

IT Automation Online Install

※ In this document, "Exastro IT Automation" is described as "ITA".

Exastro IT Automation Version 1.11 Exastro developer

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1. Introduction



1.1 About This Guide

About this guide

• This guide describes how to set up IT Automation in an all-in-one configuration by using its installer and external repositories.



2. System Configuration



2.1 Associated execution function 1/2

About associated execution function

• IT Automation supports the tools for the following functions:

Driver	Tool name (orchestrator)	Function name	Description	Installable with the IT Automation configuration tool	To be installed through this guide
Create_param	-	Create menu	This function allows you to create menus.	-	0
Hostgroup	-	Host grouping	This function allows you to group hosts into logical units (functions and roles) and to manage the parameters to be applied.	-	0
Ansible driver	Ansible	System construction	A Red Hat-provided OSS tool for setting up a platform. For a networked device, this tool allows you to install software, configure various settings, transfer files, and apply patches, based on an IaC called Playbook.	0	0
	Ansible Tower	System construction	A management platform to enhance Ansible with such functions as access control, job scheduling, and task visualization.	×	
Cobbler driver	Cobbler	OS installation	An OSS tool for automating installation. For a networked device, this tool allows you to install an OS, based on a prepared template.	×	×
Terraform driver	Terraform	System construction	Terraform is an orchestration tool provided by HashiCorp, Inc. that improves the efficiency of infrastructure process. The construction is executed after the execution plan is generated based on the infrastructure configuration coded in HCL(HashiCorp Configuration Language). Furthermore, with Policy as Code, it's also possible manage access policy in code.	×	0
Terraform CLI driver	Terraform CLI	System construction	Terraform is an orchestration tool provided by HashiCorp, Inc. that improves the efficiency of infrastructure process. The construction is executed after the execution plan is generated based on the infrastructure configuration coded in HCL(HashiCorp Configuration Language).	×	0

2.1 Associated execution function 2/2

D	Driver	Tool name (orchestrator)	Function name		Installable with the IT Automation configuration tool	To be installed through this guide
CI/CD f	for IaC	git	CI/CD for IaC	 Creates a clone of the Git repository in ITA. Uses the clone to detect any updates to the Git repository files. Configures the link between the Git repository files and the files managed by the link software (Ansible-Driver or Terraform-Driver). 	0	×



2.2 System Requirements

ITA system requirements:

 Please refer to "Exastro-ITA_System configuration/environment_construction guide_basics" for details regarding ITA's System requirements.



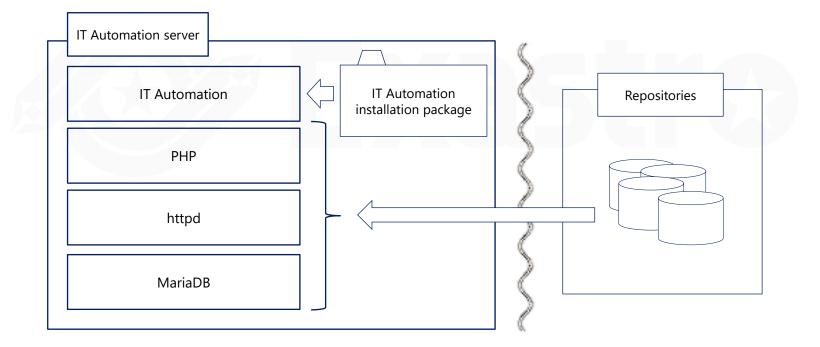
3. IT Automation Construction Procedure



3.1 Online Installation

Installation procedure

• When the IT Automation server has an internet-connection, install necessary libraries via the Internet and execute the IT Automation installer to perform configuration.



3.2 Preparation (1/3)

Enabling repositories (only for online installation)

• Enable the following repositories depending on your OS.

OS	Repository			
	https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm			
	https://downloads.mariadb.com/MariaDB/mariadb_repo_setup			
RHEL7	http://rpms.remirepo.net/enterprise/remi-release-7.rpm			
	rhel-7-server-optional-rpms			
	https://rpm.releases.hashicorp.com/RHEL/hashicorp.repo			
	https://dl.fedoraproject.org/pub/epel/epel-release-latest-8.noarch.rpm			
RHEL8	codeready-builder-for-rhel-8-xxxxxx-rpms			
	https://rpm.releases.hashicorp.com/RHEL/hashicorp.repo			
	epel-release			
CentOS7	https://downloads.mariadb.com/MariaDB/mariadb_repo_setup			
Centos/	http://rpms.remirepo.net/enterprise/remi-release-7.rpm			
	https://rpm.releases.hashicorp.com/RHEL/hashicorp.repo			
	epel-release			
CentOS Stream8	PowerTools			
	https://rpm.releases.hashicorp.com/RHEL/hashicorp.repo			

xxxxxx : Architecture

3.2 Preparation (2/3)

 The repositories below for RHEL environments provided by cloud services are enabled

