Trafodion Install Guide

Version 1.3.0, January 2016

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License Statement

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1.3.0	January, 2016

Chapter 1. About This Document

This guide describes how to install Trafodion for end-user environments. This install allows you to store and query data using Trafodion, either via Trafodion clients (see Trafodion Client Installation Guide or via application code you write.

If you want to install a Trafodion developer-build environment, then please refer to the Trafodion Contributors' Guide.

1.1. Intended Audience

This guide is intended for:

- **Single-Node Install**: Typically used when you want to evalulate Trafodion.
- **Cluster (Multi-Node) Install**: Typically used when you deploy Trafodion for application usage.

Trafodion can be installed on a single-node or multi-node enviroment. Unless specifically noted, the term **cluster** is used to mean both single- and multi-node environments.

The installation instructions applies to a diverse set of platforms:

- **Virtual Machines**: Often used for evaluations and Trafodion development.
- **Cloud**: Used for Product Environments as well as for Developer Environments.
- **Bare Metal**: Used for Product Environments as well as for Developer Environments.

The term **node** is used to represent a computing platform on which operating system, Hadoop, and Trafodion software is running. Unless specifically qualified (bare-metal node, virtual-machin node, or cloud-node), **node** represents a computing platform in your cluster regardless of platform type.

1.2. New and Changed Information

This is a new guide.

1.3. Notation Conventions

This list summarizes the notation conventions for syntax presentation in this manual.

Notation	Usage	Example	Notes
UPPERCASE LETTERS	Uppercase letters indicate keywords and reserved words. Type these items exactly as shown. Items not enclosed in brackets are required.	SELECT	
Italic Letters	Italic letters, regardless of font, indicate variable items that you supply. Items not enclosed in brackets are required.	*file-name*	
`Computer Type`	Computer type letters within text indicate case-sensitive keywords and reserved words. Type these items exactly as shown. Items not enclosed in brackets are required.	`myfile.sh`	

Bold Text	Bold text in an example indicates user input typed at the terminal.	`ENTER RUN CODE:`
		?**123**
		`CODE RECEIVED: 123.00`
			The user must press the Return key after typing the input.

[ ] Brackets	Brackets enclose optional syntax items.	DATETIME [*start-field* TO] *end-field*	A group of items enclosed in brackets is a list from which you can choose one item or none. The items in the list can be arranged either vertically, with aligned brackets on each side of the list, or horizontally, enclosed in a pair of brackets and separated by vertical lines. For example: `DROP SCHEMA schema [CASCADE]` `DROP SCHEMA schema [ CASCADE | RESTRICT ]`

Notation	Usage	Example	Notes
{ } Braces	Braces enclose required syntax items.	`FROM { grantee[, grantee]…}`	A group of items enclosed in braces is a list from which you are required to choose one item. The items in the list can be arranged either vertically, with aligned braces on each side of the list, or horizontally, enclosed in a pair of braces and separated by vertical lines. For example: `INTERVAL { start-field TO end-field } { single-field } INTERVAL { start-field TO end-field | single-field }` —
| Vertical Line	A vertical line separates alternatives in a horizontal list that is enclosed in brackets or braces.	`{expression | NULL}`	
… Ellipsis	An ellipsis immediately following a pair of brackets or braces indicates that you can repeat the enclosed sequence of syntax items any number of times.	`ATTRIBUTE[S] attribute [, attribute]… {, sql-expression}…`	An ellipsis immediately following a single syntax item indicates that you can repeat that syntax item any number of times. For example: `expression-n…`
Punctuation	Parentheses, commas, semicolons, and other symbols not previously described must be typed as shown.	DAY (*datetime-expression*) ` `@script-file`	Quotation marks around a symbol such as a bracket or brace indicate the symbol is a required character that you must type as shown. For example: `"{" module-name [, module-name]… "}"`
Item Spacing	Spaces shown between items are required unless one of the items is a punctuation symbol such as a parenthesis or a comma.	`DAY (datetime-expression) DAY(datetime-expression)`	If there is no space between two items, spaces are not permitted. In this example, no spaces are permitted between the period and any other items: `myfile.sh`

Notation	Usage	Example	Notes
Line Spacing	If the syntax of a command is too long to fit on a single line, each continuation line is indented three spaces and is separated from the preceding line by a blank line. This spacing distinguishes items in a continuation line from items in a vertical list of selections.	`match-value [NOT] LIKE pattern` [ESCAPE *esc-char-expression*]	

1.4. Publishing History

Product Version	Publication Date
Trafodion Release 1.3.0	To be announced.

