

# ITA\_System Configuration/

# **Environment Construction Guide**

Ansible-driver

- Version 1.10 -

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% Exastro IT Automation is written as ITA in this document.

"Ansible Tower" changed name to "Ansible Automation controller" in Ansible Automation Platform 2.0. This document contains both Ansible Tower and Ansible Automation Controller.

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## Introduction

This document explains the system configuration and environment construction for operating Ansible optional function (referred to as Ansible driver hereafter) in ITA.

To use the ITA Ansible driver, it is assumed that the basic ITA functions have been built. Please refer to "System Configuration/Environment Construction Guide - Basics" for constructing ITA basic function.

# **1** Function

Ansible driver provides the following functions.

### Table 1 Function name

No	Function name	Application	WEB Content	BackYard Content
1	Ansible driver	Manage construction of server, storage, network devices from ITA through Ansible Core or Ansible Automation Controller.	0	0
2	Ansible driver (Agent)	Contents providing RestAPI for externally operating Ansible core	0	Ι

# 2 System configuration

## 2.1 System configuration

The System configuration for the Ansible Driver function is the same as the ITA system configuration.

The Ansible driver (Agent) function needs to be configured with Apache, PHP and Ansible Core. Consolidate it with the ITA system or prepare it on its own server.

The Ansible Automation Controller allows users to take advantage of enhanced functionality in Ansible execution and operate in configurations with increased availability. This requires the user to prepare a server different from the ITA/ Ansible Core server. Ansible Core [Ansible Driver (Agent)] is also required to encrypt the playbooks to be executed with Ansible Vault. (It is possible to consolidate with the Backyard server.)

If the system requires multiple connecting machines for the Ansible execution target devices and the Ansible server might need Scale-out, we recommend a configuration for Ansible Automation Controller.

The following section describes different Ansible driver function configuration patterns.

※For more information regarding the ITA System, please see

"System\_Configuration\_Environment\_Construction\_Guide\_Basic"

No	Configuration	Description	Ansible Scale-out
1	All-in-one configuration	Configuration where Ansible Core [Ansible Driver (Agent)] and ITA System is on the same server.	×
2	Ansible Core separate configuration	Linked configuration where Ansible Core [Ansible Driver (Agent)] are constructed separate from each other.	×
3	Ansible Automation Controller configuration	Linked configuration between ITA System (Ansible Core/ Ansible Driver (Agent)) and Ansible Automation Controller	0

Table 2.1 System configuration pattern	Table 2.1	System	configuration	pattern
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#### ■ 1. All-in-one configuration diagram

Please see "System\_Configuration\_Environment\_Construction\_Guide\_Basic" > "2.1 System configuration". for the All-in-one configuration diagram.



■ 3. Ansible Automation Controller configuration diagram



## 2.2 System connection requirements

The connection requirements for the different services are as following. For more information regarding the ITA System's connection requirements, please see "System\_Configuration\_Environment\_Construction\_Guide\_Basic"

Connection No. <b>%</b> 1	FROM	то	Protocol [Port No.  ※2]	Main application
1	ITA server (Web/AP function)	Ansible Core	http(s) [80(443)/tcp]	Input REST API Request (Emergency stop)
	ITA server (Backyard function)	Ansible Core	http(s) [80(443)/tcp]	Input REST API Request (Execute processes, etc.)
	Ansible Core	Storage device	File access (tcp or Storage I/O)	References Execution information when running Ansible commands (Playbooks, host_vars, etc.) Run commands for automatic configuration target devices.
4		Target device	Any (ssh [22/tcp] telnet [23/tcp] ,etc. ※3)	Run commands for automatic configuration target devices.
5	ITA server (Web/AP function)	Ansible Automation Controller	http(s) [80(443)/tcp]	Input REST API Request (Emergency stop)
6	ITA サーバ (Backyard		http(s) [80(443)/tcp]	Input REST API Request ()
$\bigcirc$	function)		ssh [22/tcp]	Redirects Ansible execution information (Playbook, host_vars, etc) to ITA operation directory(scp)
8	Ansible Automation Controller	ITA server (Backyard function)	ssh [22/tcp]	Links Git repositories created in ITA to SCM management directory (git clone)
9		Target device	Any (ssh [22/tcp] telnet [23/tcp] , etc. ※3)	Run commands for automatic configuration target devices.

