The necessary packages are as listed below
https://github.com/exastro-suite/it-automation-docs/blob/master/asset/Documents/ITA-online-install_en.pdf
3.14 Construction（9/10）Library overview (Other than what is included in ＜Mariadb、Ansible＞)

※ Please change the the version number (x.x.x) written under "Settings" or "Remarks" to match the version of ITA being installed.
　Please also change text such as "ITA Installation directory name" , Backyard Server host name" to fit your environment.

No.	Goal	Common	Menu create	Host group	Ansible	Cobbler	Terraform	CI/CD for IaC	Settings	Remarks
	Unpack ITA Installation files									
1	Unpack ITA Installation files	●							deploy the ITA file vx.x.x.tar.gz to the installation file directory. cd /(Install file unpack directory) ls -l vx.x.x.tar.gz	"The install files can be unpacked in any directory. For online, uesr the following command to gather them. wget https://github.com/exastro-suite/it-automation/releases/download/vx.x.x/exastro-it-automation-x.x.x.tar.gz ※Use the following command for v1.10.1 and later versions. curl -OL https://github.com/exastro-suite/it-automation/releases/download/vx.x.x_tag/exastro-it-automation-x.x.x.tar.gz"
2									Unpack the ITA Installation files tar -zxf vx.x.x.tar.gz	
3									Configure ITA Installation directory find it-automation-x.x.x -type f | xargs -I[] sed -i -e "s:%%%%%ITA_DIRECTORY%%%%:/(ITA Install directory):g" []	
	Install yum-utils									
4	【For CentOS7, RHEL7】 Install yum-utils	●							Install the following package yum-utils	For online, use the following command to install. yum install -y yum-utils
	Install apache									
5	Install apache	●							Install the following packages httpd mod_ssl	For online, use the following command to install. yum install -y httpd mod_ssl
6	ApacheConfigure Apache automatic startup settings.	●							systemctl enable httpd	
	Install PHP									
7	Install PHP	●							Install the following packages php php-bcmath php-cli php-ldap php-mbstring php-mysqlnd php-pear php-pecl-zip php-process php-snmp php-xml zip telnet mailx unzip php-json php-gd python3 php-devel libyaml libyaml-devel make sudo crontabs	For Online, use the following command to activate Repositories 【For CentOS7, RHEL7】 yum install -y http://rpms.remirepo.net/enterprise/remi-release-7.rpm yum-config-manager --enable remi-php72 【For CentOS8, RHEL8】 Repositories will not be added For Online, use the following command to install. yum install -y php php-bcmath php-cli php-ldap php-mbstring php-mysqlnd php-pear php-pecl-zip php-process php-snmp php-xml zip telnet mailx unzip php-json php-gd python3 php-devel libyaml libyaml-devel make sudo crontabs
8	Install PEAR Library	●							Install the following Pear packages HTML_AJAX-beta	For online, use the following command to install. pear install HTML_AJAX-beta
9	Configure HTML_AJAX-beta	●							ln -s /usr/share/pear-data/HTML_AJAX/js /usr/share/pear/HTML/js	
10	Install php-yaml	●							Install the following package php-yaml	For online, use the following command to install. pecl channel-update pecl.php.net echo "" | pecl install YAML
11	Install PhpSpreadsheet	●							Create the following directory. mkdir -p /usr/share/php/vendor	
12									Install the PhpSpreadsheet Package to the /usr/share/php/vendor Directory	For online, use the following command to install. curl -sS https://getcomposer.org/installer | php -- --install-dir=/usr/bin /usr/bin/composer.phar require "phpoffice/phpspreadsheet":"1.18.0" mv vendor /usr/share/php/
13	Install pip3 library							●	Install the following package. python-hcl2	If online, use the following command to install pip3 install python-hcl2
	Configure PHP									
14	【For CentOS7, RHEL7】 Configure php.ini	●							cp -p /(Install file unpack directory)/it-automation-x.x.x/ita_install_package/ext_files_for_CentOS7.x/etc/php.ini /etc/	
15	【For CentOS8, RHEL8】 Configure php.ini	●							cp -p /(Install file unpack directory)/it-automation-x.x.x/ita_install_package/ext_files_for_CentOS8.x/etc/php.ini /etc/	
16	【For CentOS8, RHEL8】 Configure www.conf	●							cp -p /(Install file unpack directory)/it-automation-x.x.x/ita_install_package/ext_files_for_CentOS8.x/etc_php-fpm.d/www.conf /etc/php-fpm.d/	

