TIBCO® Data Virtualization

Installation and Upgrade Guide

Version 7.0.7

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Two-Second Advantage®

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Preface

Documentation for this and other TIBCO products is available on the TIBCO Documentation site. This site is updated more frequently than any documentation that might be included with the product. To ensure that you are accessing the latest available help topics, please visit:

- https://docs.tibco.com

Product-Specific Documentation

The following documents form the TIBCO® Data Virtualization(TDV) documentation set:

- *TIBCO TDV and Business Directory Release Notes* Read the release notes for a list of new and changed features. This document also contains lists of known issues and closed issues for this release.
- TDV Installation and Upgrade Guide
- TDV Administration Guide
- TDV Reference Guide
- TDV User Guide
- TDV Security Features Guide
- Business Directory Guide
- TDV Application Programming Interface Guide
- TDV Tutorial Guide
- TDV Extensibility Guide
- TDV Getting Started Guide
- TDV Client Interfaces Guide
- TDV Adapter Guide
- TDV Discovery Guide
- TDV Active Cluster Guide
- TDV Monitor Guide
- TDV Northbay Example

How to Access TIBCO Documentation

Documentation for TIBCO products is available on the TIBCO Product Documentation website mainly in the HTML and PDF formats.

The TIBCO Product Documentation website is updated frequently and is more current than any other documentation included with the product. To access the latest documentation, visit https://docs.tibco.com.

Documentation for TIBCO Data Virtualization is available on https://docs.tibco.com/products/tibco-data-virtualization-server.

How to Contact TIBCO Support

You can contact TIBCO Support in the following ways:

- For an overview of TIBCO Support, visit https://www.tibco.com/services/support.
- For accessing the Support Knowledge Base and getting personalized content about products you are interested in, visit the TIBCO Support portal at https://support.tibco.com.
- For creating a Support case, you must have a valid maintenance or support contract with TIBCO. You also need a user name and password to log in to https://support.tibco.com. If you do not have a user name, you can request one by clicking **Register** on the website.

How to Join TIBCO Community

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Installation Requirements and Support Information

This topic describes installation requirements and what TIBCO® Data Virtualization (TDV) supports. It includes the following topics:

- Limitations for TDV Discovery, page 39

Disk Space and Physical Memory Requirements

TDV performance depends on processor speeds, available memory, network bandwidth, data source response times, query join types, the complexity of views, and many other implementation factors. Fast response times and support for a large active user base and large loads are achieved with:

- Fast multi-core CPUs
- Large amounts of RAM
- Ample disk space
- GB Ethernet network connections on the same subnet as the most heavily trafficked data source

If hardware configurations are less than optimal, TDV functions equally well, although more slowly, for most development tasks.

The following sections describe the minimum requirements for disk space and memory.

- Minimum Disk Space Requirements, page 10
- Physical Memory Requirements, page 11

Minimum Disk Space Requirements

TDV has these minimum disk space requirements:

- 500 MB for TDV installation
- 300 MB for the TDV repository database

Recommended disk space for TDV includes:

- 16 GB RAM
- 1 GB for cache
- 10 GB for a temp directory on the TDV installation partition

  By default, TDV creates a temp directory on the same partition on which it is installed. After installation, you can reconfigure the size and partition of the temp directory to accommodate large queries. For information about those configuration parameters, see the *TDV Administration Guide*.

- 1.2 GB of additional free space under the TDV Version Control System (VCS) directory is the required minimum for each user who uses the VCS.

  By default, TDV creates a VCS directory on the same partition on which it is installed.

  Different types of resources require different amounts of space to store. We recommend that you use 12KB per resource as a rough storage guideline. The following guidelines will help you figure out how to calculate your VCS directory storage needs.

  — If you have 100,000 resources, we recommend 1.2GB of space available for storing resources.

  — If you expect a large amount of check-ins to the VCS directory, we recommend that you allocate additional space in the VCS directory area which lives under the TDV installation (INSTALL_DIR\data\vcs).

  Typically, changes within version control systems are stored as textual diffs. Textual diffs can add up over time.

Physical Memory Requirements

TDV has these memory requirements:

- 200 MB for design and development
- 700 MB for deployment

These physical memory requirements are for running TDV and Studio. Further memory might be needed for running other applications.

To increase the performance of data processing with TDV, add more RAM. The only thing to consider when adding more RAM into your TDV environment is that when garbage collection processes are run they might take longer.

Port Requirements

By default, TDV Server listens to port 9401 for ODBC connections. The ODBC port number is always one greater than the server's web services HTTP base port which by default, is 9400. So the ODBC default port number is 9401. If SSL is used (encrypt is set to true), the ODBC driver automatically adds 2 to the port value so that the 9403 port is used. To determine the actual ODBC port settings, see TDV Port Settings for Client Connections to TDV.

Changing the HTTP base port value also changes the value of all derived ports after the next TDV restart (with the exception of the Repository and Cache database ports, which will remain the same).

Port number availability for TDV and Business Directory:

- TDV ports

TDV Ports Default	Description
9400	Web services HTTP port <— port needs to be exposed for non SSL TDV http access
9401	JDBC, ODBC, and ADO.NET <— port needs to be exposed for non SSL TDV client access
9402	Web services HTTP SSL <— port needs to be exposed for SSL TDV http access
9403	JDBC SSL, ODBC SSL, and ADO.NET SSL <— port needs to be exposed for SSL TDV client access
9404	Default caching database port
9405	[reserved]
9406	Monitor Daemon
9407	Active Cluster - JGroups (when installed)
9408	Repository
9409	Monitor (when installed)

- BD ports

Business Directory Ports Default	Description
9500	Web services HTTP port
9501	JDBC, ODBC, and ADO.NET
9502	Web services HTTP SSL
9503	JDBC SSL, ODBC SSL, and ADO.NET SSL

Business Directory Ports Default	Description
9504	[reserved]
9505	[reserved]
9506	Monitor Daemon
9507	[reserved]
9508	Repository
9509	Monitor (when installed)

Studio and Server Connectivity and Installer Limitations

You can sometimes mix versions of Studio and Server as follows within a major release.

Studio Version	Server Version	Support
older	newer	Active
newer	older	Not active

For example:

- Connecting a 7.0.0 Studio with a 7.2.1 or 7.2.2 Server is supported.
- Connecting a 7.2.1 Studio with a 7.2.0 Server is not supported.

Business Directory and Deployment Manager Limitations

You can sometimes mix versions of Business Directory, Deployment Manager, and TDV as follows.

BD/DM Web UI Version	TDV Version	Support
older	newer	Active
newer	older	Limited, Not active

For example:

- Business Directory 7.0.2 and 7.0.3 clients are not compatible with published resources from TDV 7.0.1.
- The use of Business Directory 7.0.3 clients with published resources from TDV 7.0.2 is supported.

Installer Limitations

- 64-bit installers are supported only on 64-bit platforms.
- Linux and Windows installers are available only on the x86 hardware platform..

Type of Client	Requirements
32-bit Studio client	• They are at the same TDV version and patch level. • The Server version is newer than the Studio version and they are both within the same major TDV version.
64-bit Studio client	

TDV Supported Platforms

Studio can be installed and run on all Microsoft Windows platforms, but is not available for any UNIX platforms. Business Directory is supported on Windows and UNIX platforms only.

64-bit installers are provided for each of the Windows and UNIX platforms. In addition, separate JRE versions are provided for each platform (see JRE Support, page 15).

JRE Support

The JRE required for TDV for each platform is listed in the following table.

Platform	JRE Required
AIX	1.8.0_161 (build 8.0.5.11) 64 bit
Linux	1.8.0_172-b11 64 bit
Solaris	1.8.0_172-b11 64 bit
Windows TDV Server, TDV Studio, Business Directory	1.8.0_172-b11 64 bit
Windows TDV Studio	1.8.0_172-b11 32 bit

Operating System Support for Studio

Client-platform operating system support and patch levels are listed in the following table.

Operating System (Client)	Patch	TDV Support	Notes
Microsoft Windows 7		Active	x64 and x86
Microsoft Windows 8	SP1	Active	x64 and x86
Microsoft Windows 10		Active	

There is a known limitation of Windows OS that can result in a UNC error when using TDV. The known issue is that:

- The Windows service process can't see any mapped network driver of a front end user session, because the Windows service is running under a different credential, and the mapped network driver is valid in the user session only.
- The Windows service process can see SYSTEM ODBC DSN only, any USER ODBC DSN is not visible to the Windows service.

To work around for this known issue, use the UNC path for TDV to access remote files.

Operating System Support for Server

Server-platform operating system support and patch levels are listed in the following table.

Operating System (Server)	Patch	TDV Support	Notes
AIX 6.1 (PowerPC)	6100-07 or higher	Active	64-bit versions are supported. TDV deploys in native 64-bit JVM on all supported 64-bit operating systems.
AIX 7.1 (PowerPC)	7100-01 or higher	Active	
Amazon Web Service (AWS) CentOS 7		Active	x64 Includes a Windows installer for Studio.
Amazon Web Service (AWS) Microsoft Windows 2012		Active	x64 Includes a Windows installer for Studio.
CentOS 5.10		Active	64-bit versions are supported. TDV deploys in native 64-bit JVM on all supported 64-bit operating systems. x64 architecture.
CentOS 6.5		Active	
CentOS 7		Active	
Microsoft Windows 10		Active	
Microsoft Windows Server 2008 R2 Enterprise	SP2	Active	TDV deploys in native 64-bit JVM on all supported 64-bit operating systems.
Microsoft Windows Server 2012 Standard		Active	x64.
Microsoft Windows Server 2012 R2 Standard		Active	
Oracle Linux 5.10 Red Hat compatibility mode		Active	x64.
Oracle Linux 6.5 Red Hat compatibility mode		Active	x64.

Operating System (Server)	Patch	TDV Support	Notes
Red Hat Enterprise Linux v5.10	N/A	Compatible	64-bit versions are supported. TDV deploys in native 64-bit JVM on all supported 64-bit operating systems. x64.
Red Hat Enterprise Linux v6.6	N/A	Active	
Red Hat Enterprise Linux v6.7	N/A	Active	
Red Hat Enterprise Linux v7	N/A	Active	Red Hat provides a 64bit OS image for RHEL 7 that provides 64bit application support for TDV.
Solaris Sparc 5.10	N/A	Active	64-bit versions are supported. TDV deploys in native 64-bit JVM on all supported 64-bit operating systems.
Solaris 10 (SPARC)	N/A	Active	64-bit versions are supported. TDV deploys in native 64-bit JVM on all supported 64-bit operating systems.
SUSE Enterprise Linux v11.3	N/A	Active	
SUSE Enterprise Linux v12	N/A	Active	
Windows Server 2003 Datacenter Edition	N/A	Active	64-bit versions are supported. TDV deploys in native 64-bit JVM on all supported 64-bit operating systems.
Windows Server 2003 Web Edition	N/A	Active	

Driver Support

Driver	Server Version	TDV Support
ODBC	iODBC Driver Manager v3.5.12 for Linux	Active

Driver	Server Version	TDV Support
ODBC	iODBC Driver Manager v3.5.12 for AIX (PowerPC)	Active
ODBC	iODBC Driver Manager v3.5.12 for Solaris (SPARC)	Active
ODBC	Windows Driver Manager	Active
JDBC	JRE v1.8 and conforms to JDBC API 4.0	Active
JDBC	JRE v1.7 and conforms to JDBC API 4.0	Active
JDBC	JRE v1.6 and conforms to JDBC API 4.0	Active
ADO.NET	ADO.NET (32-bit and 64-bit)	Active

SNMP Support

The TDV system supports SNMP v1 and v3.

