
- **Samples.** For v15, enhanced samples are provided for the TS Director/SDK. For more information, see *TS Director SDK Reference Guide*.

TS Director - CICS

The new TS Director - CICS solution allows the TS user to make client calls from an IBM Mainframe system running CICS (middleware that processes high volume transactions) and communicate with TS Director running on an ASCII (UNIX or Windows) system.

The TS Director - CICS solution uses XML streams over HTTP protocol to transmit data between CICS and the TS Director. The solution is available in TSS v14.0 and later versions. It requires:

- CICS TS v3.1 and later versions (with CICS sockets enabled)
- TS Director v14.0 and later versions running on a UNIX or Windows platform

For information about installing and using TS Director - CICS, see the *TS Director - CICS Installation Guide* and the *TS Director - CICS Reference Guide*.

TS Web Services

TS Web Services is a new, optional component of Trillium Software's Enterprise Connectivity Solutions (ECS). TS Web Services allows you to use industry standard tools and protocols, such as XML, SOAP, and HTTP, to send records to the TS Director to be cleansed (formatted and enhanced) and matched (identify potential duplicates).

You define the format of cleansing and matching requests with the XML-based Web Services Description Language (WSDL). The Web Service Configuration and Deployment Manager guides you through the process of creating, testing and deploying your cleansing and matching WSDLs.

The TS Web Services installation includes sample WSDLs and requests developed with the sample TS Quality project supplied with the TS Director. You can use these samples to become familiar with TS Web Services.

Launch the Web Services Configuration and Deployment Manager from the Director System Manager by selecting **File > Launch Web Service Configuration and Deployment Tool**.

Code Sample and Sample Projects. In v15, the location of the code samples and sample projects has been changed to make them more easily accessible. The samples have also been modified: C/C++ samples now use MSVC 2013, C# samples (and .DLL's) now use .Net 4.0, Java now uses v1.7, and additional configuration is required to for WebLogic 11.g (see the `ReadMe.txt` file in Web Services > WebLogic folder).

For more information, see the *TS Web Services User's Guide*.

TS Connector for SAP Products

This section describes enhancements and changes to the TS Connector for SAP products. For more information about the TS Connector for SAP, see the *TS Connector for SAP Products Reference Guide*.

- The /TRILLIUM/RSADRINI report has been enhanced to include the country as filter criteria and performance has been improved by way of parallelization.
- User Exits/BADIs are now provided in Master Data Tools for Master Data Inquiry and Batch Window Matching.
- Support for CRM 7.0 Enhancement Package 3 (EHP3) and ERP 6.0 Enhancement Package 7 (EHP7).
- Re-certified the SAP Connector for both PV (Postal Validation) and DES (Duplicate Check and Error Tolerant Search).

CHAPTER 8

TSS v15 Update 1 Enhancements

This chapter describes the enhancements and updates included in the first update to TSS v15 (released October 2014), including:

- [Data Quality Enhancements on page 69](#)
- [Data Management Enhancements on page 70](#)
- [Enterprise Integration Enhancements on page 71](#)

① *For a full list of changes incorporated into the update, see the patch logs available with your TSS update downloads.*

Data Quality Enhancements

This section describes the enhancements and changes incorporated into TS Quality standardization and cleansing processes.

Transformer Table Recode

The UI option **Enable phrase change** has been changed to **Phrase Recode Only** to make it clear that it recodes only the look-up value itself, not the entire attribute. There is no change in the way the function works.

United Kingdom (GB) Postal Matcher

Changes and additions have been made to the GB Postal Matcher output schema, UI options, and browser fields.

Output Schema Changes

- The length of the attribute Gb_gout_organization_name has been changed from 30 to 60 characters. The attribute stores the extended version of the business organization name.

- New Gb_gout_udprn attribute stores a UDPRN (Unique Delivery Point Reference Number), an 8-character numeric code to identify the PAF addresses.
- New Gb_gout_department attribute stores the department name. 60 characters.

Use Postal Extensions Option

There is a new UI option called **Use Postal Extensions**. When checked, the postal extension table (GBEXDATA.tbl) is used to generate the department names (gb_gout_department) and the extended version of the organization names (gb_gout_organization_name).

The postal extension table is included in the GB postal directories. The argument in the settings file is POSTAL_EXTENDED_DATA_FILE_NAME.

- ① *The postal extension table (GBEXDATA.tbl) must be installed to use this option. The postal extension table is included in the GB postal directories delivered in September 2014 or later.*

GB Directory Browser Field Changes

- ORGANIZATION_NAME. The organization name field length has been changed from 30 to 60 characters.
- New field UDPRN (Unique Delivery Point Reference Number) contains an 8-character numeric code to identify the PAF addresses.
- New field DEPARTMENT contains the department name. 60 characters.

- ① *To display the department names and the extended version of the organization names, the postal extension table (GBEXDATA.tbl) must be installed. The postal extension table is included in the GB postal directories delivered in September 2014 or later.*

- ① *If you import or migrate your old or legacy projects after installing v15 Update 1, the new attributes and attribute length will be automatically applied upon import or migration. If you import or migrate your old or legacy projects in v15 and then install v15 Update1, the new attributes and attribute length will be applied when you run the GB Postal Matcher process.*

Data Management Enhancements

This section describes the enhancements and changes incorporated into the Repository Manager and the TS Reporting Adapter.

Local System Restricted Access Option

As an enhancement for repository security, TSS administrators can now limit

the access TSS users have to copy or export files from a repository to their local systems or to a network.

The new option, **Disable access to the file system**, is available in the Options window in the Repository Manager. When selected, this option limits users to write data back to the repository only.

Selecting the option disables the following tasks:

- In the Repository Manager and Control Center:
 - Session options New, Open, Save Session, and Save as
 - Save, Export, and Copy a List View to local system
 - Save List View Layout, Load Layout and Export
 - The Quick Access Toolbar and related icons (for example, Open, Save and Print)
 - Access to technical documentation
- In the Control Center:
 - In the Library, the export to local file system or import from local file system for Business Rules, Word definitions, and Ignore words tables
 - Export and Generate Schema options for entities
 - Import project for TS Quality projects and Generate DDL for TS Quality entities
 - On the Advanced tab, the Edit Schema button

For more information, see the *TSS Repository Administrator's Guide*.

64-bit Support for ODBC TS Reporting Adapter

The TS Reporting Adapter now supports connections to 64-bit applications, such as Excel. The ODBC Reporting Adapter (64-bit) is available with the v15 TSS installation package.

For more information and installation procedures, see the *TS Reporting Adapter for Excel User's Guide*.

Enterprise Integration Enhancements

Director .NET Wrapper API

As part of the TS Director SDK solution, the Director .NET Wrapper API provides functions that give you access to the data cleansing and matching services of Trillium Software System. For TSS v15 Update 1 there are two new Director .NET Wrapper classes available:

- WinServiceManager. Provides methods to create, start, stop and delete Windows services for the cleanser and matcher.

- WinServiceParameters. Provides the parameters necessary to create, start, stop and delete cleanser and matcher services. There are no methods; the class contains the properties for setting the parameters.

For more information, see the *TS Directory SDK Reference Guide*.

CHAPTER 9

TSS v15 Update 2 Enhancements

This chapter describes the enhancements and updates included in the second update to TSS v15 (released February 2015), including:

- [Control Center Minimum Requirements on page 73](#)
- [Trillium Cloud on page 74](#)
- [Expression Builder - New Date Functions on page 74](#)
- [Data Quality Enhancements on page 75](#)
- [Data Management Enhancements on page 75](#)
- [Enterprise Integration Enhancements on page 77](#)

① *For a full list of changes incorporated into the update, see the patch logs available with your TSS update downloads.*

Control Center Minimum Requirements

This section includes the requirements for the Control Center client, with changes noted for this update.

Supported Platforms

- Microsoft Windows 8
- Microsoft Windows 7
- Microsoft Windows Server 2012
- Microsoft Windows Server 2008

① *Windows Vista and Windows Server 2003 are no longer supported.*

Browser Support

Internet Explorer versions 9, 10, and 11 are supported.

① *IE 8 is no longer supported.*

Trillium Cloud

Trillium Cloud allows you to work with TSS data quality profiling and cleansing tools in a cloud environment. With Trillium Cloud you do not need to install TSS software on your server systems, apply patches and upgrades, or install and maintain country templates and directories.

Features include:

- Access to the Control Center, Parser Tuner, and Directory Browser data quality tools
- Ability to view, edit, and execute TS Quality batch projects exported from the Control Center
- Ability for TSS administrators to add and configure data (loader) connections, add data repositories, and set repository permissions

Expression Builder - New Date Functions

The following functions have been added to the Expression Builder. These functions enhance how TSS handles dates in expressions.

- **DT_ADD**. Increments (or decrements) part of the date or time and returns a string with the date/time in the same format.
- **DT_CEILING**. Updates the date/time to the end of the specified part and returns a string with the date/time in the same format.
- **DT_CONVERT**. Converts date/time value from its original format to a specified format and returns a string value.
- **DT_DIFF**. Calculates the difference between two date/time values.
- **DT_DIFF_PART**. Returns the approximate difference between the specified part of two date/time values as an integer.
- **DT_IS_DATE**. Evaluates whether the date/time value is a date.
- **DT_IS_DATE_TIME**. Evaluates whether the date/time value is in the specified format.
- **DT_IS_TIME**. Evaluates whether the date/time value is a time.
- **DT_MAX**. Compares two date/time values to determine which is later.
- **DT_MIN**. Compares two date/time values to determine which is earlier.
- **DT_NAME**. Extracts the specified part of the date/time and returns the localized name.
- **DT_NOW**. Returns the current date/time in the specified format.
- **DT_PART**. Extracts the specified part of the date/time and returns the value as an integer.
- **DT_ROUND_DOWN**. Rounds down the specified part of a date/time and returns a string with the date/time in the same format.
- **DT_ROUND_UP**. Rounds up the specified part of a date/time and returns a string with the date/time in the same format.

- **TO_SECONDS**. Returns the specified date and time as seconds.

Data Quality Enhancements

This section describes the enhancements and changes incorporated into TS Quality standardization and cleansing processes.

City Changes File

The city changes file is an advanced file used in the Customer Data Parser and the Global Data Router. Entries in the file instruct the process to use the specified characters and words to look up city names.

When used with the Customer Data Parser, there is a new entry available in the list of attributes for GEOGRAPHY lines of patterns called **GEOG-CHANGE** (abbreviated to **GEOG-CHG**). Corrects mismatched province and city values, as well as spelling of a city name.

US Postal Matcher

The new Postal Service code PB is generated in the US DPV attribute **us_dpv_footnote3** for the US Postal Matcher if the input address matches the PBSA table.

Data Management Enhancements

This section describes the enhancements and changes incorporated into the Repository Manager and the TS Reporting Adapter.

Hadoop Hive Data Connection - Updated Support

The Hadoop environments supported by the TSS Hadoop Hive driver have been updated and include the following:

Table 9-1 Supported Hadoop Hive Environments

Environment	Distribution Version	Hadoop Hive Version
Amazon Elastic MapReduce (Amazon EMR)	N/A	Hive 0.8.x Hive 0.11.x
Apache Hadoop Hive	N/A	0.8.x 0.9.x 0.10.x 0.11.x 0.12.x 0.13.x

Table 9-1 Supported Hadoop Hive Environments (Continued)

Environment	Distribution Version	Hadoop Hive Version
Cloudera's Distribution Including Apache Hadoop (CDH)	CDH4.0x	Hive 0.7.1
	CDH4.1x	Hive 0.8.x
	CDH4.2x	Hive 0.9.x
	CDH4.5x	Hive 0.12.x
	CDH5.0.x CDH5.1.x	
Hortonworks Distribution for Apache Hadoop	HDP 1.3	Hive 0.11.x
	HDP 2.0	Hive 0.12.x
	HDP 2.1	Hive 0.13.x
MapR Distribution for Apache Hadoop	MapR 1.2	Hive 0.7.1
	MapR 2.0	Hive 0.9.x

For more information, see the *TSS Repository Administrator's Guide*.