OS	Repository		
	https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm		
	https://downloads.mariadb.com/MariaDB/mariadb_repo_setup		
RHEL7	http://rpms.remirepo.net/enterprise/remi-release-7.rpm		
	rhui-rhel-7-server-rhui-optional-rpms		
	https://rpm.releases.hashicorp.com/RHEL/hashicorp.repo		
	https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm		
	https://downloads.mariadb.com/MariaDB/mariadb_repo_setup		
RHEL7 (AWS/RHUI2)	http://rpms.remirepo.net/enterprise/remi-release-7.rpm		
()	rhui-REGION-rhel-server-optional		
	https://rpm.releases.hashicorp.com/RHEL/hashicorp.repo		
	https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm		
	https://downloads.mariadb.com/MariaDB/mariadb_repo_setup		
RHEL7 (AWS/RHUI3)	http://rpms.remirepo.net/enterprise/remi-release-7.rpm		
()	rhel-7-server-rhui-optional-rpms		
	https://rpm.releases.hashicorp.com/RHEL/hashicorp.repo		
	https://dl.fedoraproject.org/pub/epel/epel-release-latest-8.noarch.rpm		
RHEL8	codeready-builder-for-rhel-8-rhui-rpms		
	https://rpm.releases.hashicorp.com/RHEL/hashicorp.repo		
\times DHEL7(AWC/DHLIT2) + DHEL7 on AWC (uses DHLIT2)			

%RHEL7(AWS/RHUI2) : RHEL7 on AWS (uses RHUI2) RHEL7(AWS/RHUI3) : RHEL7 on AWS (uses RHUI3)

3.2 Preparation (3/3)

IT Automation construction tools

• The following table lists tools for configuring IT Automation:

Description	File	Path location
ITA installer	ita_installer.sh	/(Extract path)/ita_install_package/install_scripts/
Answer file	ita_answers.txt	/(Extract path)/ita_install_package/install_scripts/

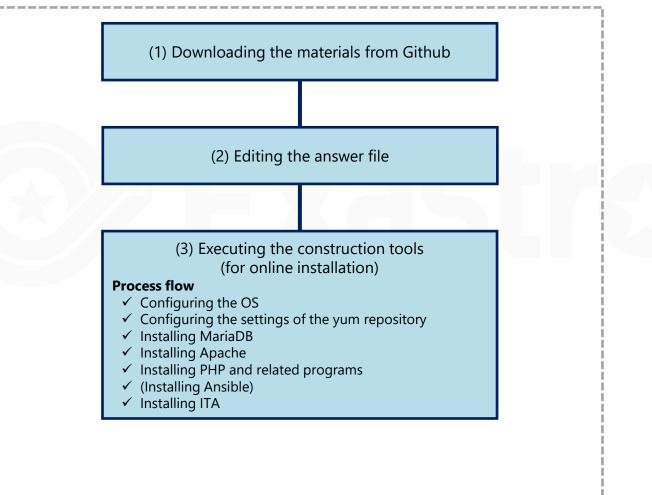
RHEL Subscription

 If ITA is going to be installed on non-cloud environment RHEL7/RHEL8 OS, please make sure to be subscribed to the environment ITA is going to be installed on beforehand.

3.3 IT Automation Construction flow

Construction flow (online)

• The configuration flow is as follows:



3.4 Construction (1/12)

*Environment building users must be root users.Downloading the materials from Github

• Download the materials with the following command:

curl -OL https://github.com/exastro-suite/it-automation/releases/download/vx.x.x/exastro-it-automation-x.x.x.tar.gz

※ Since v1.10.1, the command is as follows.
curl -OL https://github.com/exastro-suite/it-automation/releases/download/vx.x.x_tag/exastro-it-automation-x.x.x.tar.gz

*The curl command needs to be installed in advance. *Change the (x.x.x) with the version you want to install.

Deploying the materials.