Web Service Protocols

Web Service Protocols	TDV Support
SOAP v1.1	Active
SOAP v1.2	Active
WSDL v1.1	Active
WSI-Basic Profile v1.0	Active
WSI-Basic Profile v1.1	Active
XPath v1.0	Inactive
XPath v2.0	Active
XQuery v1.0	Active
XSLT v1.1	Active
XSLT v2.0	Active

Directory Services Support for LDAP and Kerberos

The following LDAP directory services are compatible for the TIBCO Data Virtualization to use as a secure authentication service.

Directory Service	TDV Support	Notes
Active Directory 2008, 2012	Active	LDAP, LDAPS, Kerberos
Novell eDirectory 8.8 sp5	Active	
Oracle Directory Server Enterprise Edition 11.1	Active	LDAP, LDAPS

Options and Features Supported for Use with TDV

The TDV product suite supports a large collection of data sources, connection protocols, features, and client interfaces that grows with each service pack and release. The following topics catalogs many of these items:

Web Browser Support

Web Browsers	TDV Support	Notes
Microsoft Internet Explorer	Active	Business Directory supports IE 10 or higher. When using IE 10, the Business Directory load time is slower than when using IE 11 or an alternative browser.
Mozilla Firefox	Active	
Chrome	Active	
Safari	Active	Not supported for web service API calls. Safari commonly has problems with websites requesting an SSL certificate, but not requiring one. Business Directory and Deployment Manager on Mac using a Safari browser, might experience this issue. Refer to topics provided by Apple support for how to work around this problem. You might need to delete certificates in your keychain and retype the product URLs to launch them properly.

Monitor requires a Web browser running Adobe Flash Player Version 10 or greater.

For the Monitor and Deployment Manager client web applications to function properly, the machine that is running a compatible browser must be running on a machine with Windows 7 or higher. For Windows 8, if you are using IE, then make sure all compatibility settings are enabled or specifically configure it for compatibility view for each of the TDV web based products. Occasionally the login screen for these web applications does not close automatically, you can close it and continue using the product or you can choose to run in a different browser.

For best results, when running Business Directory and Deployment Manager concurrently, use different browsers.

Online help (and long lists in Manager) might not display as expected in Chrome. You can switch to another browser to resolve the issue.

The TDV and Business Directory servers require a secure connection. So when you first connect a browser to any TDV web-based application, you might get a warning about connecting to an untrusted site.

Depending on your browser:

- You might be asked to allow the connection process to continue.
- You might want to configure it to trust the site so that warning messages no longer appear. For some site configurations this might require configuration of SSL connections for your entire TDV environment.

OAuth 2.0 Compatible Browsers

- OAuth 2.0 is compatible with the Chrome browser.

Browsers and Kerberos Support

Different browsers have different settings to enable Kerberos support. TIBCO recommends that you search the web to confirm the instructions to enable Kerberos SPNEGO authentication and credential delegation for your browser and operating system.

For example in Firefox, add the url to both network.negotiate-auth.trusted-uris and network.negotiate-auth.delegation-uris and switch network.negotiate-auth.allow-non-fqdn to true.

Directory Services Support for LDAP and Kerberos

The following LDAP directory services are compatible for the TIBCO Data Virtualization to use as a secure authentication service.

Directory Service	TDV Support	Notes
Active Directory 2008, 2012	Active	LDAP, LDAPS, Kerberos
Novell eDirectory 8.8 sp5	Active	
Oracle Directory Server Enterprise Edition 11.1	Active	LDAP, LDAPS

Supported Data Sources

TDV supports these data sources.

TDV supports OAuth 2.0 for HTTP-based data sources: SOAP, REST, WSDL, and XML-HTTP. It is also available for several Advanced Adapter data sources.

For other supported data sources and applications, see these sections:

- Supported Add-On Adapters, page 26
- Supported Advanced Data Source Adapters, page 27

Select Data Source Adapter field	TDV Support	Versions, Compatibility, and Notes
Apache Drill	Active	CAST AS functions are not supported.
Composite	Active	
Custom Java Procedure	Active	
DB2 V10.5 (Type4)	Active	
DB2 z/OS Version 10 (Type 4)	Active	
Data Direct Mainframe	Active	The Shadow RTE Server (version 6.1.4.7606 or later) must be installed on the DataDirect Mainframe computer and the Shadow RTE Client (version 6.1.1.1080 or later) must be installed locally on the computer hosting the TDV Server.
File (cache, delimited, and XML)	Active	For data sources that access a file share, the TDV service user account needs to have permission to read the file share.
Greenplum 3.3	Active	TDV capabilities with Greenplum have been developed and tested with a single node license.
Greenplum 4.1	Active	
Greenplum 4.3	Active	
HBase 0.98 (Apache Phoenix Driver)	Active	Introspection of HBase databases retrieves information from the system tables. User created tables are only introspected if they have been created using the Apache Phoenix shell. Requires installation of Apache Phoenix JDBC drivers, specifically those in phoenix-4.1.0-bin.tar.gz. For more information see the TDV Administration Guide.
HSQLDB 2.2.9	Active	

Select Data Source Adapter field	TDV Support	Versions, Compatibility, and Notes
Hive 0.10 (HiveServer2)	Active	Cloudera CDH4. Kerberos is supported. For Hive data sources, TDV introspects tables and columns only.
Hive 0.12 (HiveServer2)	Active	For Hive data sources, TDV introspects tables and columns only.
Hive 0.13 (HiveServer2)	Active	Cloudera CDH5.3. Hortonworks HDP 2.1. Kerberos is supported. For Hive data sources, TDV introspects tables and columns only.
Hive 0.14 (HiveServer2)	Active	Cloudera CDH5.3. Hortonworks 2.2. Kerberos is supported. Trusted Delegation is not supported. For Hive data sources, TDV introspects tables and columns only.
Impala 1.0	Active	For Hive data sources, TDV introspects tables and columns only.
Impala 2.0	Active	For Hive data sources, TDV introspects tables and columns only.
Informix 9.x	Active	
LDAP	Active	v3
Microsoft Access	Active	Windows platforms only
Microsoft Access (non-ODBC)	Active	Windows platforms only
Microsoft Excel	Active	2000

Select Data Source Adapter field	TDV Support	Versions, Compatibility, and Notes
Microsoft Excel (non-ODBC)	Active	2000
Microsoft SQL Server 2008	Active	Kerberos authentication is supported.
Microsoft SQL Server 2012	Active	Kerberos authentication is supported with the 2008 driver.
Microsoft SQL Server 2014	Active	
Microsoft SQL Server 2016	Active	
MySQL 5.1	Active	
MySQL 5.5	Active	
Neoview 2.3	Active	
Neoview 2.4	Active	
Netezza 6.0	Active	NPS
Netezza 7.0	Active	NPS
OData	Active	Provides for some limited access to SharePoint data.
Oracle 11g (OCI Driver)	Active	11g R1, 11g R2, Oracle RAC Kerberos authentication is supported with thin driver version 11.2.0.4.
Oracle 11g (Thin Driver)	Active	11g R1, 11g R2, Oracle RAC Kerberos authentication is supported with thin driver version 11.2.0.4.
Oracle 12c (OCI Driver)	Active	Oracle RAC
Oracle 12c (Thin Driver)	Active	Oracle RAC
PostgreSQL 9.0	Active	
PostgreSQL 9.1	Active	
PostgreSQL 9.2.3	Active	

Select Data Source Adapter field	TDV Support	Versions, Compatibility, and Notes
REST	Active	Kerberos authentication is supported. NTLM authentication is supported.
RSS	Active	
Redshift	Active	The following trigonometric functions should not be pushed to Redshift data sources, because they might return incorrect results: SIN, COS, TAN, ASIN, ACOS, COT.
SOAP	Active	1.1, 1.2 Kerberos authentication is supported. NTLM authentication is supported.
SAP HANA SPS 09	Active	Support is for on premise SAP HANA deployments.
Sybase 12	Active	12.5 ASE
Sybase 15	Active	15 and 15.5 ASE Kerberos authentication is supported.
Sybase IQ	Active	15
Sybase IQ (Type 2)	Active	15.2
Teradata 13	Active	13 and 13.10 Support for query band.
Teradata 14	Active	14.10 Might require installation of a Teradata 15 driver. Support for query band.
Teradata 15	Active	FastExport is not supported. The JDBC driver does not support CLOB columns with NULL values when using TDV to cache data into a Teradata 15 target. Support for query band.
Vertica 6.1	Active	

Select Data Source Adapter field	TDV Support	Versions, Compatibility, and Notes
WSDL	Active	1.1 Kerberos authentication is supported. NTLM authentication is supported.
XML/HTTP	Active	Flat files or over HTTP. Kerberos authentication is supported. NTLM authentication is supported.

Supported Add-On Adapters

Consult your vendor specific documentation for detailed documentation of the objects and fields that have changed from version to version. These SAP adapters require the SAP JCo driver. Configuration steps can be found in the *TDV Adapter Guide*. OLAP Cube Support—With TDV 5.1.0.1 and later, you can create dimensional OLAP views in TDV.

TDV supports the following application data sources.

Adapter	Version Support
Active Cluster	
Oracle E-Business Suite Adapter	11.5.8, 11.5.10 and 12.1 on Oracle 9i and 10g
Salesforce.com Adapter	Version 37 You can install and use the Salesforce.com Adapter on all platforms that TDV supports. See Installation Requirements and Support Information, page 9.
SAP Adapter	5.0, 6.0, and above SAP R/3 v4.7
SAP BW Adapter	3.5 and 7.4 SP 9
SAP BW BEx Adapter	3.5 and 7.4 SP 9
Siebel Adapter	7.7, 7.8, 8.0

For installation and licensing instructions, consult Installing Optional TDV Products, page 83.

Supported Advanced Data Source Adapters

TDV supports the following application data sources.

Data Source Adapter	Versions, Compatibility, and Notes
Active Directory	LDAP v2 and v3 servers
Amazon DynamoDB	DynamoDB REST API Version 2012-08-10
Cassandra	Versions 2.1.7 and 3.0.0
Couchbase	Version 4.0 of the API
DynamicsCRM	Windows server 2012 R2, Windows Server 2012, windows server 2008 R2, Windows server 2008, and Windows Server 2003
DynamicsGP	Dynamics GP 2010, 2013, and 2015
DynamicsNAV	Dynamics NAV 2013, 2015, and 2016
Eloqua	Eloqua REST API and Bulk API version 2.0
Email	Standard IMAP client as specified in RFC 1730 and RFC 2060
Sharepoint Excel Services	Excel data from SharePoint 2013, 2016, and Online
Facebook	Facebook Graph API 2.0, 2.1, 2.2, 2.3
Google AdWords	API v201502 and v201601
Google Analytics	Google Analytics Management API v3.0, Google Analytics Core Reporting API v3.0
Google Apps	Google Contacts API v3.0, Google Calendar API v3.0, Google Drive Web API V2.0
Google BigQuery	Google BigQuery API v2.0
Google Sheets	Google Sheets API v3.0
HBase	

Data Source Adapter	Versions, Compatibility, and Notes
HubSpot	HubSpot REST API
JSON	Standard JSON format as specified in RFC 7519
Marketo	Marketo REST API v1, Marketo SOAP API v2.6
MongoDB	MongoDB 2.6 and 3.0
NetSuite	NetSuite SOAP APIs 2011-2015
OData	OData 2.0, 3.0, and 4.0
RSS	RSS 2.0 feeds
SharePoint	SharePoint Online, SharePoint 3.0, and SharePoint Server 2007, 2010, 2013
Twitter	Twitter REST API v1.1

Limitations:

- Sometimes, instead of returning an empty value, “Select * from table where columnname = 'value'” may throw an exception, if there is no value in the column.
- Some adapters support ORDER BY, but sometimes there are only a few objects within that data source that support ORDER BY. TDV displays a message if the tables do not support ORDER BY.
- Tables might need to be filtered with mandatory inputs for querying the contents for table scans to work as expected. For example for google apps directions, the starting location and ending location might be needed to retrieve the results.
- Sharepoint adapters support direct Kerberos authentication.
- Bulk inserts are not supported.
- GoogleSheets does not support client side filtering.
- Table names or column names with the period character are not supported.
- Eloqua data sources where the password value is entered when creating the data source will persist the password and it cannot be changed.
- For the Sharepoint Excel Services adapter, during introspection all String data types are mapped to VARCHAR.