TS Reporting Adapter

This section describes enhancements to the TS Reporting Adapter.

New ODBC Query

There is a new query for use with the ODBC reporting adapter called `view_attribute_distinct_values`. When used, it returns distinct values data for a specified attribute. 100 rows are retrieved unless the `max_rows` parameter is used.

Excel Sample Reports

Trillium Software offers a set of 10 customized Excel sample reports that show summary graphs and charts specific to your profiling and TS Quality data. The customized TSS Excel samples are now available for both OLE DB and ODBC Reporting Adapters (previously only OLE DB was supported).

Switching Repositories in Excel

You no longer have to close and reopen Excel when you want to extract data from a different repository.

Enterprise Integration Enhancements

This section describes enhancements and updates for the following TSS enterprise data products.

TS Director

The following changes are incorporated into this release:

- A new class, TrilliumDirectorSOAP, has been added to the IIS .Net Web Services API. TrilliumDirectorSOAP supports five new methods:
 - CleanseUnicode()
 - ReferenceMatchUnicode()
 - WindowMatchUnicode()
 - DirectorSetup()
 - Ping()
- ① *This version of the .NET Web Services API requires IIS 7.x with ASP.NET using .Net v4.0. Windows Server 2012 is not supported.*
- When creating or starting a Director, you can now specify whether the Director should route requests to servers based on the number of requests currently being handled by each server (Current Load) or rotate requests among servers (Round Robin). The default is Current Load.

TS Web Services

The following changes are incorporated into this release:

- TS Web Services has been migrated to a Java implementation using the Apache Tomcat web server and the Apache Axis2 framework. (Previous versions used the Apache HTTP Server and Apache Axis2/C.) This change supports accurate processing of Unicode characters.
- The TS Web Service is now defined by one standard WSDL. A single class is used for cleansing, reference matching and window matching.

CHAPTER 10

TSS v15.1 Enhancements

This chapter describes the enhancements and updates included in the TSS v15.1 release including:

- [User Interface Enhancements on page 78](#)
- [Data Quality Enhancements on page 80](#)
- [Repository Manager Enhancements on page 82](#)
- [Enterprise Integration Enhancements on page 83](#)

User Interface Enhancements

This section describes the enhancements and updates incorporated into the Control Center interface.

Business Rules Manager

The Business Rules Manager is a new web-based application from which you can add, search, edit, and delete business rules (including rules in the Library), with a streamlined workflow to help you manage and organize business rules more efficiently.

Features include:

- Support for editing multiple rules at a time.
- Available from the Control Center or as a stand-alone application.
- Advanced search using filters and conditions.
- Dynamic filtering of search results.
- Integration with Business Rules Library.
- Enhanced expression building capabilities (see [Redesigned Expression Builder on page 79](#))

Opening the Business Rules Manager:

- In the Control Center, on the **Advanced** tab, click the **Business Rule Manager** icon.



- To open as a stand-alone application, users are sent an e-mail with a link. When users click the link, they are prompted to log in using either Windows- or Trillium-authentication (depending on the security configured in your environment).

Redesigned Expression Builder

When you work in the new Business Rule Manager, a redesigned Expression Builder is available to create and edit business rules.

Features include:

- Expression validation, as you work or when you click **Done** to create the rule. The result of rule validation is displayed in a validation box. Validation allows you to make appropriate changes to the expression before saving it.
- Expression element panel. You navigate and select functions, operators, and other elements from an accordion-style navigation panel.
- Full text editor for writing and editing expressions. Includes the following functionality:
 - Search and replace expression characters and words
 - Go to a particular line in the text editor
 - Navigate various expression states by going back to a previous state or moving forward to the next state
 - Change font size
 - Wrap text
- Ability to open multiple Expression Builders at the same time. For example, you can tile them side-by-side so that you can create/edit expressions for filtering, grouping, and aggregating at the same time.

TO_INT64 Function

As of TSS 15.1, the function TO_INT64 has been removed from the Expression Builder. Use the function TO_INT which supports 32- and 64-bit data.

DAYMONTHYEAR Function

The date formats D-MON-YYYY and D-MON-YY are now supported. Other supported formats for DAYMONTHYEAR include:

- D/M/YY
- D/M/YYYY
- D-M-YY
- D-M-YYYY

Data Quality Enhancements

This section describes the enhancements and changes incorporated into TS Quality standardization and cleansing processes.

TS Quality for Hadoop Projects

To support the TS Quality for Hadoop solution (see [TS Quality for Hadoop on page 83](#)), you can now create a TS Quality project (US or UK) designed to export to a Hadoop environment.

Customer Data Parser

If the standard definition table (which contains all standard definitions used by the Customer Data Parser) is updated from a previous version of TSS, the differences between the old and new versions are documented in a new file called **difftbl**, located on the TSS repository server system (`/tsq/tables/parser_rules/difftbl`).

Use the file name to identify the versions compared. For example, `AE-difftsq15.0.0-to-tsq14r0.txt` contains differences between TSS v14.0 and v15.0, `AE-difftsq15.0.0_15.1.0.txt` contains differences between v15.0 and v15.1.

Geocoder

When specifying Geocoder options, there is a new **Timeout (seconds)** option. This allows you to enter a numeric value for the maximum amount of time in seconds that the Geocoder is allowed to take. The default timeout is 5 seconds.

- ① *Do not change the default value unless requested to do so by Trillium Software's Customer Support or Professional Services department.*

Postal Matchers

Asian Countries Postal Matcher

There are four new output flag attributes for the Asian Postal Matcher countries (China, Japan, Korea, and Taiwan), described in Table 10-1:

Table 10-1 Asian Country Postal Matcher Output Attributes

Attribute	Length	Description
pr_level1_level2_ changed	1	Change flag. Values are: <ul style="list-style-type: none"> ■ Y—There are changes in level 1 or level 2. ■ Blank—No change or no match to directory.
pr_level3_level4_ changed	1	Change flag. Values are: <ul style="list-style-type: none"> ■ Y—There are changes in level 3 or level 4. ■ Blank—No change or no match to directory.
pr_postcode_changed	1	Change flag. Values are: <ul style="list-style-type: none"> ■ Y—There are changes in postcode. ■ Blank—No change or no match to directory.
pr_validate_with_ correction	1	Validation flag. Values are: <ul style="list-style-type: none"> ■ Y—Fail Level (pr_geocode_fail) is 0 and any of the change flags are set to Y. ■ N—Fail Level (pr_geocode_fail) is 0 and all of the change flags are set to blank. ■ Blank—Fail Level (pr_geocode_fail) is not 0 (no match to directory).

For more information in the TSS Help, see Reference Material > Postal Matcher Attributes and Results for Asian Countries > Postal Matcher Attributes for Asian Countries (China, Japan, Korea, Taiwan).

Global Postal Matcher

- **Extended ACR Code.** In previous versions of TSS, standard was the single available level of Address Correction Result (ACR) code in the Global Postal Matcher. In this release, a second level, extended, has been added. The extended ACR details the status of all address component attributes, whereas the standard ACR details the status of a subset of address component attributes. The extended ACR is stored in the new attribute called **ga_gout_ext_acr**.

For more information in the TSS Help, see Develop > Postal Matchers > Global Postal Matcher > Address Correction Result (ACR) Codes.

- **New Options:**
 - **Enforce Blanks.** There is a new advanced option called **Enforce blanks**. When selected, this option clears populated address attributes if the postal table specifies that it should be blank for the matched address.
 - **Timeout (seconds).** See [Geocoder on page 80](#).

Great Britain (GB) Postal Matcher

There is a new option called **Perform additional matching**. When checked, the additional match will be attempted using the postcode and the street name. This option is useful when you assume the input postcode is correct but the other components are incomplete to make a match by the standard match process.

For more information in the TSS Help, see Develop > Postal Matchers > United Kingdom (GB) Postal Matcher > Specifying GB Postal Matcher Options.

Transformer Data Reconstruction - Derived Attributes

There are two new derived attributes for use with Transformer Data Reconstruction called **dr_address_2** and **dr_project_code**. **dr_project_code** contains a two-character country code of the country template. The attribute is useful to flag and group the ZZ (basic) countries later in the project flow and to identify the project flow when you route a country to another country.

For more information in the TSS Help, see Develop > Transformer > Special Transformers > Transformer Data Reconstruction > About Derived Attributes.

Repository Manager Enhancements

This section describes enhancements to the Repository Manager. For more information, see the *TSS Repository Administrator's Guide*.

Activating the Business Rules Manager

In the Repository Manager, in the Options window, there is a new Manager Environment option called **Enable Business Rule Manager** (selected by default). When selected, all TSS users logged into the Control Center have access to the new Business Rule Manager.

When deselected, the icon to open the Business Rule Manager does not display in the Control Center. For more information, see [Business Rules Manager on page 78](#).

TSS ODBC Loader Connection - Impala Support

You can now load data into the TSS repository using the TSS Impala Wire Protocol ODBC driver. Supports Cloudera Impala 1.0 database server.

New Setting for config.txt File

When you work with entity business rules that use the advanced Group By option, and you run analysis jobs on multiple rules at a time you may experience performance issues including a slow down (or hanging) of your

system.

business_group_limit is a new optional setting in the TSS server config.txt file that allows you to limit the number concurrently run analysis jobs that include Group By business rules. Setting a limit can help avoid overworking shared resources on your system.

① *business_group_limit is used in conjunction with the maximumWeight setting, which needs to be set to a value greater than 1 to allow multiple jobs to be run concurrently.*

Enterprise Integration Enhancements

This section describes enhancements and updates for the following TSS enterprise data products.

TS Quality for Hadoop

With the introduction of TS Quality for Hadoop, TS Quality US and GB batch projects can now be run in a Hadoop environment, using native Java MapReduce across Hadoop Distributed File System (HDFS) data clusters.

This release includes the following features:

- Trillium projects are deployed using the new Trillium Batch to Hadoop Cluster Deployment Manager. The Deployment Manager configures the project and deploys it to a Linux gateway server, from which you copy it to HDFS.
- The solution uses native Java MapReduce programs.
- Using a new architectural paradigm—Trillium Server Interface (TSI)—data is processed in parallel across the Hadoop cluster through Java API calls to 64-bit TSS core modules, using Hadoop's MapReduce infrastructure.
- Window Matching and Reference Matching are supported.
- The Global Data Router is supported, allowing multiple country projects (US and UK only).
- Commonization and Survivorship are supported.

CHAPTER 11

TSS v15.2 Enhancements

This chapter describes the enhancements and updates included in the TSS v15.2 release including:

- [EDQ 64-Bit Enabled TSQ Data Processing on page 84](#)
- [Business Rules Center on page 89](#)
- [Data Quality Enhancements on page 90](#)
- [Enterprise Integration Enhancements on page 91](#)

EDQ 64-Bit Enabled TSQ Data Processing

With TSS Version 15.2, Trillium Software expands support of 64-bit processing on Windows and Linux operating systems with the availability of Trillium Software Enterprise Data Quality (EDQ), the 64-bit enabled implementation of TS Quality.