Table 2.2 Connection	requirements list
----------------------	-------------------

\*1 Describe the connection number linked to the number in the diagram above "2.1 System configuration".

%2 Describe a standard port number.

X3 Standard examples. The protocol differs depending on the Ansible module.

## **3** System requirements

Since Ansible driver is based on system requirements of ITA system, please refer to "System Configuration/Environment Construction Guide - Basics". This section describes the requirements for BackYard, AnsibleCore, and Ansible Automation Controller.

#### BackYard

#### Table 3-1. Linux commands required for Ansible BackYard

Command	Note
zip	

#### Table 3-2. External modules required for Ansible BackYard

External module	Version	Note
php-yaml	2.1.0 or later	

#### Ansible RestAPI

#### Table 3-3 AnsibleCore system requirements

Package	Version	Note
Ansible	2.5 or later	
Python	3.0 or later	
nuinm		Python module. If installation fails when using yum, please
pywinin		use pip to install.
Pexpect		Python module.
telnet	-	Required for telnet connection to the configuration target.
		Required when operating the function on the server
Anasha	2.4 series	different from the ITA system.
Араспе		The package and version should match the ITA system
		servers

#### Table 3-4 Linux command required for Ansible Driver

Command	Note
expect	

#### Ansible Tower

#### Table 3-5 Ansible Automation Controller system requirements

Package	Version	Note
Ansible Tower	The user/password authentication method u	
Ansible lower	5.5.0 OF TALET	3.5.0 is not supported

## 4 Playbook link

The following section explains the Playbook link between ITA and Ansible Core or Ansible Automation Controller.



Figure 4-1Playbook link between ITA and Ansible Core



Figure 4-1 Playbook link between ITA and Ansible Tower3.x

In Ansible Tower 3.x, the SCM type was "Manual", but when data resources are continuously registered/executed with the "Manual" SCM type in Ansible Automation Controller 4.x, an error will occur when executing. Therefore, the SCM type is changed to "Git" to link the Playbook via Git.



Figure 4-3 Playbook link between ITA Ansible Automation Controller4.x

## **5** Default settings

Make sure to configure the following depending on the installed execution engine after having installed Ansible Core or Ansible Automation Controller.

 Table 5 Execution engine configuration list

Setting item		Execution engine		
	Ansible	Ansible	Ansible	
	Core	Tower3.x	Automation	
			Controller4.x	
Prepare shared directory	0	×	×	
Prepare ITA Operation directory	×	0	0	
Publish ITA Operation directory	×	×	0	
Prepare user for transferring files to Ansible Automation	×	0	0	
Controller.				
Prepare user for linking Ansible Automation Controller and Git	×	×	0	
Check packages	×	0	×	
Prepare required resources	×	0	0	
Configure Proxy	×	×	Δ	

O:Required ×:Not required △:As necessary

## 5.1 Preparing Shared directory

Make sure to prepare a shared directory that can be access by both ITA and Ansible Core. The user must register the shared directory to the ITA System after having installed both ITA and Ansible Core.

For more information, please see "User\_instruction\_manual\_Ansible-Driver" > "Interface information"

## 5.2 Preparing ITA Operation directory

Make sure to create an ITA operation directory in the Ansible Automation Controller server. If the system is on a cluster configuration, make sure to create a directory to all configuration servers.

Note that it is not necessary to create a directory for Ansible Automation Controller's hop node.

Item	Setting value
Directory path	/var/lib/exastro

Table 5.1-1 ITA operation directory creation information

Owner/Group	awx:awx
Permission	0755

#### **Publish ITA Operation director**

Log in to the Ansible Automation Controller and go to "Settings" > "Job" > and set " /var/lib/exastro/ " to the "Path for publishing separated job"

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#### Prepare user for transferring files to Ansible Automation Controller.

When generating an Ansible Automation Controller project from ITA, The Playbook set is transferred to the following Ansible Automation Controller directory. Make sure to prepare the Linux user that will perform the file transfer.

SCM management directory (/var/lib/awx/projects)

XIf the system is using Ansible Tower3.x, transfer the Playbook set with a Linux user.