- The DynamicsCRM, DynamicsNAV, DynanoDB, GoogleBigQuery, and SharePoint adapters do not support "is not null" syntax.
- Queries that contain "LIMIT"are not supported.
- For MongoDB, updating schema files within a running instance of TDV is not supported.
- Deployment Manager is case sensitive when using it with these adapters.
- Deployment Manager attributes for these adapters can cause plans to fail.
- “Ignore case sensitivity mismatch between CIS and data source” and “Ignore trailing space mismatch between CIS and data source” override the server side setting for a data source.
  By default these two overrides are enabled so that queries are always pushed. This is the case even when there is a mismatch and the query does not contain UPPER or RTRIM or similar options.
- Set these attributes to false or disable the push to get the consistent results as when the query is run with in the TDV.

For installation and licensing instructions, consult Installing Optional TDV Products, page 49.

For OAuth descriptions, see Configuring OAuth 2.0 for TDV Advanced Adapters, page 51.

Supported Cache Targets

TDV supports the following as cache targets:

Cache Target	TDV Support	Parallel Cache Target Support	Native Cache Target Support	Notes
File	Active	Active		Typically best for demonstrations or caching of a few hundred rows.
Greenplum 4.1	Active	Active	Active	
Greenplum 4.3	Active	Active	Active	
HSQLDB 2.2.9	Active	Active		

Cache Target	TDV Support	Parallel Cache Target Support	Native Cache Target Support	Notes
IBM DB2 LUW v10.5	Active	Active	Active	Native load with insert and select, and DB2 Load are supported.
Microsoft SQL Server 2008	Active	Active	Active	The DBO schema must be selected and introspected as a resource prior to attempting to cache data.
Microsoft SQL Server 2012	Active	Active	Active	The DBO schema must be selected and introspected as a resource prior to attempting to cache data.
Microsoft SQL Server 2014	Active	Active	Active	The DBO schema must be selected and introspected as a resource prior to attempting to cache data.
Microsoft SQL Server 2016	Active	Active	Active	The DBO schema must be selected and introspected as a resource prior to attempting to cache data.
MySQL 5.1	Active	Active	Active	
MySQL 5.5	Active	Active	Active	
Netezza 6.0	Active	Active	Active	Native load with insert and select is supported. Parallel cache processing is achieved using the native DISTRIBUTE syntax. Procedure caching is supported.

Cache Target	TDV Support	Parallel Cache Target Support	Native Cache Target Support	Notes
Netezza 7.0	Active	Active	Active	Native load with insert and select is supported. Parallel cache processing is achieved using the native DISTRIBUTE syntax. Procedure caching is supported.
Oracle 10g	Supported			Native load with INSERT and SELECT is supported. Native load with DB link is not supported.
Oracle 11g and 11g R2	Active	Active	Active	
Oracle 12c	Active	Active	Active	
PostgreSQL 9.1	Active	Active	Active	Bulk load is supported. Native loading is supported when the source and target are the same database. If not then Parallel loading is used.
PostgreSQL 9.2.3	Active	Active	Active	Bulk load is supported. Native loading is supported when the source and target are the same database. If not then Parallel loading is used.
SAP HANA SPS 09	Active	Active		
Sybase ASE 12.5	Active			
Sybase ASE 15.5	Active			
Sybase IQ 15.2	Active		Active	
Teradata 13	Active		Active	Supported, but with limitations.

Cache Target	TDV Support	Parallel Cache Target Support	Native Cache Target Support	Notes
Teradata 13.10	Active		Active	Supported, but with limitations.
Teradata 14.10	Active		Active	Supported, but with limitations. Might require Teradata 15 driver.
Teradata 15	Active		Active	Choose tables For Caching is not supported.
Vertica 6.1	Active	Active	Active	Supports the use of native load and parallel cache load together. Native load with INSERT AND SELECT is supported.

Data Ship Source and Target Support

Data ship optimization is supported for following data source types.

Data Source Type	Data Ship Source Support	Data Ship Target Support	Performance Option	Notes
DB2 v10.5	Active	Active	Bulk Load using the LOAD utility	LUW
Greenplum 3.3	Active	Active		
Greenplum 4.1	Active	Active		
Greenplum 4.3	Active	Active		

Data Source Type	Data Ship Source Support	Data Ship Target Support	Performance Option	Notes
Microsoft SQL Server 2008	Active	Active	Bulk import/export using BCP	
Microsoft SQL Server 2012	Active	Active	Bulk import/export using BCP	
Microsoft SQL Server 2014	Active	Active	Bulk import/export using BCP	
Microsoft SQL Server 2016	Active	Active	Bulk import/export using BCP	
Netezza 6.0	Active	Active	external tables	
Netezza 7.0	Active	Active	external tables	
Oracle 11g	Active	Active	Database Links	To use an Oracle data source for data ship, the DBA must install the DBMS_XPLAN package in the database and create an area for temporary tables. For this data source to participate in data ship, it must be specified as a data ship source. Participation as a data ship target is optional. If Oracle is both source and target, DB Link needs to be set up between the Oracle databases.
Oracle 12c	Active	Active	Database Links	
PostgreSQL 9.1	Active	Active	Database Links	
PostgreSQL 9.2.3	Active	Active	Database Links	

Data Source Type	Data Ship Source Support	Data Ship Target Support	Performance Option	Notes
Sybase IQ 15	Active	Active	Location: iAnywhere JDBC driver	For a Sybase IQ data source to participate in data ship, the QUERY_PLAN_TEXT_ACCESS database option must be set to ON. For this data source to participate in data ship, it must be specified as a data ship source. Participation as a data ship target is optional.
Teradata 13.00	Active	Active	FastLoad/ FastExport	For this data source to participate in data ship, it must be specified as a data ship source. Participation as a data ship target is optional. Teradata Fastload mode doesn't work correctly using the 14.10 JDBC driver when Teradata is the Target Data Source. To workaround this issue, use the Teradata JDBC 15 driver.
Teradata 13.10	Active	Active	FastLoad/ FastExport	
Teradata 14.10	Active	Active	FastLoad/ FastExport	
Teradata 15	Active	Active	FastLoad	
Vertica 5.0	Inactive	Inactive		
Vertica 6.1	Active	Active	Bulk load utility Export to another Vertica database	

TDV DDL Feature Support

TDV DDL (Data Definition Language) feature to CREATE and DROP tables directly in the following data sources:

- DB2
- MySQL
- Oracle
- SQL Server

- Netezza
- Teradata

Supported Client Applications

All other client applications are supported through the standard communication protocols that include JDBC and ODBC.

Client-Side Applications	TDV Support	Notes
Cognos 11 R3	Active	
Cognos v10.2.2 fixpack 5	Active	
MicroStrategy 9.0.2	Active	TDV supports these data sources for use with MicroStrategy: Oracle 10g or 11g, Netezza 5 or 6, SQL Server 2008, and for mixed data coming from Oracle 11g and Netezza 6. Because MicroStrategy can create and delete data directly, you must have used Studio configured one of the following as a temporary tablespace to hold the created and deleted data: Oracle 10g and 11g, Netezza 5 and 6, SQL Server 2008, Teradata 13, MySQL 5, and DB2 v9.
MicroStrategy 9.2.1/9.2.1m on Windows I-Server	Active	
Tableau Desktop Professional Edition Version 7.0.13	Active	
TIBCO Spotfire	Active	

Client-Side Web Services

Client-Side Web Services	TDV Support
.NET Framework v1.1	Not Supported
.NET Framework v2.0	Active
.NET Framework v3.0	Compatible
.NET Framework v4.0	Active

Client-Side Web Services	TDV Support
.NET Framework v4.5	Active

Enterprise Service Buses

Enterprise Service Bus	TDV Support
Sonic 7.5	Active
TIBCO EMS 4.4	Active
OpenMQ 4.4	Active

Client-Side ADO.NET Driver Support

The TDV ADO.NET driver can be installed, uninstalled, or re-installed. It can support 32-bit and 64-bit Windows operation systems. TDV Software supports native ADO.NET driver functionality on the following Windows operating systems.

- Vista Business
- Vista Business x64
- Windows 7 Professional
- Windows 7 Professional x64
- Windows versions 2005, 2008, 2010, 2012 and 2013.

The TDV ADO.NET driver requires several things including:

- .NET Framework 2.0 to be installed on the host.
- Latest version of Windows XP, Windows Server 2003, Windows 7 Professional, or Windows Vista Business.

TDV supports communication and use with:

- Visual Studio 2005 and 2008 edition Standard, Professional, or Team Developer versions
- Visual Studio 2010, 2012 and 2013

Data Sources Supported for Kerberos Token Pass-through

- IBM DB2 LUW version 9
- Oracle

  With these Kerberos authentication modes:

  — Microsoft memory-based

  — Ticket cache file-based

  — Specified data source name and password

  ...these Oracle data sources are supported for Kerberos:

  — Database version 11gR2 with an Oracle 11g driver
- Microsoft SQL Server 2008 and 2012

  — For Kerberos authentication, use the Microsoft SQL JDBC driver version 4.0.
- SOAP 1.1 and 1.2
- REST
- Sybase ASE v12 and v15
- WSDL 1.1
- XML over HTTP

TDV Operating Systems Support

- 64-bit Windows Server 2003, 2008, and 2010
- 64-bit RHEL AS 6.6 and 7.0

Communication Interfaces and Protocols

- ADO.NET
- JDBC
- OData
- ODBC
- Web Services

Security Features

Security features are discussed throughout this guide:

- SSL is available for silent mode installation (Silent Mode Installation, page 79) and for installing optional products (Installing Optional TDV Products, page 83).
- Kerberos can be used when connecting to several data sources (Supported Data Sources, page 21).
- Password protection is available for operations like installing and starting TDV and registering with data sources like SAP (see Registering with the SAP System Landscape Directory, in the *TDV Adapter Guide*).

Support and Maintenance Policies for TIBCO Products

TIBCO provides support and maintenance for major/minor releases of TDV.

Support Policies for Third-Party Environments

All versions stated of an environment presume the initial release of a Third-party product without any need for patches, service packs or equivalent terms unless stated. Equally, unless stated, we presume that patches or service packs and minor version releases are upward compatible for our products. Whenever a new release of TDV requires deployment of a patch or service pack or is compatible only with a minor version of an environment, TDV will highlight these requirements in release notes and will require customers to install a patch or service pack or minor version to receive support and maintenance on the product.