Depending on your product key, your EDQ installation options may include:

- Enterprise Data Quality, which installs the 64-bit enabled core TS Quality modules and Trillium tables. TS Quality batch and real-time projects can be executed (run) on 64-bit platforms using full 64-bit processing.
- TS Quality for Hadoop, which installs the Hadoop connector, enabling TS Quality processing across a Hadoop cluster. Enhanced country support and deployment enables you to manage the TSS software, projects, and postal file distribution more efficiently across the HDFS cluster.
- TS Quality for Real Time, which installs the TS Director, a service that provides transaction load balancing and server connection management for client applications. There are two optional components available with the TS Quality for Real Time installation:
 - TS Web Services - TS Web Services enables Trillium processing through industry-standard SOAP requests. Selecting this option installs the Apache Tomcat Web Server. Java version 1.7 is required.

- Director SDK - The Software Development Kit includes the Java API, code samples, and a sample project, director_proj. You can optionally install cleansing and matching services to test your client application.
- TS Quality for SAP, which installs the SAP connector, enabling TS Quality integration with the SAP NetWeaver RFC client in support of 64-bit.

Note the following:

- Control Center and the TSS repository remain 32-bit applications. All processes run in the Control Center are 32-bit; when you export TS Quality projects, batch scripts for both 32-bit and 64-bit processing are created. The 64-bit batch script runs using the 64-bit encoded TSQ core modules.
- New 8-bit Unicode Transformation Format (UTF-8) postal tables are available for the 16 Postal Matcher and Custom Postal Matcher countries and are required for EDQ processing. See [UTF-8 Postal Tables on page 87](#).
- If you upgrade to v15.2 from a previous version of v15, and you choose to install and use the 64-bit components, you must also install the 32-bit product components. This allows for testing your existing TS Quality projects concurrently on the same TSS server system with the redeployed version to verify that the results are as expected for each project. It is recommended you do this before you deploy to a 64-bit production environment.
- There is no batch script for parsing customization in 64-bit. Run the parsing customization in the Control Center for 64-bit projects before deploying.
- The Batch Deployment Tool (BDT) command line scripts cannot be used to create the scripts for 64-bit batch deployment.
- Siebel Connector is not supported with EDQ, but is available as a 32-bit component.
- The following are not supported with EDQ 64-bit: Trillium Monitor, HTTP-over-HTML servers, J2EE and IIS .NET (legacy web services), and C++ APIs.
- In 64-bit, the TS_QUALITY environment variable is not needed. However, existing 32-bit functions remain unchanged and continue to use the TS_QUALITY environment variable.

Running 64-bit TS Quality Projects

New and existing TS Quality projects can be deployed to and executed using 64-bit processing. Note the following guidelines for working with projects intended for 64-bit execution:

- For existing batch projects created in an earlier version (pre-v15.2) of TSS, to take advantage of 64-bit functionality, you must re-export the project to batch to generate the 64-bit script.

- While the new UTF-8 tables are used when you run your batch script on 64-bit systems, you still need to use the 32-bit postal tables when creating and working with your project in the 32-bit Control Center.
- After you export a batch project, ensure you are pointing to the relevant 64-bit directories and have set the TS_QUALITY_64 environment variable to the version number folder of the 64-bit Quality installation. For information, see the TSS Help (Deploy > Exporting a Project to a Batch Script and Running a Batch Project).

Batch Scripts

You can export a project into a batch script which can be run on either a UNIX or Windows platform outside of the Control Center. When you export a project to batch, a total of three scripts (two 32-bit and one 64-bit) are generated. Select and run the appropriate script depending on your system environment.

① *As of Version 15.2, a batch export to a 64-bit environment is supported for Windows and Linux only.*

- Batch scripts for UNIX:
 - `runprojectN.sh` - runs the batch project in 32-bit
 - `customize_len/ben.sh` - runs parsing customizations in 32-bit
 - `runprojectN_64.sh` - runs the batch project in 64-bit (Linux only)

Where *N* is the number of your project.

- Batch scripts for Windows:
 - `runprojectN.cmd` - runs the batch project in 32-bit
 - `customize_len.cmd` - runs parsing customizations in 32-bit
 - `runprojectN_64.cmd` - runs the batch project in 64-bit

① *There is no batch script for parsing customization in 64-bit. The parsing customization must be run in the Control Center for a 64-bit batch project.*

Guidelines for 64-bit Batch Processing

Note the following when you export a project into a batch script intended for a 64-bit processing environment:

- For the Postal Matchers, the new UTF-8 postal tables are required to run a batch script in 64-bit. For more information, see [UTF-8 Postal Tables on page 87](#).

Previously only 32-bit versions of these postal 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.

- A configuration file (`Config64.tbl`) will be automatically created in the project's settings folder when you run the 64-bit script for the first time. This file will be used by the 64-bit batch execution scripts.
- The following TS Quality processes are not supported when using 64-bit:
 - Database Read/Write process
 - Certified Postal Matchers (Australian AMAS certification, Canadian SERP program, and United States CASS Postal Matcher)
 - Profiling processes (Analysis, Business Rules, Dependencies, Keys, and Load)

Running 64-Bit and 32-Bit Concurrently

You can install TS Quality (32-bit) and EDQ (64-bit) on the same machine for testing purposes. Components are segregated in different directory paths and do not conflict. The version that will be used to process your data depends on your project selections.

- Batch scripts - When you export a project to a batch script, TS Quality creates different versions of the script. Run the 32-bit version to use the 32-bit TS Quality core components; run the 64-bit version to use the TS Quality 64-bit core components. (See [Batch Scripts on page 86.](#))
- Real-time projects - When you create a cleanser or matcher, you select the processing type, which determines whether the project will run with 32-bit or 64-bit components.

You can test your data using both 32-bit and 64-bit execution before moving your projects into a 64-bit production environment.

When switching between 32-bit and 64-bit projects, you must make two changes to your environment:

- If both 32-bit and 64-bit locations are included in your PATH environment variable, the first location in the path list will be used. You can find the currently defined location by using the 'which' command on Linux to search for `libtrillTGenClientLibrary.so`, or the 'where' command on Windows to search for `TGenClient.dll`. Change the PATH environment variable to point to the correct library location.
- Change the JRE_HOME location. 32-bit projects must use the JRE included with the 32-bit Trillium installation; 64-bit projects use the JRE included with your Java installation.

UTF-8 Postal Tables

8-bit Unicode Transformation Format (UTF-8) is a variable-length character encoding for Unicode. UTF-8 can represent every character in the Unicode character set and is compatible with ASCII.

EDQ 64-bit processing supports postal tables in UTF-8/Unicode format only. Therefore, for the Postal Matchers, the new UTF-8 postal tables are required to

run a batch script in 64-bit 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.

- ① *The Control Center still needs the 32-bit version of the postal tables to process data before you export to batch.*

UTF-8 Benefits

UTF-8 removes certain global data processing limitations. For example, using the UTF-8 character format, the Postal Matchers can now properly handle special characters not available through single-byte code pages (tables of values that describe the character set used for encoding). The results from Parsing and Matching processes may show differences when comparing the results of the same data using the 32-bit tables. The UTF-8 data results will include special or outlier characters (that is, characters that fall outside of the 256 character limit) that other encodings cannot read or do not pass.

- ① *The changes apply mainly to non-ASCII data.*

For information about installing and configuring your system to use these tables, see either the *Postal Directory Installation Guide* or, in the *TSS Installation Guide*, the *Installing Postal Directories* chapter.

About EDQ Table Locations

To process your data, TS Quality projects use several tables, such as postal tables, parser rule tables, code page tables, and so on. 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 `tables` directory is created by the EDQ installation and contains the following subdirectories:

- `ACE_tables`. Tables for the JP Postal Matcher Address Code Edition (ACE) Postal Matcher.
- `atables`. Tables for the Postal Matcher for China, Japan, Korea, and Taiwan.
- `census_tables`. Tables for US Census Geocoder used with the US Postal Matcher.
- `code_pages`. Code page tables.
- `gatables`. Tables for countries used by the Global Postal Matcher.
- `general_resources`. General process files, including rule, table, ddx, ddl, and map files.
- `parser_rules`. Parser rules file.
- `postal_utf8`. Tables for 64-bit UTF-8 postal.

- ① *For the 16 countries that have both the 32-bit postal tables and 64-*

bit UTF-8 postal 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.

For the 16 Postal Matcher countries (including those for the Custom Postal Matcher) there are two versions of the postal tables—one for 32-bit TS Quality processes, and the 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 postal tables as they are already compliant with UTF-8 and/or Unicode data. Therefore, you can simplify project configuration and set `EDQ.ini` to point to a single set of tables used for both EDQ 64-bit processing and 32-bit processing.

For more information about installing the EDQ components and the EDQ, see the *TSS Installation Guide* or the *Postal Directory Installation Guide*.

Business Rules Center

The Business Rules Center (formerly the Business Rules Manager) is a web-based application from which you can add, search, run, edit, and delete business rules (including rules in the Library), with a streamlined workflow to help you manage and organize business rules more efficiently.

New features include:

- Ability to run business rule analysis on one or multiple rules at a time.
- You can now export and import business rule sets, rule search results, and rule analysis results.
- Options to Copy and Save As business rules to create similar rules.
- Business rule search now includes case insensitive search feature.
- Customize views of search results and metadata by sorting, filtering, and locking columns.
- New Task Manager allows you to view the progress tasks, such as business rule analysis, that are run in the background.
- When accessed from the Control Center, the Business Rules Center opens in a separate browser window rather than a tab in the Control Center.

Data Quality Enhancements

This section describes the enhancements and changes incorporated into TS Quality standardization and cleansing processes.

Postal Matchers

Certified Postal Matchers

The following certified Postal Matchers are not supported for EDQ (64-bit), although they remain valid for TSS 32-bit processing:

- Australia (AU) – AMAS Australia Post
- Canada (CA) – SERP Canada Post Corporation
- United States (US) – CASS United States Postal Matcher

Korean Postal Matcher - New Postal Code System

Effective on August 1, 2015, South Korea's existing 6-digit postal codes were replaced with a new set of 5-digit postal codes. As a result, the new postal directories will change to the new format and will convert the 6-digit postal codes to the 5-digit postal codes.

After you install or upgrade to TSS v15.2, you can use either the new postal directories for Korea or the older, pre-15.2 (32-bit) directories, but not both versions. If you install EDQ, you can only use the new table. The older table is not valid for 64-bit processing.

For more information in the TSS Help, see [Develop > Postal Matchers > Postal Matcher for Korea \(KR\) > New Postal Code System for Korea](#).

Relationship Linker Results Analyzer

This new application allows you to browse the results of your linking process and examine the relationships between the matched data. After you have run the Relationship Linker, you can open the Relationship Linker Results Analyzer and display match results.

It is important to examine your matched results to see how records were initially matched. You can then decide if it is necessary to adjust the linking rules according to your business requirements.

UTF-8 Multiplication Rule

The UTF-8 multiplication rule applies generally only to delimited files, not fixed-length files. You can now manually enable the UTF-8 rule for all types of files and projects.

For more information in the TSS Help, see [Reference Material > Encoding and Types > Working with UTF8 Data](#).

Enterprise Integration Enhancements

This section describes enhancements, updates, and changes for TSS enterprise data products.

TS Connector for Siebel

The Siebel Connector is not available for use with EDQ core components. For Siebel Connector support, install the ECS software.

TS Director

A new version of TS Director is available for use with EDQ components when you install TS Quality for Real Time. For more information, see [EDQ 64-Bit Enabled TSQ Data Processing on page 84](#).

TS Quality for Hadoop

The TS Quality for Hadoop solution includes enhancements to country support and deployment:

- TS Quality for Hadoop now includes a script that copies all Trillium components to all nodes in your Hadoop cluster.
- TS Quality for Hadoop now offers full global country support, including country projects, postal directories (where available), double-byte countries, and also those countries supported by the Global Postal Matcher.