No.	Goal	Common	Menu create	Host group	Ansible	Cobbler	Terraform	CI/CD for IaC	Settings	Remarks
	Update sudo file									
17	Create sudo settings file	●							/etc/sudoers.d/(Free file name) In the directory above, create a file with the contents below. daemon ALL=(ALL) NOPASSWD:ALL apache ALL=(ALL) NOPASSWD:ALL	Create command example： cat << EOS > /etc/sudoers.d/it-automation daemon ALL=(ALL) NOPASSWD:ALL apache ALL=(ALL) NOPASSWD:ALL EOS
18	Change Sudo Settings file permission	●							Make sure the permission for the created sudo settings file is 440 chmod 440 /etc/sudoers.d/(Free file name)"	
19	Change sudoers file	●							vi /etc/sudoers Check the sudoers file and comment out if any of the following is written.(If already comment out, skip this step) Defaults requiretty	
	Install ITA									
20	Create installation directory	●							mkdir -p /(ITA Installation directory)	※Make sure that "other users" also have permission to run all the parent directories of the ITA Install directory.
21	Deploy ITA files	●							cp -rp /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ITA/ita-contents/ita-root /(ITA Install directory)/.	
22	Deploy ITA settings file	●							cp -rp /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ITA/ita-confs /(ITA Install directory)/ita-root/confs	
23	Create Session directory	●							mkdir -m 777 /(ITA Installation directory)/ita_sessions	
24	Create data_relay_storage directory	●							mkdir /(ITA Installation directory)/data_relay_storage	
25	Create Directory used in ITA	●							For paths written in the /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/install_scripts/list/create_dir_list.txt file, create directories one line at a time with /(ITA Install directory) at the beginning. mkdir -p /(ITA Install directory)(File path written in the document)	
26	Change permission(755)	●							For paths written in the /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/install_scripts/list/755_list.txt, Change the permissions one line at a time with /(ITA Install directory) at the beginning. chmod 755 /(ITA Install directory) (File path written in the document)	
27	Change permission(777)	●							For paths written in the /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/install_scripts/list/777_list.txt, Change the permissions one line at a time with /(ITA Install directory) at the beginning. chmod 777 /(ITA Install directory) (File path written in the document)	
28	Deploy ita_base release file	●							cp -p /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ITA/ita-releasefiles/ita_base /(ITA Install directory)/ita-root/libs/release/.	
29	Deploy createparam Release files		●						cp -p /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ITA/ita-releasefiles/ita_createparam /(ITA Install directory)/ita-root/libs/release/.	
30	Deploy hostgroup release files			●					cp -p /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ITA/ita-releasefiles/ita_hostgroup /(ITA Install directory)/ita-root/libs/release/.	
31	Deploy ansible_driver release files				●				cp -p /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ITA/ita-releasefiles/ita_ansible-driver /(ITA Install directory)/ita-root/libs/release/.	
32	Deploy cobbler_driver release files					●			cp -p /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ITA/ita-releasefiles/ita_cobbler-driver /(ITA Install directory)/ita-root/libs/release/.	
33	Deploy terraform_driver release files						●		cp -p /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ITA/ita-releasefiles/ita_terraform-driver /(ITA Install directory)/ita-root/libs/release/.	
34	Deply cicd_for_iac release files							●	cp -p /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ITA/ita-releasefiles/ita_cicd /(ITA Install directory)/ita-root/libs/release/.	
35	Configure MariaDB connection information	●							①Make sure that following character string is base64 encoded and rot13 encrypted. mysql:dbname=(ITA Database name);host=(DBMS Server IP Address.) ②Write the created character string into the file below. ※Delete any value already there. /(ITA Install directory)/ita-root/confs/commonconfs/db_connection_string.txt	Example： If the ITA Database name is "ITA_DB" and the DBMS Server IP Address is 1.1.1.1, The following command can be used to retrieve the base64-encoded, rot13-encrypted string.
36	Configure MariaDB user information	●							"①Make sure that the MariaDB Username is base64 encoded and rot13 encrypted. ②Write the created character string into the file below. ※Delete any value already there. /(ITA Install directory)/ita-root/confs/commonconfs/db_username.txt	Example： If the MariaDB Username is "ITA_USER, The following command can be used to retrieve the base64-encoded, rot13-encrypted string. echo -ne "ITA_USER"	base64	tr '[A-Za-z]' '[N-ZA-Mn-za-m]'
37	Configure MariaDB password information	●							①Make sure that the MariaDB Password is base64 encoded and rot13 encrypted. ②Write the created character string into the file below. ※Delete any value already there. /(ITA Install directory)/ita-root/confs/commonconfs/db_password.txt	Example： If the MariaDB password is "ITA_PASSWD, The following command can be used to retrieve the base64-encoded, rot13-encrypted string. echo -ne "ITA_PASSWD"	base64	tr '[A-Za-z]' '[N-ZA-Mn-za-m]'