The following classifications indicate the level of support for the current release.

Classification	Description
Active	All aspects (design/creation and runtime) are supported in Studio and Server.
Desupported Not Supported	Design/creation of platform version is no longer supported, runtime will persist until the next major or minor version. OR: This platform version has not been added to TDV yet.
Deprecated	Runtime removed from TDV. Old data sources will need to be upgraded to platform versions that are supported

Classification	Description
Inactive	Design/creation and runtime are allowed in Studio and Server, no active testing or development of new features will be performed to the platform version

Support Policies for Third-Party Application Virtualization Environments

Customers deploying TIBCO's products in third-party application virtualization environments from VMWare, Xen, and others should first consult the list of native host environments supported by TDV to verify compatibility. Support issues arising from deploying TDV in any Third-party application virtualization environments will be reviewed and resolved only on the native host operating system to remove any incompatibilities that might be introduced by the application virtualization environment itself.

Limitations for TDV Discovery

Servlets are not supported and cannot be imported from previous TDV versions.

Data Sources Not Supported by Discovery

Discovery supports all data sources and TDV Adapters except the following:

- Custom Java procedures—Not supported because they are procedural.
- DB2 z/OS
- Hive
- HP Neoview
- IBM DB2 z/OS Version 8, Version 9, Version 10
- Impala
- Netezza
- PostgreSQL
- Relational data sources—Procedural objects in relational data sources are not supported.
- SAP BW
- SAP HANA

- Teradata
- Vertica
- WSDL
- XML (flat files or over HTTP

Preparing for Installation

This topic focuses on preparations to install the Data Virtualization Platform, as follows:

Software Components for Installation

TDV provides the following installers for the Data Virtualization software components:

Installer	Included in the installer	
TDV Server	TDV Server Studio Deployment Manager Repository Java Monitor Discovery	Active Cluster Salesforce.com Adapter SAP Adapter SAPBW and BEx Adapters Oracle EBS Adapter Siebel Adapter Default cache database Advanced Data Sources Adapters
Studio	Studio	Java
Client	ODBC ADO.Net	JDBC
Business Directory Server	BD Server BD Repository	BD web application Java

Some of these components need a separate license key to activate them.

About TDV Software Patches

TDV produces service pack patches as needed to update installed products. Patches are applied after the product has been installed. A patch is a zipped package of files that fixes known issues and which often provides enhanced functionality.

Install the most recent TDV patches on all computers running Server, Studio, and associated utilities. Specific patches might not be required for all TDV applications and services installed in a particular release. Typically, patches should be applied universally to avoid version mismatches.

You must use the Studio patch to get Studio client fixes.

For information about how to obtain and install the latest patch, see TDV and Business Directory Product Maintenance, page 53.

Overview of Installation Steps

This section includes the following topics:

Installation Overview for New TDV Software Customers

If you are installing TDV Data Virtualization products for the first time, here is an overview of how you would proceed:

1. Review the new features and bug fixes as documented in the *TDV and Business Directory Release Notes*.
2. Review the information in the following topics:
   - Installation Requirements and Support Information, page 9
   - About TDV Software Patches, page 42
   - Preparing Your Systems for Installation, page 43
3. Install TDV as described in:
   - Installing TDV, Studio, and Drivers, page 65
   - Silent Mode Installation, page 79

4. Apply the latest TDV Service Pack patch. Instructions for how to install a patch or service pack are subject to change with each service pack. For instructions, see TDV and Business Directory Product Maintenance, page 53.

Installation Overview for Existing Customers Upgrading from a Previous Release

To install a major upgrade for TDV

1. Review the new features and bug fixes as documented in the *TDV and Business Directory Release Notes*.
2. Review the information in the following topics:
   - Installation Requirements and Support Information, page 9
   - About TDV Software Patches, page 42
   - Preparing Your Systems for Installation, page 43
3. Review and follow the steps in Upgrading from an Earlier TDV Release, page 47.
4. Backup all the data you want to save from the previous version of TDV.
5. Install the current version of TDV and any service packs.
6. Import the data from your previous version of TDV from the backup file.

Preparing Your Systems for Installation

To prepare your systems for installation

1. Review the new features and bug fixes as documented in the *TDV and Business Directory Release Notes*.
2. Review any README file included in your installation, patch, or service pack bundle.

3. Review the following requirements:
   - Installation Requirements and Support Information, page 9
   - You must have administrator privileges on the host computer to install TDV Server.
   - You can have multiple JVMs running on the installation machine.
   - Server requires a block of nine ports for use by TDV and associated services. The port setting for Web services HTTP communication serves as the “base port”. By default, the base port is 9400, but you can change it after installation using configuration parameters.
4. Make sure that any LIBPATH or LD_LIBRARY_PATH environment variable that you might have does not begin with a "/" slash or end with a ":" colon. Those characters may keep the repository from starting successfully.
5. Review your firewall settings and verify that they allow access to the ports that TDV (Business Directory, Deployment Manager, and TDV) products need to use.
6. To see the current base port setting, choose Configuration from the Administration menu and navigate to Server > Web Services Interface > Communications > HTTP > Port (Current).

   Note: Changing the HTTP base port value also changes the value of all derived ports after the next TDV restart. When the base port is changed, you must update all data sources with the new port information.

   These example ports are reserved or are derived from the base port:

```
9400 Web services HTTP port
9401 JDBC, ODBC, and ADO.NET
9402 Web services HTTP SSL
9403 JDBC SSL, ODBC SSL, and ADO.NET SSL
9404 Default caching database port
9405 [reserved]
9406 Monitor Daemon
9407 Active Cluster - JGroups (when installed)
9408 Repository
9409 Monitor (when installed)

9500 Business Directory
9502 Business Directory (reserved)
9508 Business Directory
```

7. Stop Server if an earlier version is running.
8. Restart databases, especially those used for your caches and repositories.
9. Shut down all other application programs running on the installation machine.

10. Make sure you know the hostname or the IP address of the installation machine.
11. If you are installing on a Linux operating system, see Preparing UNIX for TDV Installation, page 45.
12. If you are installing on a Windows operating system, see Preparing Microsoft Windows for TDV Installation, page 47.

Preparing UNIX for TDV Installation

This section applies only if you are installing TDV on a machine running a supported UNIX operating system. Examples of valid and invalid */etc/hosts* file entries are shown in the following table.

Validity	/etc/hosts File Entry
Valid	127.0.0.1 localhost IP hostname.domain hostname
Valid	127.0.0.1 localhost localhost.localdomain IP hostname.domain hostname
Valid	127.0.0.1 localhost localhost.localdomain localhost IP hostname.domain hostname
Invalid	127.0.0.1 localhost.localdomain IP hostname.domain hostname
Invalid	127.0.0.1 localhost.localdomain localhost IP hostname.domain hostname

To prepare your UNIX machine for installation of TDV products

1. Review the new features and bug fixes as documented in the *TDV and Business Directory Release Notes*.
2. Optionally for AIX, make sure that you have one of the following readline libraries installed:
   - readline-6.0-1.aix5.1.ppc.rpm
   - readline-6.0-3.aix5.1.ppc.rpm
   - readline-6.1-3.aix5.1.ppc.rpm
   - readline-6.2-5.aix5.1.ppc.rpm
   - readline-6.3-5.aix5.1.ppc.rpm
   - readline-6.1-1.aix6.1.ppc.rpm
   - readline-6.1-2.aix6.1.ppc.rpm
3. Run the following command to determine if localhost can be resolved on the target installation machine before attempting an installation:

```
ping localhost
```

4. If the ping results look like the following, localhost is being resolved and the machine is ready for TDV installation. You can continue with the instructions in other sections.

   Linux Ping Example with Valid localhost

```
$ ping localhost
PING localhost (127.0.0.1) from 127.0.0.1 : 56(84) bytes of data.
64 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=255 time=0.071
ms
64 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=255 time=0.063
ms
64 bytes from localhost (127.0.0.1): icmp_seq=3 ttl=255 time=0.043
ms
--- localhost ping statistics ---
3 packets transmitted, 3 received, 0% loss, time 1999ms
rtt min/avg/max/mdev = 0.043/0.059/0.071/0.011 ms
```

5. If the ping results look like the following, localhost is not correct. You must edit your /etc/hosts file.

   Linux Ping Example with Invalid localhost

   This example of /etc/hosts files shows where Server is unable to connect to the repository database because of the localhost.localdomain entry preceding the localhost entry (assuming the localhost entry exists at all).

```
$ ping localhost
PING localhost.localdomain (127.0.0.1) from 127.0.0.1 : 56(84)
bytes of data.
```

```
64 bytes from localhost.localdomain (127.0.0.1): icmp_seq=1 ttl=255
time=0.080 ms
64 bytes from localhost.localdomain (127.0.0.1): icmp_seq=2 ttl=255
time=0.071 ms
64 bytes from localhost.localdomain (127.0.0.1): icmp_seq=3 ttl=255
time=0.044 ms
--- localhost.localdomain ping statistics ---
3 packets transmitted, 3 received, 0% loss, time 1998ms
rtt min/avg/max/mdev = 0.044/0.065/0.080/0.015 ms
```

6. Edit the /etc/hosts file to add a localhost entry, directly after the 127.0.0.1 entry, with the following syntax:

```
127.0.0.1 localhost <optional host name>
```

7. Save your changes and rerun the ping for localhost.

Preparing Microsoft Windows for TDV Installation

If you are installing TDV on Microsoft Windows Vista Business Edition, Windows 2008, Windows 2012 R2, or Windows 7, you must disable User Account Control before installing TDV Server. Optionally, if you run into permission issues when running the installer, you can use this procedure to attempt to solve the issue.

To disable the User Account Control

1. From the Windows Start menu, select Control Panel > User Accounts > Change User Account Control Settings.
2. Change the setting to Never notify.

Upgrading from an Earlier TDV Release

This section is a guide for customers who are upgrading to TDV from a previous version and want to migrate metadata from that version to the new version.

Note: This process is different from many other software vendor upgrade procedures, which typically modify the existing instance.

The metadata upgrade process requires installing a new TDV instance in parallel with the existing TDV instance, exporting the metadata from the old instance, and importing the old instance's backup CAR file into the new TDV instance.

TDV recommends that you keep the older TDV instance until you are sure the new installation is stable. However, be aware that:

- If you are running two versions of TDV simultaneously, their port numbers must be different.
- If you are using Active Cluster, all servers in the cluster must be running at the same version and patch level.
- New instances of TDV can use the repository database of older instances.

Make sure that you have administrator privileges and perform all of the steps below as that user.

To upgrade and migrate your existing installation, follow the steps in these sections

1. Documenting the Existing TDV Instance, page 48
2. Considerations for Upgrading to TDV 7.0, page 49
3. Exporting Metadata from the Existing TDV Instance, page 49
4. Installing the New Version of TDV, page 50
5. Importing Metadata into the New TDV Instance, page 74
6. Verifying a Successful Installation, page 75

Documenting the Existing TDV Instance

Before making a backup of the existing TDV instance, document the key features of the instance. These settings are later applied to the new TDV instance to ensure the consistency of results returned from published resources.

Note: If you cannot upgrade directly from the existing TDV instance to the new version, multiple versions of TDV and multiple export and import processes might be required, so that database schemas remain compatible.