TS Web Services

The following changes and additions are incorporated into this release:

- TS Web Services support is now available on both 32-bit and 64-bit platforms.
- TS Web Services using Trillium Server Interface (TSI) is the 64-bit enabled implementation of TS Web Services. TSI, part of Trillium's Enterprise Data Quality (EDQ) technology, provides the underlying technology for communication with TSS components. TSI enables secure data transfer through use of security certificates on the Apache Tomcat web server. Optional user authentication provides additional security.

Using TSI, cleansing and matching processing is performed entirely in memory, enhancing performance. TS Web Services using TSI is supported on Windows and Linux 64-bit systems.

- A new user interface, SOAP Service Administration, allows you to configure your projects, starting your projects, viewing a log of TSI activity, and to optionally add web access keys to require user authentication for access to TS Web Services. This version supports

setting match levels one through four for both consumer and business matches.

SAP

The following changes for SAP are incorporated into this release:

TS Quality for SAP (SAP Connector)

- The new 64-bit SAP Netweaver RFC library product is available with EDQ, and is supported on Windows and Linux systems. For information about changes to support the new RFC library, see [Function Module Name Changes](#).
- Starting with TSS v15.2, TSS will no longer deliver software for the 32-bit version of the SAP Connector ahead of SAP's decision to discontinue support of the 32-bit SAP RFC library product as of March, 2016. SAP will now be available for 64-bit only. If you need to run SAP with the 32-bit SAP RFC library product, it is recommended that you continue to use an earlier release of TSS.
- EDQ Installation Note: For the TS Quality for SAP, and for any client using TS Director, after installation you must set the following environment variables:
 - TRILLDIRADDR: Name of the host or IP address (in dotted decimal format) of the node on which the Director listens. Set on client and cleansing/matching service machines.
 - TRILLDIRPORT: Port on which the Director listens for incoming requests. Set on client and cleansing/matching service machines.

Function Module Name Changes

To accommodate the 64-bit SAP Netweaver RFC library, the RFC function module names have been moved into the /TRILLIUM/ namespace. This is required of all RFC function module names because the RFC server functions are now defined inside the SAP data dictionary. For example, for the SAP Cleanser, the function module names are now /TRILLIUM/DO_CLEANSING and /TRILLIUM/GENERATE_WINDOW_KEYS.

Upgrade Recommendations. If you are upgrading to TSS v15.2, and you have developed custom applications that call Trillium, you may need to change your customized code after you upgrade, depending on how you have implemented the Trillium calls.

① *If you do not use custom applications to call Trillium, during the upgrade the customizing settings are automatically updated.*

BADI Methods. It is recommended that, if possible, your custom applications call the following BADI implementation methods instead of calling the RFC functions directly because the BADI methods automatically read the customizing settings and dynamically call the Trillium RFC functions:

- For address cleansing, use the BADI ADDRESS_CHECK method IF_EX_ADDRESS_CHECK~ADDRESS_POSTAL_CHECK.

- For duplicate checking, use the BADI ADDRESS_SEARCH method IF_EX_ADDRESS_SEARCH~ADDRESS_SEARCH.

Trillium RFC Function Methods. If the full BADI implementation methods cannot be used (for example, for objects that do not use Business Address Services addresses), then consider reading the customizing settings and dynamically calling the Trillium RFC functions using the following lower-level methods:

- For address cleansing, use /TRILLIUM/CL_IM_ADDR_CHECK=> DO_CLEANSING. This method reads the configuration and calls the RFC function.
 - For duplicate checking, use method /TRILLIUM/CL_IM_ADDRSEARCH=>GET_MATCHER_PARAMETERS to read the configuration and /TRILLIUM/CL_IM_ADDRSEARCH=>DO_MATCHING to call the RFC function for matching. Both calls are required.

SAP MDG

TSS v15.2 includes support for SAP Master Data Governance (MDG) 7.0, including cleansing, matching (de-duplication), and fuzzy search of world-wide name and address information for Customers (organizations), Suppliers (organizations), and business Partners (organizations and individuals). A user interface for user acceptance, available in English and German, is included.

SAP MDG 7.0 is implemented on an SAP ERP system, which requires SAP ERP 6.0 Ehp7.

This release is available on Windows x86 64-bit and Linux x86 64-bit platforms.

CHAPTER 12

TSS v15.2 Update 1 Enhancements

This chapter describes the enhancements and updates included in the TSS v15.2 Update 1 release including:

- [TS Web Services on page 94](#)

TSS v15.2 Update 1 is a 64-bit update only, valid for Enterprise Data Quality (EDQ) functionality on Windows and Linux systems. For more information about EDQ, see [EDQ 64-Bit Enabled TSO Data Processing on page 84](#).

TS Web Services

Version 15.2 Update 1 of TS Web Services SOAP Service Administration introduces the following features:

- Two new tabs have been added to the Administration Home page:
 - The new Environment tab assists with troubleshooting. It displays settings such as your system path, operating system version, and whether or not the TSI Dynamic Library is loaded. If your environment is not correctly configured, a message displays alerting you to the problem.
 - The new Settings tab allows you to set the SOAP Service logging level and to specify whether the current project should automatically start when Tomcat starts.
- A new tab, Project Log, has been added to the Project Configuration page. It allows you to view the log file for the currently running project.
- The ability to set a cleanse limit has been added to the Add Web Access Key page. This option is used by system administrators when setting up a TS Web Services evaluation configuration. It sets a threshold for cleanse requests which, when reached, disables access to the cleanse service.
- A new page, Cleanse Count by Country, has been added. Using this page you can monitor the number of cleanse requests being generated for each of your licensed postal matcher countries. This feature provides insight into the distribution of your organization's data quality activity.

- TS Web Services now supports JRE 1.8.
- ① *Master Batch processing is a new enhancement added to TS Web Services. Master Batch is used by Trillium staff during initial implementation of certain Trillium solutions, such as Trillium for Microsoft Dynamics CRM.*

CHAPTER 13

TSS v15.2 Update 2 Enhancements

This chapter describes the enhancements and updates included in the TSS v15.2 Update 2 release including:

- [Data Quality Enhancements on page 96](#)
- [Enterprise Integration Enhancements on page 98](#)

TSS v15.2 Update 2 is valid for TSS 32-bit for Windows and UNIX platforms (Linux, HP-UX, AIX, and Sun), and EDQ 64-bit processing for Windows and Linux platforms.

Data Quality Enhancements

This section describes the enhancements and changes incorporated into TS Quality standardization and cleansing processes.

Basic Country Project

A new mask file called `zzmasks.win/unx` is now included to manage all alphas and numerics in the Basic Country (ZZ) project.

Bulgaria Cyrillic

This release of TSS includes Bulgaria Cyrillic-native language support.

Bulgaria Cyrillic Data Process. You can now select Bulgaria (Latin-1) or Bulgaria (Cyrillic-native) in the Control Center when creating a project. You can also browse the data in the Postal Browser.

Ireland Eircode

Effective in July 2015, Ireland has started a new postal code system, Eircode. An Eircode is a unique code designed to accurately identify the location of an address, and is assigned to each residential and business address. Existing postal addresses have been assigned Eircodes.

Note the following guidelines when using Eircode for Ireland in TSS:

- You can use Eircode for input data for TSS processing. However, TSS cannot validate Eircode as our current postal tables for Ireland do not include Eircode information.
- Directory Browser does not display Eircode.
- Even though a record receives a Match Level Code of '0' (exact match to postal table), this does not mean the Eircode is validated.
- If Eircode is present in the input data, it will be returned in GA_GOUT_POSTAL_CODE.
- If the Dublin city code is present in the input data, it will be returned in GA_GOUT_EXTRA_CITY and in GA_GOUT_POSTAL_CITY.

Global Data Router

The Country Rules Table (rtrules2.win/unx) now supports UTF-8 encoding, so you can define rules for country names and cities in native languages. Prior to this, encoding was limited to Latin-1.

Transformer - Web Service Map Files Changes

The Transformer allows you to call XML-based, third-party web services in the Control Center by utilizing a map file. Map files contain all the information required to define a specific web service call and its corresponding response.

As of TSS v15.2 Update 2, the following changes apply:

- Previously, the Transformer supported encrypted map files only. Now encrypted map files can be used. The Transformer will automatically check to see if a map file is encrypted. If it is, it will be decrypted.
- You can now supply your own map files/tables, although they must be customized by Trillium Software Consulting. Contact Trillium Technical Support or your Trillium Account Representative for more information.

Enterprise Integration Enhancements

TS Web Service Manager

The following enhancements have been added to the Web Service Manager:

- Testing of both 32-bit and 64-bit TS Web Services implementations is now supported.
- Creating test requests has been simplified with the addition of an input grid to enter test data.
- Results of a test request can now be viewed as name/value pairs.
- On the Matcher Input/Output Fields tab, the Selected Fields list is now automatically populated with the contents of the Match Fields List.
- For the 32-bit implementation, a new button on the Server Configuration tab, Get Director Setup, displays the values of TRILLDIRADDR and TRILLDIRPORT from Apache Tomcat. This button is inactive for 64-bit (TSI) implementations; TSI does not use these variables.

SAP Add-On Support Package 01 for Add-On v8.5

This support package corrects issues with handling of parallel processing in the /TRILLIUM/RSADRINI program.

CHAPTER 14

TSS v15.3 Enhancements

This chapter describes the enhancements and updates included in the TSS v15.3 release including:

- [Discovery Center on page 99](#)
- [Transformer Web Services Map Files Changes on page 100](#)
- [Postal Table Shipment Changes on page 100](#)
- [Trillium for SAP on page 101](#)

Discovery Center

The Discovery Center (formerly the Business Rules Center) is a web-based application from which you add and manage business rules (including rules in the Library) and data sources (entities) using a streamlined workflow.

New features include:

- **Task Queue.** Always available from anywhere in the Discovery Center, the Task Queue allows you to quickly track the status of jobs that are running or waiting to run.
- **Add Data Source.** Add a new data source (entity) to your repository. Drill down to see your data rows, metadata, attributes, and associated business rules. Associate a library rule set to a data source, creating a connection to the data source attributes. Export data source metadata views as .csv files.
- **Charts and graphs.** Data visualization using bar and pie charts and graphs has been added to give at-a-glance overviews of the status of your data quality results. Quickly view the structure and content of your original data rows. Enhanced visualizations help you understand and drill into passing and failing records, grouped or aggregated rule results, and data source, business rule, and attribute metadata.
- **Enhanced Metadata Review.** Review and act on relationship analysis including keys, dependencies, dependency conflicts, and joins.

- Navigation and Drill-downs. Toggle to important information while you work. Additional drill-downs and navigation is available to access your metadata, and business rule, attribute, and entity analysis results.
- Associations. Assess impact of changes to library rules by viewing and modifying rule associations to data sources.
- Exports. Export rules, rule results, attributes, data rows, and data sources to share rules and information across repositories and environments.
- Contextual online help.

① *Discovery Center supports Internet Explorer 10 and 11. If you are using Windows 10, you must access the Discovery Center with IE 11 because Microsoft Edge is not supported.*

Transformer Web Services Map Files Changes

The Transformer allows you to call XML return-based, third-party web services in the all TSQ workflows by utilizing a map file. Previously, the Transformer supported encrypted map files only. Now unencrypted map files can be used. Encrypted map files are still supported in v15.3.

The Transformer now only supports web-service map files customized by Trillium Software Consulting. Contact Trillium Technical Support or your Trillium Account Representative for more information.

Postal Table Shipment Changes

As of July 1, 2016, Trillium Software will no longer provide CD deliveries for updates to our postal directories or updates to our United States centroid latitude/longitude directories. All updates will be provided on our secured FTP site.

All Trillium Software customers have an account on this site. If you are unsure of your credentials, please contact Trillium Customer Support. If you have any questions, please contact your Trillium Customer Success Manager or Trillium Customer Support.