ITA operation directory(/var/lib/exastro)

We highly recommend that Linux users to set and use a password for the awx user that is generated during the Ansible Automation Controller installation. If the user is using a user different from awx user, editing permissions for the SCM management path (/var/lib/awx/projects) are not subject for Redhat support.

The prepared Linux user must be registered to the ITA System. Follow

"User\_instruction\_manual\_Ansible-Driver" > "Ansible Automation Controller host list" for information on how to register the Linux user.

#### Prepare user for linking Ansible Automation Controller and Git

The SCM type when generating an Ansible Automation Controller from ITA is set to "Git". The link destination Git repository is created by the host installed by the Ansible driver Backyard function. Make sure to prepare the Linux user that will connect the Git repository from the Ansible Automation Controller through SSH key authentication.

The Linux user must be registered to the ITA System.

For more information, please see "User\_instruction\_manual\_Ansible-Driver" > "Interface information"> "SCM list Git link destination information". If the user is installing (or updating a preexisting ITA system to) ITA V1.10.0 or later, the Linux user and key file used to connect to the Git repository is generated and set to the "Interface information" > "SCM management Git link destination information" > "User " and "ssh secret key file".

The user will not have to create them separately. The user must configure the host name (or ip address) installed by Ansible driver's backyard function to the "host name".

If using a different user, generate both a Linux user and a key file and update the "Interface information" "SCM management Git link destination information".

#### Table 5.4-1 Linux user information for SSH key authentication generated when installing ITA.

Item	Item value			
User	awx			
Password	Not set			
Secret key	/home/awx/.ssh/rsa_awx_key			
Public key	/home/awx/.ssh/rsa_awx_key.pub			

## 5.3 Check Packages

Confirm packages that are required for Ansible-driver are installed. If not installed, it's required to install the packages.

- Required package
   pexpect
- Confirmation method
  - su awx
  - source /var/lib/awx/venv/ansible/bin/activate

pip list

deactivate

Method to install

su - awx

source /var/lib/awx/venv/ansible/bin/activate

umask 0022

pip install --upgrade pexpect

deactivate

Required resource preparation

It is required to register projects, inventory, credentials, and application with Ansible Tower in advance.

Table 5.7-1 Ansible Automation Controller required resources list

Туре	Use	Name	Description		
Application	Authentication		Application information for authentication when		
	application	o_auth2_access_token	connecting from ITA to AnsibleTower with		
			RestAPI		
User	Token		Connection token used to connect from ITA to		
		-	AnsibleTower with RestAPI		

### 5.4.1 Application

.

- AnsibleTower settings
  - Name : o\_auth2\_access\_token
  - Organization
  - •
  - Client type

: o\_auth2\_access\_token

- : Default
- Authorization Grant Type : Password base of resource owner
  - : Secret

### 5.4.2 User Token

- AnsibleTower settings
  - APPLICATION
    - SCOPE • : write

Login with the user used to login AnsibleTower beforehand is required.

The generated token must be set as the connection token in the interface information of the AnsibleTower console. Please refer to "Interface information" in "User Instruction Manual Ansible-driver" and register.

### **Proxy settings**

Container images of the execution environment are downloaded from Redhat's designated site at the time of work execution, etc., depending on the configuration of Ansible Automation Controller. If Ansible Automation Controller is under Proxy environment, Proxy setting is required for Ansible Automation Controller.

If operations are executed without Proxy settings, the cause of the error may not be obtained. Login to Ansible Automation Controller from a browser and set the following environment variables in "Settings" -> "Jobs" -> "Additional Environment Variables".

https\_proxy http\_proxy no\_proxy HTTPS\_PROXY HTTP\_PROXY NO\_PROXY

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インベントリー		<pre>2 "command", 3 "shell".</pre>					
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組織		1. [ 					
ユーザー		3 "/opt/awx/ssh/"					
チーム		4					
	-11	Ansible コールバックプラグイン <sup>(2)</sup>					
管理	·	1 []					
認証情報タイプ							
遥知							
管理ジョブ		15月10月8日2431 9					
インスタンスグループ		1-{					
アプリケーション		2 "HTTPS_PROXY": "					
実行環境		3 "HTP_PROXY": "A 4 "NO_PROXY": "3					•
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