Make note of the settings in the following table.

Setting	What to Record
Ports	The port numbers for the existing instance, because after the installation of the new server is complete, the port numbers of the new instance might need to be changed.
Authentication mechanism	The authentication mechanism. If LDAP or another dynamic authentication is used, the same settings need to be applied to the new server. This setting determines various authentication mechanisms enabled within Server.

Setting	What to Record
Users/groups	The groups created in Server and the users that belong to these groups. If LDAP authentication is used, note the LDAP groups that were imported into Server.
Metadata repository	The full path of the repository location and the administrator user ID and password.
Custom data sources	Custom data sources that were introspected and any custom drivers that were used to introspect these sources.
External libraries	Any external libraries that were referenced from the instance.
Customized settings, including JRE flags, managed and unmanaged memory	Configuration parameter settings for the existing Server instance. From the Administration menu, select Configuration and check all relevant parameter settings. The new TDV instance's settings should match the old instance settings if you want similar results and performance.

Considerations for Upgrading to TDV 7.0

TDV no longer supports external repository databases. With 7.0 use of the PostgreSQL database that is distributed with the TDV Server install is required.

Depending on what you might have previously been using as your repository database, you might want to keep a backup copy of that database if you suspect you might have a need to revert to a prior TDV install such as 6.2.6.

During the export you performed in Exporting Metadata from the Existing TDV Instance, page 49 all of the relevant information from your old repository was captured.

During the import you performed in Importing Metadata into the New TDV Instance, page 74 all of the relevant information from your old repository was transferred into the new TDV PostgreSQL repository database.

Exporting Metadata from the Existing TDV Instance

The first step for upgrade or migration is to export the existing metadata information from the repository. This process writes out a CAR file that includes six files containing metadata, scheduling, settings, and user information.

To run the export

1. Verify that you have administrator privileges.
2. Open a command prompt window.
3. Navigate to <TDV_install_dir>/bin.
4. Perform a full backup with the options that you need:
   - Using Studio. See "Using Studio for a Full Server Backup" in the *TDV User Guide*.
   - Using the TDV backup_export utility. For more information, see the *TDV Administration Guide*.
5. Locate and copy the resulting CAR file to a safe and easily accessible location for use later.

Installing the New Version of TDV

To install a new TDV when you are upgrading from an earlier release

1. Review the new features and bug fixes as documented in the *TDV and Business Directory Release Notes*.
2. Install the new version of Server as described in Installing TDV, Studio, and Drivers, page 65 or Silent Mode Installation, page 79.
3. Install the latest versions of all other TDV software that you use.
4. Set up any external libraries, including JDBC drivers, and then shut down and restart the server.
5. Deliver the upgraded drivers (the TDV ODBC driver and the TDV JDBC driver) to the dependent clients.
6. To ensure consistency in results and performance, make the configuration of the new server instance similar to the old instance.
7. Perform the instructions in Importing Metadata into the New TDV Instance, page 74.

Perform the instructions in Verifying a Successful Installation, page 75.

Tracking and Documenting Your Install or Upgrade

We recommend that you document the issues that you encounter during an upgrade and document all customizations made to your new TDV system, to help ensure that your next upgrade goes smoothly.

Before beginning your install, be aware that JRE and PostgreSQL customizations are not preserved through the installation process. After install you must remake the customizations.

TDV and Business Directory Product Maintenance

This section contains:

About TDV 7.0 Installation

After TDV 7.0 is installed, you can proceed with installation of service packs or hotfixes.

If you are sent a patch to address a specific urgent issue, it is referred to as a hotfix patch. Hotfix patches have been quickly created by our engineering group for timeliness and are not for general use.

About Hotfix Maintenance

Hotfix patches are not automatically carried over through export and import processes during an upgrade or migration. They need to be reapplied if you migrate to another instance that is the same version. Hotfixes are also built for specific versions of TDV, so they should not be used for later versions of TDV than the version for which they were built.

For hotfixes, run the upgrade process for TDV and Business Directory.

About Service Pack Maintenance

A service pack is a zipped package of files that fixes known issues and often provides enhanced functionality. All TDV Server, Studio and Business Directory software service packs are cumulative and supersede previously released service packs. A service pack should be applied on all computers where TDV products are installed, keeping them all at the same revision level. Installation of a service pack does not change configuration settings and custom functionality.

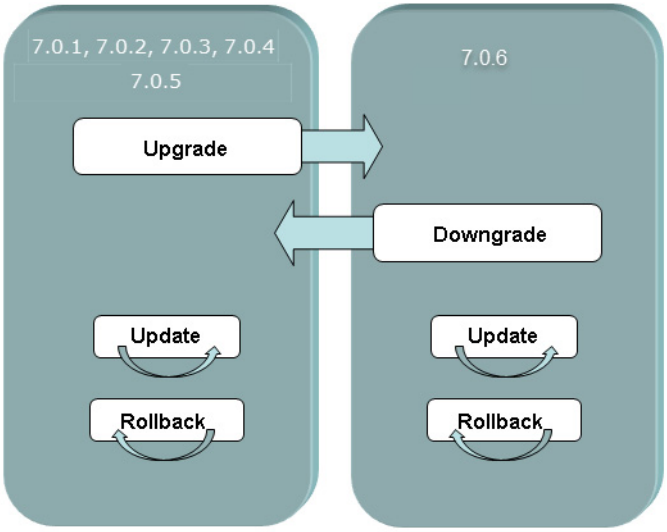
It is recommended that you keep your TDV Server and Business Directory Server instances at the same patch level.

Update, Upgrade, Downgrade, and Rollback

Terms have the following definitions in the diagram and procedures in this section:

- <TDV_install_dir>: The installation directory for TDV Server, Studio, or Business Directory, as appropriate.
- Upgrade: To upgrade to a higher release (for example, from 7.0.5 to 7.0.6) by running the upgrade script that comes with the service pack. You can upgrade from any 7.0.x version directly to 7.0.5.
- Downgrade: To revert to a previous release (for example, 7.0.6 to 7.0.4, or 7.0.5 to 7.0.2) by running the downgrade script that comes with the service pack. You can downgrade from 7.0.7 to 7.0.6, 7.0.5, 7.0.2, or 7.0.1. You cannot downgrade to 7.0.
- Update: To apply a hotfix within a release (7.0.x) by running an update script, which is included with every hotfix.

- Rollback: To remove a hotfix within a release by running a rollback script, which is included with every hotfix.



Applying the Hotfix to TDV Server and Business Directory

The latest hotfix, requires a clean update of your TDV Server and Business Directory environment. The optimal way to achieve the clean environment is to apply the hotfix as if it was a Service Pack.

To apply a hotfix

1. Follow the instructions in Applying the Service Pack to TDV Server, Studio, and Business Directory, page 55.

Applying the Service Pack to TDV Server, Studio, and Business Directory

Important bug fixes and additional functionality are added to TDV with each service pack.

Service packs typically involve careful ordering of procedural steps to make sure appropriate scripts are generated and available, and backup files saved.

Notes:

- Customers using advanced data source adapters that require OAuth need to first run TDV as a stand-alone server (no Monitor Daemon), set up OAuth once, and then run TDV with the Monitor Daemon.
- Sometimes when running Manager after a service pack install an error message pops up (Unable to finish loading...). You can safely ignore this message, close, and reopen Manager.
- The 7.0.7 patches require the following download space:
  - Studio and Business Directory require 500 GB
  - Server requires 1 GB

To apply a service pack

1. Optionally, perform a full TDV and Business Directory backup. For details about backup export, see the *TDV Administration Guide* or the *Business Directory Guide*.
2. If installing on Windows 8, be sure to use Run as Administrator.
3. For Windows, make sure to close any open windows to the repository/jre folder.
4. If your TDV products are running, stop them, including all processes and databases used as repositories or caches.
5. Copy the service pack zip file to <TDV_install_dir>.
6. Unzip the file.
7. When asked whether to replace the existing files, reply Yes.

   If you are not asked whether to replace files, the patch is being extracted to some directory other than <TDV_install_dir>. The patch must be extracted to the appropriate installation directory, and must overwrite files in that directory.
8. Run one or more of these scripts to upgrade your products:

Product	Directory	Script
TDV Studio	bin	studio_upgrade_patch.bat
TDV Server	bin	cis_upgrade_patch.<sh|bat>

Product	Directory	Script
TDV Business Directory	bin	bd_upgrade_patch.<sh|bat>

Note: When you run the cis_upgrade_patch script to upgrade from 7.0.1, you will be prompted for the cache database password.

TDV Server and Business Directory servers are restarted when the script finishes running. You can reopen the client applications, such as Studio, after the script finishes running.

9. To configure the dependency from your TDV Server to the default database cache:

   a. Stop the TDV Server. For example:

```
composite.bat monitor stop
```

   b. Uninstall the monitor daemon. For example:

```
composite.bat monitor uninstall
```

   c. Install the monitor daemon. For example:

```
composite.bat monitor install
```

Applying the Service Pack to Active Cluster

When updating Active Cluster, it is critical that clusterid remain unchanged. Changing it can adversely affect cached data.

These instructions are guidelines developed from testing with a two node Active Cluster environment.

To upgrade with scheduled system downtime

1. Determine and note the clusterid, so that it can remain unchanged.
2. Make sure that the cluster is in sync. That is, make sure both nodes are in the cluster and are functional.
3. Disable any cache refreshes on both of the nodes.
4. Configure the load balancer to stop sending traffic to node 1.

   Shutting down node 1 would cause in-flight requests to fail.
5. Remove node 1 from the cluster.
6. If your TDV products are running, stop them, including all processes and databases used as repositories or caches.

7. Apply the service pack or hot fix to node1.
8. Start up node 1, but do not re-join the cluster.
9. Configure the load balancer to send traffic to node 1 instead of node 2.
10. Remove node 2 from the cluster.
11. Apply the service pack or hot fix to node 2.
12. Join node 1 and node 2 to the cluster.
13. Enable cache refreshes on both of the nodes.
14. Verify the cluster status.

Rolling Back a Service Pack or Hotfix for TDV Server, Studio, and Business Directory

If you installed a service pack or hotfix and you later decide that you want to revert to the previous installation, you can roll back the service pack changes.

Precautions

It is important to understand the requirements and limitations of rollback procedures:

- You can use this process to roll back to an earlier 7.0.x release. You cannot use this process to roll back to a version prior to 7.0.
- If you are rolling back from 7.0.7 to 7.0.x, the upgraded versions of JRE and PostgreSQL are deleted and any data that was held in them is lost.
- If you are rolling back from version 7.0.6 to 7.0.5 all VCS connections are deleted and all roots are detached.
- If you are rolling back from version 7.0.6 to 7.0.2, you need to use the -toVersion argument with the rollbackRepository command.
- The rollback scripts are only for rolling back to a previous patch. Rollback is not guaranteed to work if performed with an instance that only has one 7.0.1 or later patch or hotfix applied, in an attempt to roll back to the base 7.0 GA

version. If you do this, starting the TDV server may result in error messages such as these:

— In the cs_repository.log: “Could not receive data from client: No connection could be made because the target machine actively refused it.”

— In the cs_monitor.log: “MONITOR STOP. The metadata repository was created with a newer version of the server. The server cannot continue.”