Trillium for SAP

The following are Trillium for SAP enhancements:

MDG 8.0 Support

TSS v15.3 includes support for SAP Master Data Governance (MDG) 8.0 and includes the following enhancements:

- The Score returned in the Duplicate Check result list has been enhanced to return a more comprehensive match score.
- The Duplicate Check Popup has been enhanced to include First Name and Last Name fields of the BP person.

SAP HANA Certification

TSS has achieved SAP-certified integration with SAP NetWeaver running on SAP HANA®.

When you migrate your SAP NetWeaver systems to SAP HANA, your integration with TSS will continue to work seamlessly. This certified integration also allows you to implement SAP ERP®, SAP CRM®, SAP MDG®, and other applications running on SAP HANA to integrate with TSS.

CHAPTER 15

TSS v15.4 Enhancements

This chapter describes the enhancements and updates included in the TSS v15.4 release including:

- [Discovery Center on page 102](#)
- [Quality Transformer on page 103](#)
- [Enterprise Integration on page 104](#)

For important changes to the v15.4 installation and supported platforms, see [TSS Important Changes on page 12](#).

Discovery Center

The Trillium Discovery Center is a web-based application from which you view, manage, and analyze objects in your TSS repository including business rules, data sources (entities), attributes, data rows, library rule sets, join analyses, and all associated metadata.

New features include:

- **Join Analyses.** You can now generate join analyses across and within data sources against the intersection of one or more sets of attributes.
- **Browser Support.** In addition to Internet Explorer 10 and 11, the Discovery Center now supports Google Chrome.
- **Export Relationships.** You can now export join metadata and join analyses results, as well as key and dependency metadata, as a .csv file.
- **Change Relationship Status.** After you review relationship analysis, you can change the permanent or discovered status of a key, join, and dependency depending on validity of the analysis.
- **Data Sources.** The following data source functionality has been added for v15.4:

- Add New Attribute/Column. When adding a data source to the repository, you can add a new, customized attribute (column) to the data source.
- Upload File from Local System. You can add a data source by directly loading a delimited data file from your local system.
- Add Rule Set Associations to Data Sources. When examining a single data source, you can associate the data source to a rule set without having to navigate to the Library.
- Add Rule to Data Source. You can add a new rule directly to a data source.
- Delete Data Sources. You can delete one or more data sources from a repository.
- Mask and Value Recodes. You can recode masks and data values. A recode is a user-defined revision, or recoding, of a mask shape or data value. You then export the recoded masks or values in a table for use in Transformer projects.
- Uploading Files to the Server. You can upload a file from your local system to the TSS repository server for use in the Discovery Center.

Quality Transformer

This section describes the enhancements and changes incorporated into the TS Quality Transformer process.

Trillium Precise Web Services

Trillium Precise is a new, optional JSON-based web service available for use with the Transformer and allows you to validate business and personal e-mail addresses and phone numbers. Validation includes checking that the e-mail address or phone number is valid, whether the registered name matches the input name, validating the country code with which it is associated, and other validation information. Data can be validated during a batch process or in real time as records are entered.

① *Trillium Precise is an optional component licensed separately. E-mail and phone validation is supported for most of the countries including the U.S. and Canada. Coverage varies by country.*

Trillium Precise uses map files included in your TS Quality installation. When you license Trillium Precise, you configure the Transformer to send a name, address, e-mail address, IP address, and/or phone number to the Trillium web server to request validation. When the Transformer is run, the validation results are returned to the Transformer output.

For the Transformer to call the Trillium Precise web services, you must specify the map files and define the input and output attributes in the Output Transformation setting. The map files contain all the information required to define a Trillium Precise web service call and its corresponding response.

Note for Blank Map Values

When mapping attributes for input, if you are using the User Credentials section to enter your user key, you must keep the **Use blank map value** option unselected for the first attribute (TSPx_IN_KEY).



However, if there are any other attributes that you do not map in, you must select the **Use blank map value** options for those attributes.



To see more information about Trillium Precise in the TSS Help, see [Develop > Trillium Precise Web Services](#).

Legacy Plus (+) Operator

When specifying output data in the Transformer, there is a new option called **Use Legacy Plus Operator**. When selected, the plus operator (+) in your expression statements concatenate multiple arguments (strings, attributes, and integers) with no space between arguments.

This option is to be used only for backwards compatibility with TS Quality projects created in pre-15 versions of TSS.

Enterprise Integration

This section describes enhancements and updates for the following TSS enterprise data products.

Trillium for Siebel

Trillium for Siebel now supports Siebel 2016. This is in addition to support of Siebel 8.1.1.14 CRM and UCM.

TS Director (32-Bit) Web Services

The following are no longer supported:

- The Director J2EE Application Programming Interfaces (APIs).
- Deployment using Oracle® WebLogic® and IBM® WebSphere®.

CHAPTER 16

TSS v15.5 Enhancements

This chapter describes the enhancements and updates included in the TSS v15.5 release including:

- [Discovery Center on page 105](#)
- [United States \(US\) Postal Matcher on page 106](#)

For important changes to the installation and supported platforms, see [TSS Important Changes on page 12](#).

Discovery Center

The Trillium Discovery Center is a web-based application from which you view, manage, and analyze objects in your TSS repository including business rules, data sources (entities), attributes, data rows, library rule sets, relationship analyses, and all associated metadata.

New features include:

- **Browser Support.** In addition to Internet Explorer 10 and 11 and Google Chrome, the Discovery Center now supports Microsoft Edge.
- **Add New Attribute/Column.** You can add a new, customized attribute (column) to most tab views.
- **Add Keys and Dependencies.** You can now create and discover keys and dependencies.
- **Manage Business Rule Priorities.** You can now add, edit, and delete business rule priorities.
- **Edit Attributes.** You can edit the name and description of data source attributes.
- **Refresh.** Use the new refresh button on the Menu bar to refresh the data displayed on the current page.
- **COBOL Data Sources.** You can now add a data source using a COBOL copybook data source.

United States (US) Postal Matcher

Beginning in Version 15.5, Delivery Point Validation (DPV), Locatable Address Conversion System (LACS^{Link}), Suite^{Link}, and Residential Delivery Indicator (RDI) products of the United States (US) Postal Matcher became compliant with the new USPS encryption standard. As a result, the following features have been added or changed:

- New USPS product directories. The new set of USPS product directories are available to download and install.
- Hash table for DPV. The US DPV processing no longer uses the segmented 100 DPV hash tables (dph.hsa.z00-z99); it uses only one hash table (dph.hsa).
- Reporting false positive records. There is a new process to report a False Positive File to Trillium Software Customer Support if you encounter an error message. The False Positive File includes any false positive records along with your company's name and address information. You must specify this information in the Control Center before processing.
- Fields Not Returned for Callable Processing. Certain fields are no longer returned when running the US Postal Matcher in callable mode (API), due to license agreement with the USPS.

If you have an existing project created in TSS v15.4 or earlier with these USPS products invoked, you will need to update the product directories. In addition, you will need to update the project for the new settings for a False Positive File. If you try to run an existing project without setting the new options, the US Postal Matcher will generate an error.



If you install TSS v15.5 and you use the DPV, LACS^{Link}, Suite^{Link}, or RDI products, you must use the new product directories. As of August 1, 2017, Trillium Software will no longer make available these USPS product directories with the old encryption standard. Trillium Software will make available both new and old product directories until then, but you will need to update your software and product directories as soon as possible.

For more information, see the technical bulletin *Changes to United States Postal Matcher (TSS Version 15.5)* available from the TSS software FTP site and the documentation page of the Trillium Software Customer Portal website.

CHAPTER 17

TSS v15.6 Enhancements

This chapter describes the enhancements and updates included in the TSS v15.6 release including:

- [Administration Center](#)
- [Discovery Center](#)
- [Data Quality Enhancements](#)
- [Data Management Enhancements](#)
- [Enterprise Integration Enhancements](#)

For important changes to the installation and supported platforms, see [TSS Important Changes on page 12](#).

Administration Center

The Trillium Administration Center is a new, secure browser-based application from which TSS repository administrators add, monitor, and manage data repositories and data connections for Discovery Center users. Administrators can also configure and launch connections to web services from one location.

Features include:

- Add and edit repositories and data (loader) connections.
- Add one or more repositories to enable Discovery Center users to sign in, load (or link to) their data, and run profiling activities.
- Add one or more data connections for each type of external data source to which Discovery Center users plan to connect.
- Run filtered searches using one or more conditions to find repositories and data connections located on the current repository server. You can also search for particular tasks run against repository objects.
- Configure, store, and launch connections to web services.
- View the progress of Discovery Center queued and running tasks, such as business rule analysis, rule set imports, and data source creation. The Task Manager and Task Queue list the status of jobs that were

executed against all repositories on the current repository server and provide important information when multiple processes are running.

- Save the row data displayed in tab views by exporting it as a comma-separated value (.csv) file. Save the file to your local (client) system to share and open in other applications.

Discovery Center

The Trillium Discovery Center is a secure, browser-based application from which you view, manage, and analyze objects in your TSS repository including business rules, data sources (entities), attributes, data rows, library rule sets, relationship analyses, and all associated metadata.

New features include:

- Universal Keyword Search. You can use the search on the menu bar to find data sources, joins analyses, and rules in the Library, as well as data source rules.
- Using Notes. You can now view, add, edit, and delete notes associated with data sources and attributes.
- Adding Rules to the Library. There is a new streamlined design, making it easier to promote and associate a business rule with a rule set in the Library.
- Exporting Tab Rows. When exporting rows in a tab view, now all tabs support exporting the .csv file to both server and local systems.
- Logging Out. You can now log out of the Discovery Center when you are finished with your work session.
- Saving a Copy of a Data Source Rule. When you edit a data source rule, you can now make a copy of that rule and its properties as a new rule in the current data source.

Data Quality Enhancements

This section describes the enhancements and changes incorporated into TS Quality standardization and cleansing processes.

Certified Postal Matchers for 64-bit

The following certified Postal Matchers are now supported for EDQ (64-bit):

- Australia (AU) – AMAS Australia Post
- Canada (CA) – SERP Canada Post Corporation
- United States (US) – CASS United States Postal Matcher

Customer Data Parser - Apartment Number Processing

You can now process a pound sign (#) as apartment number correctly in the Customer Data Parser (CDP). If the apartment number contains the # character and you want to keep the # character, you can do so by modifying the characters control file.

By default, the CDP converts all # characters to spaces by the characters control file (charctl.win/unx, located in ./tables/parser_rules). As a result, if the address has the # character, it will be converted to a space before parsing begins. For example, "23 Davis Rd., #C4" becomes "23 Davis Rd., C4". "C4" will still be parsed as the dwelling number, but the dwelling type is a '?' (no type) instead of 'A' (apartment), and the dwelling name will not include the # character.

To process the # character as apartment number correctly, you can remove or comment out the # character from the characters control file so that the CDP will recognize the # character as a dwelling type of apartment.

Business Data Parser - Attribute for Mixed Case

The Business Data Parser (BDP) process now includes a new user-defined attribute (bp_userx_original) to contain the original data in mixed case used in the input. This attribute is repeated a maximum of 50 times.

Sort Utility - SyncSort Technology

As of V15.6, Opttech Sort technology has been replaced with SyncSort technology. SyncSort is a high-performance sort technology offered by SyncSort Incorporated. SyncSort technology supports various collating sequences such as ASCII and EBCDIC.

Backward Compatibility with Opttech Sort

If you have existing projects using Opttech Sort, the projects now automatically run using SyncSort. Note the following guidelines when using existing projects:

- **Keep just the duplicates (JUST_DUPES)** - This option for the Duplicates setting is not currently supported by SyncSort. If your project includes this option, the Sort will generate an error message.
- **Retain order of same-key records (STABLE_SORT)** - If the Preferred sort method is set to Opttech and the Retain order of same-key records option is not selected, the Sort will internally enable this option to retain the order of same-key records.