No.	Goal	Common	Menu create	Host group	Ansible	Cobbler	Terraform	CI/CD for IaC	Settings	Remarks
	Configure common directory									
38	Configure common directory								Create directory to share the following external storage.	

Create directory to share the following external storage.

Web/AP server common directory	External storage common directory
/(ITA installation directory)/data_relay_storage	/(Free Directory)/data_relay_storage
/(ITA installation directory)/ita_sessions	/(Free Directory)/ita_sessions
/(ITA installation directory)/ita-root/temp	/(Free Directory)/ita-root/temp
/(ITA installation directory)/ita-root/uploadfiles	/(Free Directory)/ita-root/uploadfiles
/(ITA installation directory)/ita-root/webroot/uploadfiles	/(Free Directory)/ita-root/webroot/uploadfiles
/(ITA installation directory)/ita-root/webroot/menus/sheets	/(Free Directory)/ita-root/webroot/menus/sheets
/(ITA installation directory)/ita-root/webroot/menus/users	/(Free Directory)/ita-root/webroot/menus/users
/(ITA installation directory)/ita-root/webconfs/sheets	/(Free Directory)/ita-root/webconfs/sheets
/(ITA installation directory)/ita-root/webconfs/users	/(Free Directory)/ita-root/webconfs/users

(Row 38 is marked ● in the Common column for all the directory sub-rows.)