- To recover from an attempted rollback to TDV Server 7.0 GA, you need to stop TDV Server or Business Directory, reapply the patch or hotfix, and then restart the application. If you have already run the update_patch script, you do not need to run it again. (This nullifies the rollback and puts you back in the patched release level.)
- Another way to recover from an attempted rollback to TDV Server 7.0 GA is to reinstall TDV Server 7.0 GA from scratch and re-import the backup export file you saved before applying the patch.
- Refer to Rolling Back TDV Server from 7.0.5 to 7.0.4 on a Linux Platform, page 61 for a procedure to work around a cache policy configuration error.

To roll back or downgrade a service pack or hotfix for TDV Server, Studio, or Business Directory

1. If downgrading on Windows, any open windows to the repository/jre folder must be closed.
2. If your TDV products are running, stop them, including all processes and databases used as repositories or caches.
3. Stop the Monitor Daemon:

```
composite.<bat|sh> monitor stop
```

You can check for a “Bye” message in cs_server.log.

To rollback the repository perform these steps (not necessary for 7.0.7 to 7.0.6, nor for 7.0.6 to 7.0.5)

4. Navigate to the TDV, Studio, or Business Directory install directory.
5. Locate and start the server process without the Monitor Daemon. For example:

```
For TDV Server:composite_server.<bat|sh> run
For BD: bd_server.<bat|sh> run
```

6. Keep the server running, and in a different terminal roll back the repository.

   To roll back the repository from 7.0.6 to 7.0.4 or earlier, run:

```
server_util.<bat|sh> -server <ID> -port <port> -user <user_ID>
-password <password> -rollbackRepository -toVersion 7.0.x
```

7. Check the repository version, for example:

```
<TDV_install_dir/repository/bin> ./psql -U admin -p 9408 -h
localhost -d cis070001 -c "select * from
cis070001.metadata_version"
```

Rollback Version	TDV Repository Name
7.0.7	31
7.0.6	31
7.0.5	31
7.0.4	30
7.0.3	29
7.0.2	28
7.0.1	27

8. Stop the monitor, TDV Server and repository database.

To complete the rollback for the TDV non-repository components

9. Locate and run the rollback script. For example:

Rollback Type	Command

Service Pack rollback	`./rollback_TIB_tdv_<product>_<version>_all.<bat|sh>`
	The <product> string is server, studio, or bd (Business Directory). For example:
	`./rollback_TIB_tdv_server_7.0.7_all.bat`

Hotfix rollback	`./rollback_TIB_tdv_<product>_<version>_HF-002_all.<bat|sh>`

10. If you are rolling back from 7.0.6 to 7.0.4 or an earlier version, you must locate and delete the following file (not necessary for 7.0.6 to 7.0.5):

```
...apps/server/lib/cswebapi-server.jar
```

11. If you are moving from 7.0.x or 7.0.2 to 7.0.1, run the downgrade script. For example:

Downgrade Type	Command

Service Pack downgrade	`<product>_downgrade_patch.<bat|sh>`
	
	The <product> is cis, studio, or bd (Business Directory). For example:
	`cis_downgrade_patch.sh`

Note: If you are applying a patch or a hotfix within the same release (7.0.1, 7.0.2, or 7.0.5), or moving back to a release that does not require an upgrade (7.0.2), you perform a rollback, but not a downgrade. For example, you would need a rollback but not a downgrade if you were moving from 7.0.5 hotfix 12 and 7.0.5 patch 10.

12. Navigate up one directory level and reapply the last service pack or hotfix.
13. Start the Monitor Daemon.

```
For TDV: composite.<bat|sh> monitor start
For BD: bd.<bat|sh> monitor start
```

In the server.log, verify that the version is the target version you intended.

14. Import backup CAR files as needed.
15. Optionally, redefine all your VCS roots and connections.

Note: Downgrading from 7.0.5, 7.0.4, 7.0.3, 7.0.2 to 7.0.1 or 7.0 does not remove the default database cache process.

Rolling Back TDV Server from 7.0.5 to 7.0.4 on a Linux Platform

If you roll back TDV Server from 7.0.5 to 7.0.4 on a Linux platform, you will encounter what appears to be a cache policy configuration error. For example:

```
Problem(s) encountered :1 - "/shared/examples/ViewSales" using the
cache policy: "h2" : The resource
'/lib/sources/cacheDataSource/view29088' does not exist.
```

In fact (in this case), the resource /lib/sources/cacheDataSource/view29088 does exist.

Workaround

1. Perform the rollback (refer to Rolling Back a Service Pack or Hotfix for TDV Server, Studio, and Business Directory, page 58).
2. Go to the Info tab and add an annotation.
3. Save the Cache Policy.

Uninstalling the Default Database Cache Feature

If you installed the Default Database Cache feature as part of a patch installation, you need to stop it and uninstall it manually before the step in which you uninstall TDV.

To uninstall the Default Database Cache feature

1. Stop the Server and Repository if they are running.
2. Go to the bin directory under <install_dir>.
   a. Run these commands for Windows:

```
bin\composite.bat cache stop
bin\composite.bat cache uninstall
```

   b. Run these commands for UNIX:

```
bin/composite.sh cache stop
bin/composite.sh cache uninstall
```

3. Follow the uninstallation steps for TDV, as described in the *TDV Installation and Upgrade Guide*.

Recovering if a Server Was Started Too Soon

For TDV 7.0.x on Windows OS, if you started TDV or Business Directory before you ran the patch, you can no longer start the server from the command line. To recover from this situation, follow this procedure.

To recover if a server was started too soon:

1. If they are running, stop the TDV Server or Business Directory service.
2. Open a command window (for example, cmd.exe) and type:

```
cd <TDV_install_dir>\bin
```

```
.\70inst_patch.bat
```

3. Start the TDV Server or Business Directory service.
4. In a command window, type:

```
.\server_util.bat -server <hostname> -user <user_ID> -password
<password>
[ -port <port> ] [ -domain <domain> ] -regenerateFiles
```

5. Stop the TDV Server or Business Directory service.
6. Wait two minutes.
7. Try starting the TDV Server or Business Directory service from a command window:

```
<TDV_install_dir>\bin\composite.bat monitor start (TDV)
<TDV_install_dir>\bin\bd.bat monitor start (Business Directory)
```

TDV Server or Business Directory should now run without any "unknown service" errors.

Maintaining TDV-to-Client Application Connections

This section includes instructions for how to update connections between TDV Server and your client applications in the following sections:

- Updating an ODBC Client Application, page 63
- Updating a JDBC Client Application, page 64

Updating an ODBC Client Application

To patch ODBC client applications

1. Install the ODBC patch as you would for a Studio installation, but apply the ODBC patch only to where you installed a TDV ODBC client:
   - 32-bit driver: <TDV_install_dir>/apps/odbc
   - 64-bit driver: <TDV_install_dir>/apps/odbc64
2. See the *TDV Client Interfaces Guide* for more information.

To patch ODBC client users on Windows 7

1. Locate your Windows 7 DSN entry file.
2. Recreate any custom system DSNs, using DSN tools.
3. See the *TDV Client Interfaces Guide* for more information.

Updating a JDBC Client Application

To patch JDBC client applications

1. If you only need to obtain the updated TDV JDBC driver for your JDBC client, you can do one of the following:
   - Obtain the updated csjdbc.jar file from the server's <TDV_install_dir>/apps/jdbc/lib directory after the Studio patch is installed.
   - Extract any one of the csjdbc.jar files directly from the patch zip file.
2. See the *TDV Client Interfaces Guide* for more information.

Installing TDV, Studio, and Drivers

This topic describes how to install TDV on both Windows and UNIX computers and then verify that the installation was successful.

Topics include:

Installing on Windows

This installation process is used to install one or more components of TDV. You install TDV for Windows using the InstallAnywhere installer wizard.

Note: If you installed TDV on Microsoft Windows Vista Business Edition, Windows 2008, or Windows 7, see Preparing Microsoft Windows for TDV Installation, page 47.

Running the TDV Server Installer

This installer installs the following components:

- TDV Server
- Deployment Manager
- Repository

• Java	• Monitor	• Discovery
• Active Cluster	• Salesforce.com Adapter	• SAP Adapter
• SAPBW and BEx Adapters	• Oracle EBS Adapter	• Siebel Adapter
• Studio	• Default caching database	• Advanced Data Sources Adapters

To install TDV on a Windows computer

1. Read any README files included with or associated with the download file.
2. Run the installer executable for your platform.
3. Follow the prompts on the screen. Special characters and spaces are not supported for <TDV_install_dir>.

   You can select the defaults for the <TDV_install_dir> and the TDV Server base port number.

   You will be prompted for two different passwords.

TDV Password Type	Description
TDV Repository	This is the database that will be used to store all of the data and metadata about the items that you create within TDV. It also stored your configuration and other environment settings. Passwords with special characters that are supported by your operating system shell are fine to use.
Default Caching Database	This is the database that will be created for you to hold data that you want to cache using the default caching method. There are multiple caching options. You might want to note the password for future use of this database.

   The installation process might take a few minutes, during which progress windows are displayed.

4. Select a password for the default caching database.
5. Finish to exit the installer when the installation is completed.

   The Server starts automatically at the completion of the installation process. You can also start and stop the services as described in the *TDV Administration Guide*.

   Install and uninstall logs are called bitrock_installer_<number>.log while the installer is running. After installation is complete, the logs are named

<product>_install or <product>_uninstall.log. The log files can be found in the following directories:

Platform	Default Location of Log Files
Unix	/tmp
Windows 2008, Windows 2012, Windows 7, Windows 8	C:\Users\<username>\AppData\Local\Temp
Windows 2003	C:\Documents and Settings\<username>\Local Settings\Temp\1

6. Optionally, download and install the latest TDV patch as described in *TDV and Business Directory Release Notes*.

Running the Studio Installer

This installer installs the following components:

- Studio
- Java

This installer can be run on each Windows machine that needs access to the TDV Server.

To install Studio on a Windows computer

1. Read any README files included with or associated with the download file.
2. Run the installer executable for Studio.
3. Follow the prompts on the screen.
4. When the installation is complete, click Finish to exit the installation program.

Studio automatically runs and prompts you for login information.

Installing the Drivers

This client distribution (driver zip) file includes the following components:

- ODBC
- ADO.NET
- JDBC

This zip file can be unpacked on each machine that has client application that needs access to the TDV Server.

To install the drivers distributed with TDV

1. Read any README files included with or associated with the download file.
2. Locate and extract the drivers zip file.
3. When installing the ODBC Win 64-bit driver on Windows 10, make sure to select Run as Administrator. Select the client EXE file, right click and select Run as Administrator. When prompted, select Yes and allow the installation to run to completion.
4. Follow the instructions in the TDV Administration Guide for details on how to complete configuration of each driver.
5. When the installation is complete, click Done to exit the installation program.

Installing on UNIX

Your TDV Server can be installed on a UNIX machine. Studio is not available for UNIX and must be installed on a Windows machine. You can then connect the Studio client to the Server on the UNIX machine.