Data Management Enhancements

This section describes the enhancements incorporated into the Repository Manager.

Log File Management

By default, when the log reaches 1 GB, the `mtb_server.log` file is renamed with a timestamp and a new log is started. The log files can use up a lot of disk space and this could lead to poor performance. To avoid this problem, you can now control the file size before renaming occurs and specify how many backups to keep in your disk.

The following new parameters are available in the `config.txt` file, located in the `etc` folder in the Server installation directory (for example, `C:/Program Files (x86)/Trillium Software/MBSW/15/etc`).

- **logfile_size_max** - The maximum size of the log file in megabytes. For example, `logfile_size_max 500` means a maximum log file size of 500MB. If this parameter is omitted or set to '0' a default log file size of 1024MB is applied.
- **logfile_backups** - The number of backup versions of the log file. For example, `logfile_backups 4` means keep a maximum of 4 backup files. If this parameter is omitted or set to '0' the maximum number of log files is set to 255.

Example

```
value logfile_size_max 1024
value logfile_backups 16
```

When the current `mtb_server.log` file exceeds its configured maximum size a new backup file is created, and if the total number of backup files now exceeds the user-configured maximum, the files with the oldest timestamp are deleted until only the maximum number of backup files remain.

Backup files are identified as the filename pattern of `mtb_serverYYYYMMDD.log` where `YYYYMMDD` is a datestamp in the inclusive range 10000101 through 29991231.

For more information, see the *TSS Repository Administrator's Guide*.

Enterprise Integration Enhancements

This section describes enhancements and updates for the following TSS enterprise data products.

Enterprise Data Quality (EDQ)

The EDQ installation now includes the following new client interface components for 64-bit processing (Windows only):

- **Director System Manager (64-bit)** - A graphical user interface that allows you to control Director, cleansing and matching.
- **Project Rule Analyzer (64-bit)** - A tool that allows you to test cleansing and matching rules and logic.
- **Web Service Manager (64-bit)** - A web service test tool that allows you to send web service requests for cleansing and matching using TSI.

You can launch these components by selecting **Start > All Programs > Trillium Software > TSS 15 - EDQ (x64)**.

TS Web Services

The following changes are incorporated into this release:

REST Capabilities. TS Web Services with Trillium Server Interface (TSI, 64-bit) now supports the industry standard REST requests. (Previous version supported only SOAP requests.)

Trillium Software recommends that you use the following types of web services as best practices:

- REST for JavaScript as it is a preferred or required method.
- SOAP for back-end operation.
- REST might be faster than SOAP because of smaller pay load.

TSI Web Server Administration. TSI Web Server Administration (formerly the SOAP Service Administration) is an enhanced web-based application from which you perform various management tasks for TS Web Services with TSI, such as configuring and starting a project. It includes a new option for **Read-Only Users**. This option allows you to create a user name and password with read-only access to the TSI Web Server Administration. This application is installed with the EDQ installation.

Official TSI Web Service SDK. TS Web Services with TSI now includes Software Development Kit (SDK) to achieve cleansing and matching. This replaces the legacy TGenClient/Director interface. The sample files directory, C:\ProgramData\Trillium Software\EDQ\15\samples\SDK\TSI, includes:

- cs - C# .NET sample projects for REST and SOAP requests.
- Java- Java sample projects for REST and SOP requests.

SSL Implementation. TS Web Services with TSI now allows you to enable secure data transfer through Secure Socket Layer (SSL). SSL is the standard security technology for establishing an encrypted link between a web server and a browser.

Security Error Messages. When security errors occur, the Web Service Manager now displays the following error messages.

Message	Description
Invalid private key file	The wrong private key file was used.
Permission denied (publickey)	The private key file used did not match the public key.

For more information, see the *TS Web Services Developer's Guide*.

Security Note for Linux

For Linux, there are separate public keys for 32-bit implementation (ECS) and 64-bit implementation (EDQ). If you use both 32-bit and 64-bit implementations, you will need to add both keys to the `authorized_keys` file.

The sample public keys are located in the following directories:

- 32-bit (ECS installation)
C:\Program Files(x86)\Common Files\Trillium Software\deployment\15\ECS_GUI\default_keys
- 64-bit (EDQ installation)
C:\Program Files\Trillium Software\EDQ\15\default_keys

Alternatively, you can generate your own keys.

Example (32-bit)

```
command="/opt/trillium/x32/Linux/tsq/Software/bin/trilsecure.sh"  
ssh-rsa AAAAB3NzaC1...rsa-key-20080306
```

Example (64-bit)

```
command="/opt/trillium/x64/Linux/bin/trilsecure.sh"  
ssh-rsa AAAAB3NzaC1...rsa-key-20170306
```



The sample keys are for testing only. Trillium Software highly recommends that you generate your own keys and passphrases to ensure system security.

CHAPTER 18

TSS v15.7 Enhancements

This chapter describes the enhancements and updates included in the TSS v15.7 release including:

- [Trillium Discovery and Collibra Integration](#)
- [Discovery Center](#)
- [Data Quality Enhancements](#)
- [Postal Directory Download](#)
- [Trillium Language Pack Locale Setting](#)
- [Trillium™ Discovery REST APIs and Documentation](#)

For important changes to the installation and supported platforms, see [TSS Important Changes on page 12](#).

Trillium Discovery and Collibra Integration

For TSS v15.7, a new integration is available between the Trillium Discovery and Collibra applications, including the Collibra Data Governance Center. The Data Governance Center allows you to automate data governance management and stewardship tasks; define communities, domains, and governance roles; and establish work flows.

The integration includes a bi-directional synchronization between the Discovery Center and the Data Governance Center so that data quality rule assets built within Collibra's Data Governance Center rulebooks are imported into Discovery Center as library rules in associated rule sets.

Discovery Center users associate the rule sets with their data source rules, analyze their data set, and then load the results back into the Data Governance Center for viewing, data remediation, and to help track trends over time.

Business Rule Analysis Results in Collibra

Business rule results from Discovery Center are returned and viewed in the Data Governance Center as follows:

1. In the Discovery Center, you associate a library rule set to one or more data sources so that an instance of each rule in the rule set is added to each data source. Each business rule instance retains the original library rule's name and properties.
2. Run analysis on the data source business rules.
3. When a business rule's status is Analyzed, rule results are copied from Discovery Center to the Data Governance Center at the next synchronization point between the products.
4. In the Data Governance Center, you view business rule results displayed in data quality metrics. The results include the passing fraction value, and the number of rows in the data that passed or failed the analysis. Each analyzed business rule in Discovery Center has an associated data quality metric in Data Governance Center.

For example, in Figure 18-1, the data quality metric **Policy Type Validation|8|20228 Policy** shows the results for the business rule Policy Type Validation which is associated with a data source named **20228 Policy** with an ID value of **8**.

Name ▲	Asset Type	Passing Fraction	Rows Passed	Rows Failed	Predicate
Policy Type Validation	Data Quality Rule				'Policytype' IN ('
Policy Type Validation 8 20228 Policy	Data Quality Metric	67.107	6,710	3,289	'Policytype' IN ('
Product Validation	Data Quality Rule				'Product' IN ('
Product Validation 8 20228 Policy	Data Quality Metric	72.037	7,203	2,796	'Product' IN ('

Figure 18-1 Trillium Business Rule Analysis Results in Collibra

For information on how to configure and use the integration, see the *Trillium Discovery and Collibra Integration Administration and User's Guide*.

Discovery Center

The Trillium Discovery Center is a secure, browser-based application from which you view, manage, and analyze objects in your TSS repository including business rules, data sources (entities), attributes, data rows, library rule sets, relationship analyses, and all associated metadata.

New features include:

- **Load Dynamic Data Sources.** You can now create a profiled data source by loading data into an existing dynamic data source. This new profiled data source includes all available discovered metadata and profiling statistics.
- **Integration with Trillium Discovery and Collibra.** The Discovery Center is used as part of the Trillium Discovery and Collibra integration. For more information, see [Trillium Discovery and Collibra Integration on page 113](#).
- **Trillium REST API documentation** is now installed with the TSS server software and is accessible from the Discovery Center online help system. In the help's left navigation pane, click **Trillium REST APIs**. For more information, see [REST API Documentation on page 118](#).

Data Quality Enhancements

This section describes the enhancements and changes incorporated into TS Quality standardization and cleansing processes.

Trillium™ Quality for Big Data

Trillium™ Quality for Big Data integrates Trillium's data quality application with Syncsort DMX-h to cleanse and match your data in the Hadoop framework. It validates and improves the quality of your data and identifies duplicate records in your database.

Trillium Quality for Big Data uses Hadoop's MapReduce and Spark infrastructure to distribute data cleansing and matching tasks across the nodes in the Hadoop Distributed File System (HDFS) data cluster.

Use Trillium Quality for Big Data to:

- Deploy data quality workflows as native, parallel MapReduce or Spark processes for optimal efficiency.
- Process hundreds of millions of records of data.
- Standardize, enhance, and match international data sets with postal- and country-code validation.
- Integrate, parse, standardize, and match new and legacy customer data from multiple disparate sources.
- Increase processing efficiency.

- Support failover through Hadoop's fault-tolerant design; during a node failure, processing is redirected to another node.

Trillium Quality for Big Data projects are executed in Hadoop using Syncsort's DMX-h, the Hadoop edition of DMExpress (provided with the solution). Trillium Quality for Big Data invokes the DMX-h engine at run-time and DMX-h runs the workflow in the project from the initial input to the final output in the Hadoop MapReduce or Spark framework.

Note the following:

- Trillium Quality for Big Data does not support deploying a single- or multi-country project containing US, CA, or AU postal certified modules to a Hadoop environment. Also, for US, use of Delivery Point Validation (DPV), Locatable Address Conversion System (LACS^{Link}), and Suite^{Link} options is unsupported.
- Trillium Quality for Big Data is not installed automatically with the TSS software. The software is available as a separate Apache Ambari service package. To obtain the software and customized postal directories, contact Trillium Software.
- Trillium Quality for Big Data replaces the previous TS Quality for Hadoop solution which has been deprecated and is no longer available.

LOOKUP Function

In v15.7, the LOOKUP function, which has the syntax LOOKUP(attribute, entity_name/entity_ID, attribute_id), has been modified so that when you use entity name (which contains the attribute to be looked up) rather than entity ID, and there are multiple entities with the same name, the function returns results for the entity with the highest (most recent) ID value.

For example, if there are three entities with ID values of 1, 2, and 8, entity 8 will be returned.

Unique ID (UUID) Function

There is a new Quality function in the Expression Builder called UNIQUE_ID used to generate universally unique identifiers (UUIDs). A UUID is a unique 36-character permanent key used for record identification for large data volume.

Postal Directory Download

Postal directories are a critical part of the TSS data quality process because they provide the address information used to validate and improve the name and address data in your records.

Starting in TSS v15.7, there are now two ways that Trillium Software distributes the updates:

- Trillium Postal Download Web Service (New). Trillium Postal Download Web Service is an automated download service introduced in v15.7. The download service allows you to check the status of your postal license and download the postal directories from a browser-based application.
- TSS Download Center (File Portal) FTP website. TSS Download Center allows you to manually download postal directories through Trillium Software's secure website. See the *Trillium Software System Installation Guide* for procedures on downloading postal directories through this website.

For more information, see the *Trillium Postal Download Web Service User's Guide*.

Trillium Language Pack Locale Setting

Now there is a new REST API value locale setting in the TSS server `config.txt` file used to specify the locale for applications that use the Trillium REST API (including Discovery Center and Administration Center). This will allow the applications to display text in the proper language.