1.5. Comments Encouraged

The Trafodion community encourages your comments concerning this document. We are committed to providing documentation that meets your needs. Send any errors found, suggestions for improvement, or compliments to:

issues@trafodion.incubator.apache.org

Include the document title and any comment, error found, or suggestion for improvement you have concerning this document.

Chapter 2. Requirements

The current release of Trafodion has been tested with:

- 64-bit Red Hat Enterprise Linux (RHEL) 6.5, 6.6, and 6.7
- SUSE SLES 11.3
- Cloudera CDH 5.2
- Cloudera CDH 5.3
- Hortonworks HDP 2.2

Other OS releases may work, too. The Trafodion project is currently working on better support for non-distribution version of Hadoop.

2.1. General Hardware and OS Requirements and Recommendations

Trafodion assumes an environment based on the requirements of the supported Hadoop distributions. Please verify these assumptions on each server you will install Trafodion on:

- `bash` is available for shell-script execution.
- `sshd` (the `ssh` daemon) is running on each node in the cluster.
- `ntpd` (the `ntp` daemon) is running and synchronizign time on each node in the cluster.
- `/etc/hosts` is set up for fully-qualified node names (FQDN).
- `/etc/resolv.conf` is configured to use a name server tat can resolve commands such as `host -T <FQDN>`. Please attempt to use such a command to validate host-name resolution.
- The Linux Kernel Firewall (`iptables`) has either been disabled (to check: `service iptables status` (requires sudo access) or ports required by Trafodion have been opened

2.1.1. IP Ports

The following table lists the default ports used by the different Trafodion components plus the configuration file and configuration attribute associated with each port setting.

Default Port	Configuration File	Configuration Entry	Required	Range	Protocol	Comment
4200	rest-site.xml	trafodion.rest.port	Yes	1	REST	Trafodion REST Server.
4201	rest-site.xml	trafodion.rest.https.port	Yes	1	HTTPS	Trafodion REST Server (HTTPS).

Default Port	Configuration File	Configuration Entry	Required	Range	Protocol	Comment
23400	dcs-site.xml	dcs.master.port	Yes	*n*	binary	Start of Trafodion DCS port range. (37800 for Trafodion 1.1)
24400	dcs-site.xml	dcs.master.info.port	Yes	1	HTTP	DCS master web GUI. (40010 for Trafodion 1.1)
24410	dcs-site.xml	dcs.server.info.port	Yes	*n*	HTTP	Start of range for DCS server web GUIs. (40020 for Trafodion 1.1)
50030	mapred-site.xml	mapred.job.tracker.http.address	No	1	HTTP	MapReduce Job Tracker web GUI.
50070	hdfs-site.xml	dfs.http.address	No	1	HTTP	HDFS Name Node web GUI.
50075	hdfs-site.xml	dfs.datanode.http.address	No	1	HTTP	HDFS Data Node web GUI.
50090	hdfs-site.xml	dfs.secondary.http.address	No	1	HTTP	HDFS Secondary Name Node web GUI.
60010	hbase-site.xml	hbase.master.info.port	No	1	HTTP	HBase Master web GUI.
60030	hbase-site.xml	hbase.regionserver.info.port	No	1	HTTP	HBase Region Server web GUI.

There are two port ranges used by Trafodion.

- 23400 is a range, to allow multiple mxosrvr processes on each node. Allow a range of a few ports, enough to cover all the servers per node that are listed in the "servers" file in the DCS configuration directory.
- 24410 is a range as well, enough to cover the DCS servers per node, usually 1 or 2.

On top of the ports identified above, you also need the ports required by your Hadoop distribution. For example:

- *Cloudera Ports*
- *Hortonworks Ports*

Although not all the ports will be used on every node of the cluster, you need to open most of them for all the nodes in the cluster that have Trafodion, HBase, or HDFS servers on them.

2.2. Prerequisite Software

2.2.1. Hadoop Services

The following Hadoop services must be running on the cluster where you install Trafodion:

2.2.2. Software Packages

You need to install the following software and dependencies before installing Trafodion.