- Installing TDV Server on UNIX, page 68
- Installing Drivers on UNIX, page 70
- Setting the TDV Server to Start Automatically on UNIX, page 71
- Configuring Security Enhanced Linux Environments, page 72

Installing TDV Server on UNIX

This installer installs the following components:

• TDV Server	• Deployment Manager	• Repository
• Java	• Monitor	• Discovery
• Active Cluster	• Salesforce.com Adapter	• SAP Adapter
• SAPBW and BEx Adapters	• Oracle EBS Adapter	• Siebel Adapter

- Default caching database
- Advanced Data Source Adapters

To install TDV on a UNIX computer

1. Make sure you have reviewed and completed any necessary preparation as discussed in Installation Requirements and Support Information, page 9.
2. For CentOS, Red Hat Enterprise Linux, and Oracle Red Hat Enterprise Linux systems Security-Enhanced Linux (SELinux) must be disabled or in permissive mode. See Configuring Security Enhanced Linux Environments, page 72.
3. If necessary, log into the installation machine as a non-root user. Change your working directory to the user's home directory.
4. Run the following command for your platform:

```
chmod 755 <installer file name>
```

5. Make sure that the directory and path that you expect to use for TDV does not contain any spaces.
6. Make sure that you have READ and WRITE permissions on the installation directory.
7. Run the following command to start the installation:

```
./<installer file name>
```

8. Follow the prompts on the screen. Special characters are not supported for <TDV_install_dir>.

   You can select the defaults for the <TDV_install_dir> and the TDV Server base port number. The value you use for <TDV_install_dir> cannot contain a space.

   You will be prompted for two different passwords...

Password Type	Description
TDV Repository	This is the database that will be used to store all of the data and metadata about the items that you create within TDV. It also stored your configuration and other environment settings. Passwords with special characters that are supported by your operating system shell are fine to use.
Default Caching Database	This is the database that will be created for you to hold data that you want to cache using the default caching method. There are multiple caching options. You might want to note the password for future use of this database.

9. Finish to exit the installer when the installation is completed.

   The Server starts automatically at the completion of the installation process. For information about automatically restarting TDV, see Setting the TDV Server to Start Automatically on UNIX, page 71. You can also start and stop Server as described in About the Installed TDV Services, page 74 and the *TDV Administration Guide*.

   Install and uninstall logs are called bitrock_installer_<number>.log while the installer is running. After installation is complete, the logs are named <product>_install or <product>_uninstall.log. The log files can be found in the following directories:

Platform	Default Location of Log Files
Unix	/tmp
Windows 2008, Windows 2012, Windows 7, Windows 8	C:\Users\<username>\AppData\Local\Temp
Windows 2003	C:\Documents and Settings\<username>\Local Settings\Temp\1

10. If installing TDV on AIX, make sure that MAX_MEMORY >1500MB is in the <TDV_install_dir>/conf/server/server.properties.

    The server.properties file is processed every time the server is restarted from `composite.sh monitor`.

11. Optionally, download and install the latest TDV patch as described in *TDV and Business Directory Release Notes*.

Installing Drivers on UNIX

These files contain the following driver components:

- ODBC
- ADO.NET
- JDBC

To install the drivers

1. Make sure you have reviewed and completed any necessary preparation as discussed in Installation Requirements and Support Information, page 9.
2. If necessary, log into the installation machine as a non-root user. Change your working directory to the user's home directory.
3. Make sure that you have READ and WRITE permissions on the directory for which you want to unzip the contents of the file.
4. Locate and extract the drivers zip file.
5. Follow the instructions in the *TDV Administration Guide* for details on how to complete configuration of each driver.
6. When the installation is complete, click Done to exit the installation program.

Setting the TDV Server to Start Automatically on UNIX

If at any time after installing the software, you restart the UNIX installation machine, Server and the metadata repository do NOT start automatically (unlike when they start automatically after a successful installation of the software).

To configure the TDV service files cis.repository and cis.server

1. Log into the installation machine as root.
2. Change the working directory to <TDV_install_dir>/bin.
3. Run the following command as the root user:

```
cis_install_services.sh
```

   This command prompts for a username, and other details to install and configure the service files cis.repository and cis.server.

4. Enter the name of the user to start TDV (not the root user) and the other information requested.

   The script then installs cis.repository and cis.server into an appropriate location on the installation machine and configures them. The location will be printed on your screen when the configuration is successful, so make note of this location, because you need this to perform verification of the service files.

   Note: Do not run the cis.repository or cis.server scripts in the <TDV_install_dir>/bin/ directory. These are template files used by cis_install_services.sh only and are not meant to be run.

Running cis_install_services.sh does not interrupt any repository or server processes that are running, but prepares the machine for automatically starting those processes during restart of the UNIX-based computer.

To verify the TDV service files configuration

1. Go to the location noted previously from running cis_install_services.sh.
2. Enter these commands:

```
./cis.repository restart
./cis.server restart
./cis.cache restart
```

Now if the machine is rebooted, the monitor, server, and repository processes should automatically start once the machine is ready to go.

Configuring Security Enhanced Linux Environments

All UNIX instances that have SELinux = enabled need to be reconfigured to SELinux = permissive to allow connections to TDV and Business Directory. The SELinux configuration file is located under /etc/selinux/config.

To configure SE Linux environments

3. Run /usr/sbin/sestatus to validate the setting for SELinux. If the value is enabled, you must change it.
4. Login as root.
5. Edit your environment configuration file.
6. Change the value of SELinux to permissive (SELINUX=permissive).
7. Reboot.
8. Run /usr/sbin/sestatus to validate the setting for SELinux.

Installing on Amazon Web Service

The TDV Server is supported on Windows and UNIX. Studio requires a Windows-based OS to operate.

To install TDV on a Windows-based AWS

1. Install and configure a supported version of Windows for AWS.
2. Select and install the AIM for TDV.
3. Follow the install instructions in Running the TDV Server Installer, page 65.
4. Follow the install instructions in Running the Studio Installer, page 67.
5. Follow the instructions in the *TDV Administration Guide* to register you TDV licenses.

To install TDV Server on a UNIX-based AWS

1. Install and configure a supported version of Linux for AWS.
2. Select and install the AIM for TDV Server.
3. Follow the install instructions in Installing on UNIX, page 68.
4. Locate the TDV Studio installer that came bundled with your AIM.
5. Move the installer file to a Windows-based AWS or another Windows machine.
6. Follow the install instructions in Running the Studio Installer, page 67.
7. Connect to the TDV Server on your Linux AWS.
8. Follow the instructions in the *TDV Administration Guide* to register you TDV licenses.

Applying a TDV Patch or Service Pack

After installation of TDV, you might want to apply the latest TDV patch which might be a later version than what you just installed. It is recommended that you install a patch on all computers running TDV products to ensure complete compatibility and minimize unforeseen problems.

Note: Instructions for how to install a patch or service pack are subject to change with each service pack. For instructions, see the *TDV and Business Directory Release Notes*.

About the Installed TDV Services

The installation process installs the following services which are TDV processes that run in the background:

- server—the TDV Server process.
- repository—the database repository used by TDV.
- monitor—a process that monitors the TDV Server and ensures that it is always running.
- cache—a process that runs the default caching database.

All processes must be running for TDV to function properly.

For more information on configuring and starting TDV, see the *TDV Administration Guide*.

Importing Metadata into the New TDV Instance

If your are upgrading your version of TDV from an earlier version and you have completed the instructions in Exporting Metadata from the Existing TDV Instance, page 49, then follow the instructions in this section. If you are performing a new installation, you can skip these instructions.

After the new TDV instance is successfully installed, the metadata from old TDV instance needs to be imported into the new instance. After the import is successfully completed, settings such as JRE configurations, managed memory setting and ports can be updated on the new instance.

To run the import

1. Verify that you have administrator privileges.
2. Locate the CAR file that you produced from Exporting Metadata from the Existing TDV Instance, page 49.
3. Perform a full backup import with the options that you need:
   - Using the Studio Import dialog window. For more information, see the *TDV User Guide*.
   - Using the TDV backup_import utility. For more information, see the *TDV Administration Guide*.
4. Validate that the TDV resources or other settings are as you expect in the new version of Studio.

Verifying a Successful Installation

To verify that your installation of the TDV software was successful, follow the steps in this section.

To verify a successful installation

1. Start Studio. Follow instructions in the *TDV Getting Started Guid*e or in the *TDV User Guide*.
2. If you have just completed an upgrade from one version of TDV to a new one, then we suggest that you complete these instructions:
   a. Determine a set of tests that will touch all published resources and all introspected data sources, and then apply the tests against:
   — The existing instance of TDV, as a sanity check.
   — The new instance of TDV, to ensure the same results are produced.
   b. Configure and use the PubTest tool to test all your published resources.

   The PubTest program can be configured to test all published resources using JDBC, ODBC, and Web services. Additional configuration might be required to test the ODBC and Web services. Starting with TDV 4.0, an end-to-end testing program referred to as PubTest (pubtest.java) is included with the TDV installation. This program is located in the <TDV_install_dir>\apps\jdbc directory. A PubTest.doc file in this directory provides additional documentation about using this tool.

Tips from an Expert if the Server Does Not Start

If the server does not start and the log files indicate that the cause is not enough heap memory, you can modify the default max memory setting.

The server.properties file is processed every time the server is restarted from `composite.sh monitor`.

To modify the max memory setting

1. Stop the server.
2. Increase the MAX_MEMORY value in the one of the following locations depending on your server:
   - <TDV_install_dir>/conf/server/server.properties
   - <BD_install_dir>/bd/conf/server/server.properties
3. If adjusting the heap size with MAX_MEMORY is not enough to allow large CAR files to load, you can try setting the following Studio configuration parameters back to their default values:
   - Default Bytes to Fetch—Default value is 100.
   - Default Rows to Fetch—Default value is 1000.
4. From the process manager for your platform, shut down and restart all TDV processes (such as the TDV Server and monitor).

Setting Up AES128 Password Encryption

Using the default TDV keystore and truststore files with the default passwords that are defined can be a security risk.

When storing user passwords and passwords used in communications with data sources, TDV encrypts the passwords using standard encryption. We recommend that you set up TDV to use AES128 encryption for stored passwords to improve user and data security. Consult the *TDV Administration Guide* for version 7.0.4 or later and create customized keystore truststore files with customized passwords.

It is best to carry out this procedure before connecting data sources and adding users, so that TDV automatically encrypts passwords using AES128 for them. If you wait until after adding users, you need to change each user's password individually to have it be encrypted using AES128.

Note: The admin password is the most important one to have encrypted using AES128.

The server has encryption configuration parameters whose values you can set. We recommend that you set these values before creating the keystore file and restarting, so that no windows ever have invalid values.

There is no cluster sync of the keystore, nor sync via backup archive. The repository keystore belongs to the local installation only.

To set up AES128 password encryption

1. Select Administration > Configuration from the Studio menu.
2. Navigate to Server > Configuration > Repository Database > Encryption.
3. Specify a value for Keystore Password.
4. Open a command window.
5. Use an existing keystore file or to create a repository key, go to the conf/server/security directory and Invoke the following command:

```
keytool -genseckey -alias repositoryKey -keyalg AES -keysize 128
-keystore <cis_repo_keystore.jceks> -storetype jceks -storepass
<key-password-X> -keypass <key-password-X>
```

   TDV requires that both passwords in this command line be the same.

6. After the key has been generated, you can verify its presence using the following command:

```
keytool -list -v -keystore <cis_repo_keystore.jceks> -storepass
<key-password-X> -storetype jceks
```

   Where cis_repo_keystore.jceks is the name of your keystore file.

7. Restart the server.

Where to Go After Installation

For your next steps, particularly if you are new to TDV products, see the information in the following PDFs or on-line help. You can access the PDFs at <TDV_install_dir>/docs, or from within Studio at Help > Online Help.