• Unzip the .tar.gz file.

tar zxf exastro-it-automation-x.x.x.tar.gz

Changing the directory

• Move to the directory where the setting file and the shell are stored for configuration.

cd it-automation-x.x.x/ita_install_package/install_scripts

% Since v1.10.1, the command is as follows.

cd it-automation-x.x.x_tag/ita_install_package/install_scripts

3.4 Construction (2/12)

Edit answer file (ita_answers.txt)

- Please edit the answer file to configure the ITA Update.
- If the user wishes to install any library when updating to a new version, input "Versionup_All" to the "Install_mode" value. If not, input "Versionup_ITA".

Answer file (ita_answers.txt) item list (1/2)

Item	Required	Initial value	Description
install_mode	0	Install_Online	Install mode settings • Install_Online : Install online • Install_Offline : Install offline • Gather_Library : Gather library • Install_ITA : Install ITA • Versionup_All : Update ITA (With library install) • Versionup_ITA : Update ITA (Without library install) • Uninstall : Uninstall ITA *See reference for details
ita_directory	0	-	Installation directory Please specify an absolute path for the ITA Installation directory. Make sure the directory can be referenced by all users. If no installation directory exists, one will be created. *Please make sure that other users have execution rights to ITA install directory and all its parent directories.
ita_language	-	en_US	ITA display language (Japanese (ja_JP) / English (en_US))
Linux_os	-	-	ITA Server OS("CentOS7","CentOS8","RHEL7","RHEL8") Specify CentOS8 if you are using CentOS Stream8. CentOS8.x has reached EOL and is not supported
distro_mariadb	0	yes	Select the repository MariaDB will be installed from. yes : Install from repository delivered by the Linux distribution. no : Install from the MariaDB official depository (<u>https://mariadb.com/</u>) %If the linux_os is CentOS7 or RHEL7, MariaDB will be installed using the MariaDB official repository(<u>https://mariadb.com/</u>) regardless of the user settings.

3.4 Construction (3/12)

• The items from "ITA base" to "Terraform driver" are install setting items for ITA, ITA functions and any connected drivers.

• Answer file (ita_answers.txt) item list (2/2)

Item	Required	Initial value	Description
db_root_password	0	-	Root password for MariaDB
Db_name	0	-	Database name for MariaDB
Db_username	0	-	Database username for MariaDB
Db_password	0	-	Database password for MariaDB
ita_base	0	yes	Installs ITA ("yes" only)
create_param	0	yes	Decides whether to install the menu creation function or not
Hostgroup	0	yes	Decides whether to install the host group function or not
ansible_driver	0	yes	Decides whether to install Ansible driver or not
cobbler_driver	0	no	Decides whether to install Cobbler driver or not
terraform_driver	0	no	Decides whether to install Terraform driver or not
cicd_for_iac	0	no	Decides whether to install the CI/CD for IaC function or not.
terraformcli_driver	0	no	Decides whether to install Terraform CLI driver or not
ita_domain	0	exastro-it-automation.local	ITA domain name specification (used when the ITA installer creates a self-certificate.
certificate_path	Optional	-	Specify the path of the file used for the user specified SSL server certificate (Enter only when using a user specified SSL certificate. Specify an absolute path)
private_key_path	Optional	-	Specify the path of the file used for user-specified SSL private keys. (Enter only when using a user-specified SSL private key. Specify an absolute path)

3.4 Construction (4/12)

User specified server certificates and private keys.

- It is possible to use files prepared by users as server certificates and private keys. If you want to use them, please prepare both a server certificate and a private key and input their file paths to "Certificate_path" and "private_key_path" respectively in the answer file. It is not possible to use only either server certificates or private keys.
- If the server certificate includes an intermediate certificate, Create a file that connects the two and set the path of the file to "certificate_path"

Example of Creation command #cat(Server certificate file)(Intermediate certificate file)(Linked server certificate file).

 If nothing is input for "certificate_path" and "private_key_path", The ITA installer will use the value of "ita_domain" in the answer file to create and install the self-certificate.

(%The "ita_domain" is used as the common name when creating the selfcertificate. It is also the file name for the self-certificate and the private key.)

3.4 Construction (5/12)

- When installing, the server certificate and private key are placed in the (/etc/pki/tls/certs). However, since they will be removed from that directory when uninstalled, please manage the original server certificate and private key files with care when using user-specified server certificates and private keys.
- When uninstalling, if both "certificate_path" and "private_key_path" in the answer file (ita_answers.txt) are specified, the specified files will be deleted. If no file is specified, the name specified in "ita_domain" will be used to delete the used file.