No.	Goal	Common	Menu create	Host group	Ansible	Cobbler	Terraform	CI/CD for IaC	Settings	Remarks
	Apache settings									
39	Configure /etc/hosts	●							vi /etc/hosts Add the following.(Make sure to only write for the server you are using.) 127.0.0.1 (Web・AP server host name) exastro-it-automation (Ansible server IP Address) (Ansible server host name) (AnsibleTower server IP Address) (AnsibleTower Server host name) (Cobbler server IP Address) (Cobbler Server host name)	
40	Create server certificate and secret key. ※This shows how to create a self certificate, but you can also use a certificate created by a public organization or use HTTP and not use certificates at all.	●							cd /tmp openssl genrsa 2048 > (Ansible Server host name).key openssl req -new -key (Ansible Server host name).key > (Ansible Server host name).csr ~~~~~Interactive~~~~~ Country Name (2 letter code) [XX]:(Can be blank) State or Province Name (full name) []:(Can be blank) Locality Name (eg, city) [Default City]:(Can be blank) Organization Name (eg, company) [Default Company Ltd]:(Can be blank) Organizational Unit Name (eg, section) []:(Can be blank) Common Name (eg, your name or your server's hostname) []:(Ansible Server Host name) Email Address []:(Can be blank) A challenge password []:(Can be blank) An optional company name []:(Can be blank) ~~~~~Interactive~~~~~ openssl x509 -days 3650 -req -signkey (Ansible Server host name).key < (Ansible Server host name).csr > (Ansible Server host name).crt rm -f (Ansible Server host name).csr mv (Ansible Server host name).key /etc/pki/tls/certs/ mv (Ansible Server host name).crt /etc/pki/tls/certs/	※If your server certificate comes with an intermediate certificate, concatenate the intermediate certificate to the server certificate and create a file Create command cat [Server certificate file] [Intermediate certificate file] > [Connected server certificate.]
41	【For CentOS7, RHEL7】 Deploy Apache conf file	●							cp -p /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ext_files_for_CentOS7.x/etc_httpd_conf.d/vhosts_exastro-it-automation.conf /etc/httpd/conf.d/	
42	【For CentOS8, RHEL8】 Deploy Apacheconf file	●							cp -p /(Installation file unpack location)/it-automation-x.x.x/ita_install_package/ext_files_for_CentOS8.x/etc_httpd_conf.d/vhosts_exastro-it-automation.conf /etc/httpd/conf.d/	
43	Fix Apache conf file	●							vi /etc/httpd/conf.d/vhosts_exastro-it-automation.conf In the file, change the three "exastro-it-automation" to (Ansible server host name) ServerName (Ansible server host name) ~ SSLCertificateFile /etc/pki/tls/certs/(Ansible server host name).crt SSLCertificateKeyFile /etc/pki/tls/certs/(Ansible server host name).key	
44	Restart Apache	●							systemctl restart httpd	

No.	Goal	Common	Menu create	Host group	Ansible	Cobbler	Terraform	CI/CD for IaC	Settings	Remarks
	Check that everything functions normally									
45	Check that Web is running	●							http://（Web/AP server IP Address）	Login ID：administrator Initial Password：password ※For information regarding accessing with HTTPS, please refer to "Check HTTPS Access".
46	Update Ansible interface information				●				Please input "Ansible server host name" into the "Host" in [Ansible common]-[Interface information]Menu	
47	Update AnsibleTower interface information ※Input only if using Ansible Tower				●				Input （AnsibleTower server host name） （AnsibleTower authentication token.） to the [Ansible Common]->[Interface Information] menu -> [AnsibleTower Interface].	
48	Check that the Cobber server is loading the created profile.					●			Check that the name of the profile created in the Cobler server is in the [Cobbler]-[Profile list]Menu's 「list」	
49	In the Cobber server, input the information of the server where the OS will be installed to.					●			In the [Basic Console]-[Device list]Menu ->「Register」, input the information of the server you are installing. ※Refer to the document below for information regarding what to input. https://github.com/exastro-suite/it-automation-docs/blob/master/asset/Documents/Exastro-ITA_System_Configuration_Enviroment_Construcion_Guide_Cobbler-driver.pdf ・System Configuration Environment construction guide Cobbler (Page 11)	
50	Update Terraform interface information						●		In the [Terraform]-[Interface Information] Menu, enter the following information for the different items. Host name-> Terraform Enterprise Server host name. User token-> User token created from the Terraform Enterprise.	
	Check HTTPS Access.									
51	Edit the web/Ap server host name/DNS Server or the device hosts.	●							Register the Web/AP Server host name to the DNS Server or the device's hosts.	
52	Import certificate to device.	●							See the following document for information regarding importing certificates to the device. https://exastro-suite.github.io/it-automation-docs/asset/Learn/ITA-online-install_en.pdf 4.5 Operation Check（5/6）	
53	Check HTTPS connection	●							https://（Web・AP server host name）	※It is possible to access through the server IP Address instead of the host name.
54	Control HTTP/HTTPS access	●							See the following document for information regarding HTTP and HTTPS Access control https://github.com/exastro-suite/it-automation-docs/blob/master/asset/Documents/ITA-online-install_en.pdf 4.7 References	