Book Title	Description
Getting Started Guide	Contains a simple example to get you familiar with the Studio application.
Administration Guide	Contains procedures for: • Completing and configuring your TDV installation • Licensing TDV software • Starting and stopping TDV • Finding and interpreting log files • Setting up security • Setting up JDBC, ODBC, and other drivers

Book Title	Description
User Guide	Explains Studio features and how to create and publish resources
Client Interfaces Guide	Contains instructions, guidelines, and examples of how to access TDV resources through various client applications.

Silent Mode Installation

You can install in silent mode. A silent mode installation does not require any user input at the time of installation to complete the installation process. It does not have a graphical user interface (GUI) but instead uses the values from a response file to perform the installation.

Topics covered include:

Creating the Options File for a Silent Installation

Optionally, when running a silent mode installation you can use an options file that has specific key-value pairs.

To create the options file for a silent install

1. In a text editor, create a options file similar to the following:

Business Directory

```
# Modify install directory and all port number references
#
mode=unattended
install_directory=/opt/TIBCO/BD
server_port=9500
repository_admin_password=password

---------------------------------------
```

TDV

```
# Modify install directory and all port number references
#
mode=unattended
install_directory=/opt/TIBCO/TDV
server_port=9400
repository_admin_password=password
database_admin_password=password

---------------------------------------
```

2. Edit the values within the file for your installation.

The following table describes the variables in the response file:

Variable	Description and Value

INSTALL_DIRECTORY	Directory in which to install the software referred to as <TDV_install_dir>.
	
	The value can be empty, or the directory can be non-existent. On UNIX, there can be no space in the directory name. Examples:
	`install_directory=/opt/TIBCO/TDV`
	`install_directory=C:\Program Files\TIBCO\Studio`
	`install_directory=/opt/CTIBCO/BD`

REPOSITORY_ADMIN_PASSWORD	Password to access the repository database, which is automatically installed during the installation. PostgreSQL requires that the password you choose cannot contain a # or $.
SERVER_PORT	Defaults to 9400 for TDV and 9500 for Business Directory.
DATABASE_ADMIN_PASSWORD	The password used to access the default caching database, which is automatically created during installation. PostgreSQL requires that the password you choose cannot contain a # or $.

3. Save the file as <installer.properties>.

Running the Installer in Silent Mode

To run the installer in silent mode

1. Create the response file according to your system environment, and place it anywhere on the installation machine. See Creating the Options File for a Silent Installation, page 79.
2. Run one of the following commands:

Component	Command Options

TDV Server	• command line options
	`<instFILE>.bin --mode "unattended" --install_directory "</opt/TIBCO/TDV>" --server_port "9400" --repository_admin_password "password" --database_admin_password "password"`
	
	• command line with option file
	`<instFILE>.bin --optionfile <OPTION_FILE>`

Component	Command Options

Studio	• command line options
	`<instFILE>.bin --mode "unattended" --install_directory "/C:\Program Files\TIBCO\Studio"`
	
	• command line with option file
	`<instFILE>.exe --optionfile <OPTION_FILE>`

Business Directory	• command line options
	`<insFILE>.bin --mode "unattended" --install_directory "/opt/TIBCO/BD" --server_port "9500" --repository_admin_password "password"`
	
	• command line with option file
	`<instFILE>.exe --optionfile <OPTION_FILE>`

The variables are as follows:

— <instFILE> is the file name. For example, installTDVv7000_win64.exe for a Windows TDV Server.

— <OPTION_FILE> is the name of the response file.

3. Verify that the installation was successful by looking for the TDV installation directory. You can also view success or failure messages in:

— %HOMEDRIVE%\BD_install.log (Windows) or /tmp/BD_install.log (UNIX)

— %HOMEDRIVE%\TDV_install.log (Windows) or /tmp/TDV_install.log (UNIX)

4. Optionally for TDV, complete the configuration in Configuring Security Enhanced Linux Environments, page 72.

Installing Optional TDV Products

This topic describes the installation of optional TDV products. These topics are covered:

Version Support

TDV supports the versions listed in Supported Add-On Adapters, page 26 and Supported Advanced Data Source Adapters, page 27.

Installation Requirements

Add-On Adapter Installation Requirements

Individual adapters have these requirements:

- SAP BW BEx Adapter should be installed on a separate machine from the SAP GUI, to avoid possible conflict between JCo versions. See Installing the SAP Java Connector Library, in the *TDV Adapter Guide*.
- For Salesforce.com and SAP adapter installations, disable User Account Control.
- SAP BW can cause TDV errors similar to:

```
com.compositesw.cdms.webapi.WebapiException: Error
[sapbw-2900000]: BAPI_ODSO_READ_DATA_UC failed: Key figure
0CMPYPTAMT unknown in InfoProvider 0BP_REL
```

To avoid this error, locate and install the patch listed in SAP "Note 1243987 - Extraction from DataStore object fails." Install this patch, and use the program SAP_RSADMIN_MAINTAIN to set the parameter RSDRI_DS_NEW in the table RSADMIN to ' ' (empty or space).

Note: To upgrade from an earlier version of an adapter, install the new version and then see Importing Resources Defined in an Earlier Release, page 86.

Active Cluster Installation Requirements

This section lists the software and hardware requirements for Active Cluster. All data sources and databases that are supported with this release of TDV are supported by Active Cluster.

TDV File Customizations

The data source capability files and LDAP properties file are not automatically synchronized with other machines in the cluster. Therefore, if you customized the ldap.properties file or data source capability files on a TDV Server that will be in a cluster, you need to copy these files manually to all computers that are members of the cluster.

For example, if you modified the external domain configuration file and the data source capability file for DB2, you would need to copy the following files to all computers that are or will become members of the cluster:

```
<TDV_install_dir>/conf/server/ldap.properties
<TDV_install_dir>/apps/server/apps/dlm/cis_ds_db2/conf/db2.capabil
ities
```

Digital Certificates

A digital certificate ensures the identity of a particular computer and the data it transmits to another computer. Every server in an Active Cluster must have a digital certificate set up on the computer. A trial digital certificate is shipped with TDV Server but must be changed to ensure full security. See Updating the Digital Certificate to Secure Cluster Communication, page 87 for how to do this.

Supported Platforms

See Installation Requirements and Support Information, page 9 for a list of the platforms and protocols supported by Active Cluster.

Disk Space and Physical Memory

Active Cluster requires an additional 4 MB of disk space.

Load Balancer Requirements

Although a load balancer is not required to be used with Active Cluster, it is highly recommended to achieve the maximum benefits of using Active Cluster.

Licensing

The licensing type for all cluster members should be identical. See the *TDV Administration Guide* for more information about licensing.

Installing an Optional TDV Product

All optional TDV products are installed for you when you perform the TDV Server install. To activate them, register a valid license key for the products that you have purchased.

Licensing Your Additional TDV Products

Before you create or join a cluster, you must license Active Cluster on every computer that will become a member of a cluster. You should receive an Active Cluster license key through email from your TDV representative. This license key is required

Consider the following requirements:

- You must license every TDV computer that will be a member of a cluster.

- You cannot create a cluster with a mixture of trial license nodes and full license nodes; all members of the cluster must have the same license type.
- All cluster members must use the same level of encryption.

To license TDV products

1. See the *TDV Administration Guide*.

Installing the TDV Client Drivers that are Distributed with TDV

This client distribution (driver zip) file includes the following components:

- ODBC
- ADO.NET
- JDBC

This zip file can be unpacked on each machine that has client application that needs access to the TDV Server.

To install the drivers distributed with TDV

1. Read any README files included with or associated with the download file.
2. Locate and extract the drivers zip file.
3. When installing the ODBC Win 64-bit driver on Windows 10, make sure to select Run as Administrator. Select the client EXE file, right click and select Run as Administrator. When prompted, select Yes and allow the installation to run to completion.
4. Follow the instructions in the TDV Administration Guide for details on how to complete configuration of each driver.
5. When the installation is complete, click Done to exit the installation program.

Importing Resources Defined in an Earlier Release

If you used a previous release of the adapter and defined resources, you can use them with this release. Follow the instructions for exporting and importing the resources in the *TDV User Guide*.

Manage Active Cluster Security

Users who create and manage an Active Cluster must have administrative privileges. SSL is used for inter-node communications and each server in an Active Cluster must have a valid digital certificate for authentication.

All cluster members must use the same level of encryption.

- Updating the Digital Certificate to Secure Cluster Communication, page 87
- Set Access Privileges, page 87

Updating the Digital Certificate to Secure Cluster Communication

Every TDV Server ships with a trial digital certificate so SSL works right out of the box. However, the security is poor. To secure cluster communication, you must update the digital certificate on each TDV Server node in the cluster.

Updating the digital certificate entails getting a signed digital certificate from a Certificate Authority (CA) and installing it in the keystore on each TDV Server. CAs are independent vendors (such as VeriSign) that have instructions on their websites for how to generate public key/private key pairs that accompany certificate requests. The CA then returns the digital certificate back to you. After you have this information, you need to install the digital certificate on the TDV Server.

To install a digital certificate on TDV Server

1. Open Studio, and select Administration > Launch Manager (Web) from the menu to open the Manager Web interface.
2. Click the CONFIGURATION tab and select SSL.

   Manager displays the SSL Management page.
3. Enter new values as appropriate for your digital certificate, and click APPLY.

Set Access Privileges

You must have administrative privileges for Active Cluster management. Refer to the *Active Cluster Guide* for the specific rights needed for various cluster operations. Refer to the *Administration Guide* for more information about setting TDV access rights.

Uninstalling TDV

This topic describes the process of uninstalling TIBCO® Data Virtualization (TDV) and related products for Windows and UNIX. The uninstall process is similar, regardless of whether you performed a silent or interactive installation.

- Uninstalling TDV on Windows, page 89
- Uninstalling TDV on UNIX, page 89

Uninstalling TDV on Windows

When you uninstall TDV, everything stored in the metadata repository is deleted along with the TDV software.

To uninstall TDV on Windows

1. Stop the Server and Repository if they are running.
2. Start the uninstallation process:

   ... > Uninstall TDV

   For a silent uninstall, TDV is uninstalled without further interaction. For an interactive uninstall, go to step 3.
3. Click OK to confirm the uninstall.
4. Click Done when the uninstallation process is completed.

Uninstalling TDV on UNIX

The following tasks are described here:

- Preparing for Uninstalling on UNIX, page 89
- Uninstalling TDV On UNIX, page 90

Preparing for Uninstalling on UNIX

Before you uninstall TDV, remove the TDV service files from the installation machine, because the uninstaller does not remove these files automatically.

To remove the TDV service files cis.repository and cis.server

1. Log into the installation machine as root.
2. Change the working directory to <TDV_install_dir>/bin.
3. Run the following command:

```
cis_remove_services.sh
```

Uninstalling TDV On UNIX

During the uninstallation process, all the components from the previous installation are removed. You cannot uninstall the components individually.

Note: On an HP machine, the uninstaller does NOT delete the <TDV_install_dir>, because the Java process under <TDV_install_dir>/jre has the directory locked.

To uninstall TDV on UNIX

1. Log into the installation machine as the user that installed the software.
2. Run the following command:

```
<TDV_install_dir>/uninstall
```

   For a silent uninstall, run

```
./uninstall --mode "unattended"
```

   For an interactive uninstall, go to step 3.

3. Press the Enter key.

   You will see a warning about loss of data.

4. Press the Enter key to complete the uninstallation process and leave the uninstaller.