3.4 Construction (6/12)

Sample of the answer file (ita_answers.txt)

• The following shows an example of the answer file (ita_answers.txt):

Answer file (ita_answers.txt) sample (1/2)

Select install mode. # ("Install_Online","Install_Offline","Gather_Library","Install_ITA", # "Versionup_All", "Versionup_ITA", "Uninstall") # e.g) install mode:Install Online *This installer operates according to the inputted values below. Install Online: ITA will be installed after the necessary libraries has been installed via internet. Install Offline: ITA will start installing using the package created in Gather Library. Gather Library: Gathers the necessary libraries via internet and creates the package necessary to execute Install Offline. (Execute this before executing Install Offline) Install ITA: Installs ITA without installing any libraries. Versionup All: Installs ITA after installing the necessary libraries for the desired ITA version via internet. Versionup ITA: Updates ITA without installing any libraries. Uninstall: ITA Uninstalls ITA. (Libraries will not be uninstalled) install mode:Install Online # Enter install directory. # e.g) ita_directory:/exastro ita directory:/exastro # Select language. ("en_US" or "ja_JP") # e.g) ita_language:en_US ita language:ia JP # Select Operation System. ("CentOS7", "CentOS8", "RHEL7", "RHEL8") # e.a) linux os:RHEL8 # * If registering a subscription is needed in order to acquire # the RHEL7 and RHEL8 libraries, please do so in advance. linux os:CentOS7 # Install MariaDB provided by distro or not. # ves : Install MariaDB provided by distro # no : Install Official MariaDB (https://mariadb.org/) # Note: If "linux_os" is "CentOS7" or "RHEL7", ignore this flag and install distro's

one. distro mariadb:ves

POINT

Items in the answer file (ita_answer.txt) does not support full-width characters.

3.4 Construction (7/12)

The following shows an example of the answer file (ita_answers.txt): Answer file (ita_answers.txt) sample (2/2)

Enter the MariaDB root user's password # e.g) db_root_password:sample_root_password POINT db_root_password:sample_root_password **Define the MariaDB** # Decide the database name, username, and password for ITA. # e.g) db_name:sample_db_name Database name, db_name:sample_db_name Username and # e.g) db_username:sample_db_username db_username:sample_db_username Password in the # e.g) db_password:sample_db_password Answer file. db_password:sample_db_password # Select the target you need to install. # ves : need *The password can only # no : no need use half-with English ita_base:yes letters/number and material:no createparam:yes symbols hostgroup:yes ansible_driver:yes cobbler_driver:no terraform_driver:no cicd_for_iac:no terraformcli driver:ves # Enter the ita domain name. # e.g) ita_domain:exastro-it-automation.local ita_domain:exastro-it-automation.local POINT ***** Enter only if you # Enter when using user-specified certificates and private keys. are using both user-# If no file path is entered for both "certificate_path" and "private_key_path", # the ITA installer creates and installs a self-certificate and private key specified ssl # using the values entered in "ita_domain". certificate and # Enter the file path where the certificate to be install. private key. # e.g) certificate_path:/temp/etc_pki_tls_certs/exastro-it-automation.crt certificate_path: It is not possible to use only one of them. # Enter the file path where the private key to be install. # e.g) private_key_path:/temp/etc_pki_tls_certs/exastro-it-automation.key private_key_path:

3.4 Construction (8/12)

Executing the configuration tool (for online installation)

• Execute the configuration tool with the following command:

sh ita_builder_installer.sh

Check process

- The content of process executed by construction tool is output to ita_builder.log and ita_installer.log
- Log storage path

/(Installation file extract path)/ita_install_package/install_scripts/log/

Exit status

• The ITA installer returns one of the exit statuses listed below depending on the shell process exit status.

Normal exit : 0

Abnormal exit : 1

3.4 Construction (9/12)

List of libraries installed during construction.