After you install a language pack, open the `config.txt` file and update the value locale parameter. For example, the following specifies the locale as German:

```
key rest_api {  
    value locale "de"  
}
```

For more information, see the *TSS Repository Manager's Guide* or the *Administration Center online help*.

Trillium™ Discovery REST APIs and Documentation

The Trillium™ Discovery REST API provides methods of accessing and manipulating repositories, entities (data sources), and business rules. The methods also support working with the Business Rule Library and data relationships like joins, keys, and dependencies.

How the APIs are Used

The Trillium Discovery Center and the Trillium Discovery and Collibra Integration use the TSS REST APIs queries and commands to run all profiling tasks. The Administration Center uses the APIs to create loader connections, repositories, and to configure and launch links that connect to a web service.

The APIs are available for advanced users to customize the Trillium Discovery and Collibra integration or create applications that use the profiling services.

REST API Documentation

The Trillium Discovery Rest APIs are installed with the TSS server software. Accompanying API online help is available to be used as a reference for the standard requests, including parameters, examples, response codes, external JSON format, and so on.

The API online help is accessible from the Discovery Center online help system. In Discovery Center, click **Help > Open Online Help**. In the help's left navigation pane, click **Trillium REST APIs**.

You can also access the REST API documentation directly from server installation location:

- Windows: C:\Program Files (x86)\Trillium Software\MBSW\15\svr\client\docs\RestAPI\html
- Linux: install_path/server/metabase/svr/client/docs/RestAPI/html

To open the system in a browser, double-click the `index.htm` file in the `html` directory.

CHAPTER 19

TSS v15.7.4 Enhancements

This chapter describes the enhancements and updates included in the TSS v15.7.4 release, including:

- [Apache Tomcat Upgrade on page 119](#)
- [Australian \(AU\) Postal Directories and AU Postal Matcher Changes on page 119](#)

Apache Tomcat Upgrade

As of v15.7.4, the version of Apache Tomcat installed with the TSS server has been upgraded to v8.5.32.

Australian (AU) Postal Directories and AU Postal Matcher Changes

v15.7.4 includes the following changes to the Australian (AU) postal directories and AU Postal Matcher. Effective on November 1, 2018, in accordance with Australia Post licensing terms, the following changes will be made:

- **Automatic Expiry.** The AU postal directories will automatically expire according to the schedule ([AU Postal Directories Expiry Dates on page 120](#)). If the postal directories are not updated before the last day of the expiration month, the AU Postal Matcher will be shut down. See [AU Postal Directories Expiry Dates on page 120](#) for the delivery schedule and shutdown dates.
- **New Directories.** From August 2018, Syncsort will deliver the new AU postal directories that are compliant with these changes.
- **Address Matching Approval System (AMAS).** As of v15.7.4, AMAS certification is only available on 64-bit Windows and Linux. Any other version and platform will no longer support AMAS certification.
- **Delivery Point Identifier (DPID).** The Delivery Point Identifier (DPID) can only be returned if the AU Postal Matcher is run in AMAS

mode. If you wish to continue receiving the DPID information and you are not currently running in AMAS mode, you will need to modify a project within the AU Postal Matcher process to enable AMAS certification.

- **Incremental Changes File (ICF).** The Incremental Changes File (ICF), containing change information about the DPID field from a previous version of the PAF file, will no longer be available.

For more information, see the technical bulletin *Changes to Australian (AU) Postal Directories and AU Postal Matcher* available from the TSS software FTP site and the documentation page of the Syncsort Customer Portal website.

AU Postal Directories Expiry Dates

[Table 19-1](#) shows the AU postal directories' delivery schedule for 2018/2019 and the last valid date for each delivery. When the directories are used past the last valid date, the AU Postal Matcher program will be automatically shut down.

v15.7 or higher includes Postal Download Web Service to allow you to check the status of your postal license and download the postal directories from a browser-based application. Syncsort recommends that you update the directories every month using the Postal Download Web Service.

- ① *The AU postal directories are delivered every month, except for January. The delivery schedule is the same for every year.*

Table 19-1 AU Postal Matcher Shutdown Dates

Directory Delivery Date	Valid Until Last Day of Month
August 2018	December 2018
September 2018	January 2019
October 2018	March 2019
November 2018	April 2019
December 2018	May 2019
February 2019	June 2019
March 2019	July 2019
April 2019	August 2019
May 2019	September 2019
June 2019	October 2019
July 2019	November 2019
August 2019	December 2019
September 2019	January 2020

Table 19-1 AU Postal Matcher Shutdown Dates

Directory Delivery Date	Valid Until Last Day of Month
October 2019	March 2020
November 2019	April 2020
December 2019	May 2020

CHAPTER 20

TSS Documentation

This chapter describes enhancements and changes to the TSS documentation set. The TSS documentation set has been updated to reflect all the changes described in this document.

TSS Documentation Set

In addition to this document, see the following documents installed with software:

- *TSS Help*
- *TSS Installation Guide*
- *TSS Repository Administrator's Guide*
- *Administration Center Help*
- *Discovery Center Help*
- *Trillium REST API Documentation*

① *If you find errors in this or any Trillium Software documentation, have suggestions for additional topics, or have any other comments, please contact the Documentation team through Trillium's Customer Support department.*

Changes and Updates

The TSS documentation set, including the Help system and PDF manuals have been updated as follows:

- As of v15.0.0 the *TSS Getting Started Guide* is no longer published. All information you need to get started with the Control Center interface is available in the TSS Help, mainly in the Getting Started and Tour sections.
- The TSS Help has been enhanced to include the following:
 - **Basic Steps.** There is a new tab in the TSS Help called Basic Steps. Basic Steps contains grouped topics to help guide you through various widely-used TSS processes and tasks including creating an entity, profiling your data with business rules, validating address data, and parsing data.
 - **Use Cases.** There is a new top-level TOC folder called Use Cases. Use Cases highlight example scenarios and best practices for how to utilize certain TSS processes and procedures such as identifying duplicates in your data using the Relationship Linker and practical ways to profile your data.
 - **New Search Functionality.** Search results include more context and details on returned topics.
 - **New Look.** Updated look and feel.
- The TSS Help system supports Internet Explorer versions 10 and 11.
 - ① *If you use a browser other than Internet Explorer to view the online help, certain formatting elements will not display correctly.*
- The Trillium Administration Center and the Discovery Center include a full set of online documentation. Every page of the Administration Center and Discovery Center, and most panels and windows include a question mark icon (?). Click the icon for more information about the task or tasks that you can perform in the current page, panel, or window.
- **Director SDK Documentation.** The information in the Director SDK Reference Guide has been modified as follows: the XML-over-HTTP, NET Web Services, and J2EE chapters have been removed and are now available in three separate documents:
 - *TS Director XML-Over-HTTP Developer's Guide*
 - *TS Director IIS .Net Web Services Developer's Guide*
 - *TS Director J2EE Interface Developer's Guide* (Discontinued as of TSS v15.4. See [TS Director \(32-Bit\) Web Services on page 104.](#))
- As of TSS v15.7, the TS Quality for Hadoop product has been replaced with Trillium Quality for Big Data. Therefore, the *TS Quality for Hadoop Developer's Guide* has been discontinued. For information about using Trillium Quality in a Hadoop environment, see the *Trillium Quality for*

Big Data Developer's Guide and the *Trillium Quality for Big Data Installation Guide*, new for v15.7.

- Trillium REST API documentation is now installed with the TSS server software (Windows and Linux) and is accessible from the Discovery Center online help system. In Discovery Center, click **Help > Open Online Help**. In the help's left navigation pane, click **Trillium REST APIs**.


You can also access the REST API documentation directly from server installation location:

- Windows: C:\Program Files (x86)\Trillium Software\MBSW\15\svr\client\docs\RestAPI\html
- Linux: install_path/server/metabase/svr/client/docs/RestAPI/html

To open the system in a browser, double-click the `index.htm` file in the `html` directory.

Accessing Documentation

The TSS documentation is available as follows:

- **Online.** The latest technical documentation for each TSS release is posted and maintained on the Documentation page of the [Trillium Software Customer Portal website](#). Manuals and technical bulletins are available as PDFs and can be downloaded from the Customer Portal. The Customer Portal is constantly updated. Check the website occasionally to ensure you have the latest edition of a manual or technical bulletin. All customers with an active Trillium Software maintenance plan have access the Customer Portal.
- **From the Control Center and Repository Manager.** The TSS Help, *TSS Repository Administrator's Guide*, *TSS Beyond the Basics*, and *the TS Reporting Adapter for Excel User's Guide* are accessible in the Control Center and Repository Manager by opening the Trillium Software System Documentation page:
 - Click the Help options icon () and select **Manuals**.
 - (Control Center only) From the Getting Start page under Helpful Links, click **View Documentation**.
- **From the Administration Center.** To access the main Administration Center Online Help system:
 - Click **Help > Online Help**. The Help menu is always available regardless of which panel or page you are on.
 - Press the **F1** key to launch the Online Help at any time.
- **From the Discovery Center.** To access the main Discovery Center Online Help system:
 - Click **Help > Online Help**. The Help menu is always available regardless of which panel or page you are on.

- Press the **F1** key to launch the Online Help at any time.

CHAPTER 21

Troubleshooting

This chapter describes important troubleshooting workarounds. It includes the following sections:

- [Setting the LD_LIBRARY_PATH Variable When Exporting Quality Profiling Projects to Batch \(UNIX\) on page 126](#)
- [Connecting DB2 Adapter to iSeries on page 127](#)
- [Discovery Center Does Not Open on page 128](#)
- [Apache Tomcat server.xml Is Missing When EDQ Is Upgraded to v15.7.4 from v15.7.0 \(Linux\) on page 128](#)

Setting the LD_LIBRARY_PATH Variable When Exporting Quality Profiling Projects to Batch (UNIX)

Before you run a batch script for an exported project that contains Quality profiling processes, you must set the LD_LIBRARY_PATH environment variable to point to your system's libcore library directory.

This procedure applies to exported Quality projects that contain one or more of the following profiling processes:

- Business Rules
- Dependencies
- Keys
- Load

① *For more information about exporting projects that contain profiling processes, see the TSS Help: Develop > TS Quality Processes > Profiling Processes.*

Note the following:

- You must be a TSS repository or systems administrator to complete this procedure.

- Set the environment variable at any time before you export the project and run it in batch.
- This procedure permanently sets the LD_LIBRARY_PATH environment variable in your environment so that you do not have to set it each time you start a session.

► To set the LD_LIBRARY_PATH on UNIX

1. Open the .cshrc settings file, located in your home directory.

```
set path= ( /bin /usr/bin /usr/ucb /usr/local/bin /usr/sbin \
           /usr/dt/bin /opt/local/bin /usr/openwin/bin /usr/bin/X11 \
           /usr/ccs/bin /usr/sfw/bin \
           /tril09/qainstall/$OS/14/Software/bin \
           /tril09/qainstall/$OS/14/Data&adapter/bin \
           /oracle/product/10.2.0/client_1/bin \
           /app/oracle/product/11.2.0/client_1/bin \
           /oracle/OraHome_1/bin )

#set OS=`uname`

setenv TS_QUALITY /tril09/qainstall/$OS/14/Software
setenv TS_LANGUAGE en
setenv ORACLE_HOME /app/oracle/product/11.2.0/client_1
setenv LD_LIBRARY_PATH /usr/dt/lib:/usr/openwin/lib:/usr/lib:/usr/local/li
/ucblib:/tril09/qainstall/$OS/14/Software/bin
```

Figure 21-1 .cshrc File Example

2. Add the LD_LIBRARY_PATH environment variable to the variable list.
3. Set it to point to Software/bin directory of your TSS installation. This is used as the libcore library directory.