• The following table lists the libraries installed through the execution of the configuration tool:

Installation driver	Library type	Library name
ita_base	Installation tool	<pre>yum-utils(*1), createrepo(*1)</pre>
ita_base	IT Automation common	zip, telnet, mailx, unzip, sudo, crontabs
ita_base	MariaDB	MariaDB, MariaDB-server, expect
ita_base	httpd	httpd, mod_ssl
ita_base	php(*2)	php, php-bcmath, php-cli, php-ldap, php-mbstring, php-mcrypt, php-mysqlnd, php-pear, php-pecl-zip, php-process, php-snmp, php-xml, php-json, php- gd, Python3, php-devel, libyaml, libyaml-devel, make
ita_base	php plug-in	php-yaml, HTML_AJAX-beta, PhpSpreadsheet(v1.18.0)
ansible_driver	Ansible	ansible, sshpass, pexpect, pywinrm, boto3, nmap-ncat, paramiko, boto
_	git	git
cicd_for_iac	git	git
terraform_driver terraformcli_driver	Hcl analasys	python-hcl2

(*1) only RHEL7, CentOS7

(*2)If ITA is running on v.1.9.1 or earlier, PHP7.2 is used. If running on v1.10.0 or later, PHP7.4 is used

Time zones

Note that the PHP time zone is set to "Asia/Tokyo" by default.

As system errors might occur when the PHP and Server time zones are not unified, we recommend setting the server time zone to "Asia/Tokyo" or modifying the time zone in the php.ini file (/etc/php.ini)

Change the following line: date.timezone = "Asia/Tokyo"

and run the following command to restart Apache.

Systemctl restart httpd

Specification change of MariaDB 11.0.2

The "mysql*" command was deprecated in mariaDB 11.0.2 released on June 23, 2023, and the specification was changed so that the following warning is output when the "mysql*" command is executed.

mysql: Deprecated program name. It will be removed in a future release, use '/usr/bin/mariadb' instead

Installers up to ITA1.11.0 use the "mysql*" command, so WARNING may be output during installation as shown on the next page.Check the contents of ./log/mysql_ita_model-a.log etc. described in WARNING, and if there is only the above warning, it is installed normally, so there is no problem.

Since ITA1.11.1 has been fixed, WARNING will not be output.

3.4 Construction (12/12)

• Example of WARNING output during installation

[YYYY-MM-DD hh:mm:ss] INFO : 01/38 Set Language. [YYYY-MM-DD hh:mm:ss] INFO: 02/38 Create database and user for ITA. [YYYY-MM-DD hh:mm:ss] INFO: 03/38 Create tables for ita base. [YYYY-MM-DD hh:mm:ss] WARNING : The size of ./log/mysgl ita model-a.log is incorrect. [YYYY-MM-DD hh:mm:ss] INFO: 04/38 Write exastro-it-automation in /etc/hosts. [YYYY-MM-DD hh:mm:ss] INFO: 05/38 Place the certificate and private-key for https access. [YYYY-MM-DD hh:mm:ss] INFO : 06/38 Place PHP configuration file. [YYYY-MM-DD hh:mm:ss] INFO : 07/38 Place Apache(httpd) configuration file. [YYYY-MM-DD hh:mm:ss] INFO : 08/38 Create directory to place ITA. [YYYY-MM-DD hh:mm:ss] INFO : 09/38 Check the execute permission of the parent directory of ITA. [YYYY-MM-DD hh:mm:ss] INFO : 10/38 Create directory to store session files. [YYYY-MM-DD hh:mm:ss] INFO : 11/38 Create data relay storage for symphony. [YYYY-MM-DD hh:mm:ss] INFO : 12/38 Create data relay storage for conductor. [YYYY-MM-DD hh:mm:ss] INFO : 13/38 Place ITA full functions. [YYYY-MM-DD hh:mm:ss] INFO : 14/38 Place release file for ita base. [YYYY-MM-DD hh:mm:ss] INFO : 15/38 Place config files for ita base. [YYYY-MM-DD hh:mm:ss] INFO : 16/38 Create symbolic link of ITA environment file. [YYYY-MM-DD hh:mm:ss] INFO : 17/38 Create data relay storage for Ansible driver. [YYYY-MM-DD hh:mm:ss] INFO : 18/38 Create tables for Ansible driver. [YYYY-MM-DD hh:mm:ss] WARNING : The size of ./log/mysql_ita_model-c.log is incorrect. [YYYY-MM-DD hh:mm:ss] INFO : 19/38 Create tables for Terraform driver. [YYYY-MM-DD hh:mm:ss] WARNING : The size of ./log/mysgl ita model-o.log is incorrect. [YYYY-MM-DD hh:mm:ss] INFO : 20/38 Create tables for Createparam. [YYYY-MM-DD hh:mm:ss] WARNING : The size of ./log/mysql_ita_model-m.log is incorrect. [YYYY-MM-DD hh:mm:ss] INFO : 21/38 Create tables for Createparam2. [YYYY-MM-DD hh:mm:ss] WARNING : The size of ./log/mysql_ita_model-m2.log is incorrect. [YYYY-MM-DD hh:mm:ss] INFO : 22/38 Create tables for Createparam3. [YYYY-MM-DD hh:mm:ss] WARNING : The size of ./log/mysgl ita model-m3.log is incorrect. [YYYY-MM-DD hh:mm:ss] INFO : 23/38 Create tables for Hostgroup. [YYYY-MM-DD hh:mm:ss] WARNING : The size of ./log/mysgl ita model-n.log is incorrect. [YYYY-MM-DD hh:mm:ss] INFO : 24/38 Create awx user and ssh key for Ansible driver.