For example, `setenv LD_LIBRARY_PATH /.../Linux/15/tsq/Software/bin`

4. Save the file.
5. Source the file by running the following command:

```
source .cshrc
```

Connecting DB2 Adapter to iSeries

When adding DB2 data connections to iSeries DB2 platform (AS/400), for the connection to your repository to be properly configured, you must modify the TSS config.txt file by adding the entry **value iseries 1** to the end of the key rdbms section. For example:

```
key rdbms {
    value uncommitted_read "off"
    value records_read 100
    value records_read_odbc 1
```

```
        value iseries 1  
    }
```

Make this change either before or after you add the loader connection in the Repository Manager, but use the connection only after the change.

The `config.txt` file is located in the server install directory on your TSS server system. On Windows 7 this directory is `C:/Program Files/Trillium Software/MBSW/15/etc.`

Discovery Center Does Not Open

Problem

Logging in to the Discovery Center fails with a message telling you the page cannot be displayed.

Solution

On the TSS server system, start the TSS 15 Rest APIs service and try logging in again.

Apache Tomcat server.xml Is Missing When EDQ Is Upgraded to v15.7.4 from v15.7.0 (Linux)

Problem

When you upgrade TSS v15.7.0 EDQ to v15.7.4 EDQ on Linux, the Apache Tomcat `server.xml` file will not be installed in the `/apache-tomcat-8.5.32/conf` directory.

Solution

Instead of upgrading v15.7.0, uninstall v15.7.0 first and then install v15.7.4.

Index

Numerics

- 32-bit software 62
- 64-bit 62, 71, 83
 - concurrency 87
 - configuration file 87
 - SAP Netweaver RFC library 92
- 8-bit Unicode Transformation Format 85

A

- ACR Code 81
- Administration Center 107
- Analysis Process 40, 58
- Apache Axis2 77
- Apache Tomcat 13, 77, 119
 - ports 13
 - server.xml 13
- attribute business rule, Standard 33
- Attribute Properties window 30, 31
- attributes 30
- audience 9

B

- Background Tasks 25, 89
- BADI Methods
 - SAP
 - BADI methods 92
- basic countries
 - changes to 36
 - list of 36
- basic country (ZZ) project 96
- basic country template 35
- Batch Deployment Tool 58, 85
- batch processing, 64-bit 86
- batch scripts, 64-bit 86
- BDP 42
- BDT 58
- Berkeley database 63

Big Data 115

- browser support 73, 102, 105
 - Bulgaria Cyrillic 96
 - Business Data Parser 29
 - attribute for mixed case 109
 - options 42
 - output attributes 42
 - business rules
 - grouping 33
 - managing 33, 78, 89, 99
 - saved searches 33
 - Standard ABR 33
 - view results 114
 - Business Rules Center 89, 99
 - Business Rules Library 78, 89
 - Business Rules Manager 78, 82
- ## C
- CBSA 46
 - CDPRUL 45
 - Certified Postal Matchers 87, 90, 108
 - TSS v15.4 support 14
 - charts 99
 - city changes file 75
 - cloud environment 74
 - COBOL 65
 - Collibra 12, 113
 - Commonizer 40
 - config.txt file 82, 110
 - Control Center 22, 69, 73, 78
 - browser support 73
 - minimum requirements 73
 - Country Rules Table 97
 - county templates 39
 - CPDRUL 45
 - CRM

- SAP 101
- CRM 7.0 Enhancement Package 3 68
- cross-references, about 9
- Customer Data Parser 43, 80
 - City Changes 47
 - Japanese 45
 - options 43
 - rules 45
 - Special Apartment Number Processing 109
- customer support 10
- customized classes 63
- D**
- Data Browser 36
- data connection
 - Hadoop 64, 75
 - terms 65
- data connections 62
- Data Visualization 99
- Database Read/Write 87
- Database Write process 41
- date/time functions 74
- DAYMONTHYEAR 80
- DB2 65
 - 10 63
- DEDUPE function 23, 54
- delimited files 65
- Delivery Point Validation file 49
- Director .NET Wrapper API 71
- Director SDK 67
- Director SDK (EDQ) 85
- Director System Manager 66, 67, 111
- Directory Browser 45, 48
- Discovery Center 99, 108, 115, 128
 - documentation 124
- DPV 53
- DPV attribute 75
- DPV file 49, 53
- DSM 66
- dynamic entities 39
- E**
- EBCDIC, encoding 54
- EDQ
 - (64-bit) 84
 - tables 88
- EHP3 68
- EHP7 68
- Eircode 97
- encoding
 - EBCDIC 54
 - UCS2 59
- Enterprise Connectivity Solutions 66, 68
- Enterprise Data Quality 84
- Enterprise Data Quality (EDQ) 84
- entities
 - copy and paste 32
 - dynamic 39
 - grouping 39
- environment options 26
- environment variable
 - TRILLDIRADDR 92
 - TRILLDIRPORT 92
- E-R Diagram 28
- ERP 101
- ERP 6.0 Enhancement Package 7 68
- error messages 26, 112
- Excel 62
- Expression Builder 23
 - functions 23, 74
 - redesigned 79
- extract metadata 62
- F**
- failover 67
- functions 23
 - date/time 74
 - DAYMONTHYEAR 80
 - TO_INT64 79
- G**
- GB Directory Browser 70
- generic template 39
- Geocoder 46, 80
- geocoding directories 45
- Global Data Router 35, 46
- Global Postal Matcher 51, 81
- graphs 99
- guidelines
 - 64-bit batch processing 86
 - EDQ 85
 - install TSS 16
 - TS Reporting Adapter 62
- H**
- Hadoop Cluster Deployment Manager 83
- Hadoop Hive
 - data connection 64, 75
 - drivers 64, 75
- Hadoop, TS Quality 83, 91
- HP-UX 13
- HTTP-over-HTML 85
- I**
- ICM 67
- Icon View 26
- IF statements 55

-
- Ignore Word Tables 31, 48
 - IIS .NET 85
 - IIS .Net Web Services API 77
 - Impala driver 82
 - installation package 16, 18
 - Integrated Configuration Manager 67
 - Internet Explorer 73
 - Ireland Eircode 97
 - iSeries 127
 - J**
 - J2EE 85, 104
 - Java
 - 1.8 14
 - Java API 83
 - Join Projects 34
 - JRE 1.8 14, 95
 - JSON, web service 103
 - K**
 - Korean Postal Matcher 90
 - L**
 - language packs
 - set locale 117
 - List View 25
 - load connection 65
 - settings 64
 - locale setting 22, 64, 117
 - LOOKUP function 116
 - M**
 - map files 100
 - MapReduce 83
 - Master Data Governance 93
 - MDG 101
 - metaphones 30
 - mtb_admin
 - change job name 63
 - export 63
 - fix rule 63
 - N**
 - Name and Address Analyzer 48
 - Navigation View 25
 - NetWeaver 101
 - notification bar 26
 - O**
 - ODBC data connection 62
 - ODBC Data Provider 62
 - ODBC, load connection 65
 - OLE DB data connection 62
 - OLE DB Data Provider 62
 - ORACLE 65
 - P**
 - Parser customization log 36
 - Parser Tuner 48
 - parsing exceptions file 41
 - percentiles 30
 - performance improvements
 - Global Postal Matcher 52
 - Quality projects 39
 - phrase analysis 30
 - platforms, supported 14
 - Postal Directories 48
 - Hong Kong 48
 - Singapore 49
 - postal directories 100
 - downloading 116
 - Postal Directory Browser 45, 48
 - postal extensions 70
 - Postal Matchers 81, 90
 - Asian countries 49, 81
 - Canada 50
 - Certified 90
 - custom 50
 - France 51
 - Global 51, 81
 - Great Britain 82
 - Hong Kong 52
 - Japan ACE 52
 - Korean 90
 - Luxembourg 52
 - Netherlands 52
 - Singapore 52
 - UK 53, 69
 - US 53
 - postal tables 100
 - PRA 67
 - profiling 29
 - Profiling processes 87
 - project deployment
 - batch 58
 - Quality 58
 - real-time 59
 - Project Rule Analyzer 67, 111
 - Q**
 - QlikView Business Discovery Platform 62
 - Quality conditionals 23
 - Quality projects
 - deploy 58
 - deploy legacy projects 59
 - export 58
 - export project definitions 59
 - Query Express 62
 - Quick Access Toolbar 27

R

- RDI 49
 - files 49
- real-time project deployment 59
- real-time projects 67
- Reference Matching 83
- regenerate TSQ data 36
- Relationship Linker 53
- Relationship Linker Results Analyzer 90
- reporting provider 62
- Repository Manager 62, 82
 - security 70
- REST 111
- REST APIs
 - documentation 118, 124
 - locale setting 117
 - using 117

S

- SAP 68
 - 32-bit support 91
 - Add-On v8.5 98
 - CRM 101
 - ERP 101
 - HANA certification 101
 - MDG 93, 101
 - MDG 8.0 101
 - NetWeaver 101
 - RFC function module names 92
- SAP NetWeaver RFC client 85
- scheduled tasks 26
- schema changes 69
- Schema Editor 54
- security 70
- server log file management 110
- Set Selection Utility 54
- Siebel 91
 - support 104
- SOAP 91
- SOAP Service 94
- Solaris Sun, support 14
- SOUNDEX routine 57
- SQL Server 62
- SSL 112
- standalone web server 21
- Standard ABR 33
- standard deviation 30
- statistics analysis 30
- Summary Data View 26
- Sun Solaris 14
- support 10
- supported platforms 14, 73

- survivor rules 40
- Syncsort DMX-h 115
- SyncSort Technology 109

T

- Tableau 62
- technical support 10
- template
 - generic 39
 - ww 39
- third-party application 62
- TO_INT64 79
- Transformer
 - output conditionals 55
 - run statements 55
 - Table Range 55
 - Table Recode 55, 69, 75
 - Trace Key 56
 - Web service calls 57, 103
- Transformer Data Reconstruction 56, 82
- Transformer Unified Output 56
- TRILLDIRADDR 92
- TRILLDIRPORT 92
- Trillium Cloud 74
- Trillium Discovery
 - APIs 117
 - Collibra integration 12, 113
- Trillium for Siebel 104
- Trillium for Siebel, support 104
- Trillium Precise 103
- Trillium Quality for Big Data 115
- Trillium Server Interface 83
- Trillium Software
 - customer support 10
 - documentation 122
 - education services 11
 - locations 10
 - resources 10
 - technical consulting services 11
 - website 10
- TrilliumDirectorSOAP 77
- troubleshooting 126
- TS Case Management 61
- TS Connector for SAP Products 68, 92
- TS Director 66, 77
 - clients 92
- TS Director - CICS 67
- TS Director Web Services 104
- TS Quality
 - Hadoop projects 80
 - icons 37
- TS Quality for Hadoop 80, 83, 84, 91

TS Quality for Real Time 84
TS Quality for SAP
 64-bit 85
TS Quality processes
 icons 26
TS Reporting Adapter 62, 76
 64-bit support 71
TS Web Server 21
TS Web Services 68, 77, 91, 94, 95, 98, 111
 EDQ 84
TS_QUALITY 85
TSI Web Server Administration 111
TSS
 guidelines, installing 16
 install software 16, 18
 installing 16
TSS Excel reports 62, 76
U
UCS2, encoding 59
UNIQUE_ID function 116
unstructured data, profiling 29
updates 22, 69, 73
UTF-8 59, 97
 benefits 88
 multiplication rule 90
 postal tables 85, 87
V
vcnmask mask files 57
W
warnings, messages 26
Web Service Manager 98, 111
WebLogic 104
WebSphere 104
Window Key Generator 57
Window Keys 57
Window Matching 83
Windows Server 2012 77
Windows, supported platforms 14
Word Definitions Tool 42
ww template 39
X
XML web service 100
xxAUXCIT.ben/len file 43, 44
Z
ZZ project 96