4. IT Automation Operation Check



4.1 Operation Check (1/4)

Checking the main menu

• After completing the installation, take the following steps with a Windows PC client to access the main menu of IT Automation and to check that the IT Automation and all the drivers are shown properly.

Accessing the login screen

- Access the login screen with the following URL:
- URL: http://(server IP address)

※ After installation, access from both HTTP and HTTPS are possible. Since HTTP is insecure, accessing from HTTPS is recommended. For the method to access from HTTPS, please refer to operation check (4/4).

Logging in

- When the IT Automation login screen is displayed, enter the given login ID and initial password and then click the Login button.
 - Login ID : administrator
 - Initial password : password
- If you have logged in for the first time after the installation, you will be prompted to change the password.
- Please change the initial password.

4.1 Operation Check (2/4)

IT Automation login screen

• Having been successfully installed, IT Automation displays the following login screen:



4.1 Operation check (3/4)

Checking the content by displaying the menus

• After logging in, check that the following menus are shown properly:

Exastro IT Automation	User name (system Administrat Lopin to (Jadministrat Change password Logout		
E Menu DASHBOARD	Edd.		
Main menu Menu group	Movement Work status Work result		
Management Conside Basic Conside Export/Import Symphony Conductor File control of	Novement Noveme		
Fie control check-	Novement Sum Status CON Sum Result CON Sum Sum Result CON Sum		
	Terrafore		
Function	Menu		
	Management Console		
	Basic Console		
IT Automation	Export/Import		
	Symphony		
	Conductor Create manu		
Create menu	Create menu		
Hostaroup	Compare		
Hostgroup	HostGroup management Ansible Common		
	Ansible-Legacy Ansible-Pioneer		
Ansible driver			
Ansible driver	Ansible-Ploneer Ansible-LegacyRole		

4.1 Operation check (4/4)

Prepare for access with HTTPS

- Register the host name set in the "ita_domain" field in the Answer file to the environment's DNS server or to the host of your device.
- Import certificate to the user device(Windows). If you are not using user-specified server certificate, the server certificate will be stored in the following path in the ITA installation package.

Directory	File name
/etc/pki/tls/certs	[Host set to the Answer file's "ita_domain"].crt
*If you are using a user-specifie	d server certificate, use the certificate file set in the Answer

file's "certificate_path".

- Inport the certificate to the web browser.
- Accessing the login screen from HTTPS
 - Access the login screen with the following URL:
 - URL: https://(Host name entered in the Answer file's "ita_domain" field)
 - * It is possible to access with the IP address of server instead of host name.

After connecting, follow the same procedure as from HTTP.

5. Reference



5.1 Reference (1/2)

HTTP and HTTPS access restrictions

Please do the following to restrict HTTP and/or HTTPS access.

 Start editing the [/etc/httpd/conf.d/vhosts_exastro-it-automation.conf] file. To restrict HTTP access, comment out (#) [<VirtualHost *:80 >] to [</VirtualHost>] To restrict HTTPS access, comment out (#) [<VirtualHost *:443 >] to [</VirtualHost>].

 Restart Apache with the following command systemctl restart httpd

Install modes

- From ITA Version 1.6.0 and onwards, the shell executed when the installer is booted is only integrated to the ita_installer.sh. The installer behavior is branched depending on the answer file's install mode.
 - Install_Online : Installs ITA after installing the neccessary libraries online.
 - Install_Offline : Installs ITA and libraries using the package created by gather_library offline.
 - Gather_Library : Uses the internet to gather ITA Libraries and creates a package that can be used for Install_offline.(Use this before install_offline)
 - Install_ITA : Installs ITA without installing any libraries.
 - Versionup_All : Updates ITA after installing the necessary libraries online.
 - Versionup_ITA : Updates ITA without installing any libraries.
 - Uninstall : Uninstalls ITA. (Libraries will not be deleted)

