

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.

# 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. | ○ | ○ |
| 2 | Ansible driver  (Agent) | Contents providing RestAPI for externally operating Ansible core | ○ | － |

# 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”

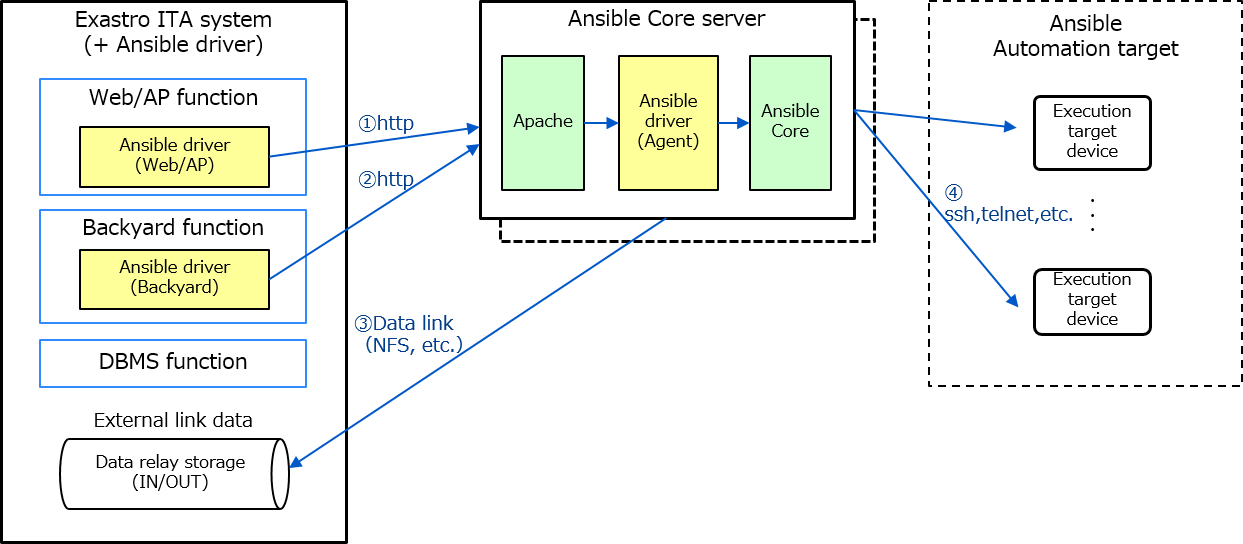
Table 2.1　System configuration pattern

|  |  |  |  |
| --- | --- | --- | --- |
| 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 | 〇 |

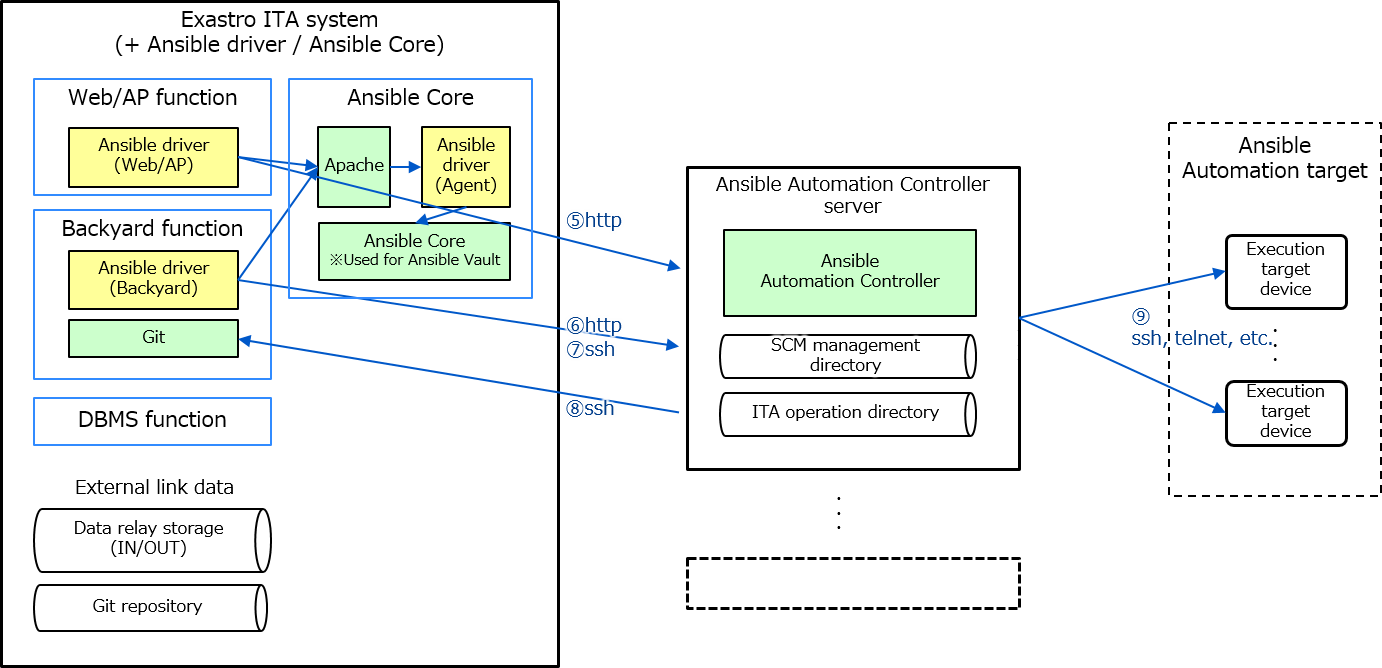
■ １．All-in-one configuration diagram

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

■ ２．Ansible Core separate configuration diagram



■ ３．Ansible Automation Controller configuration diagram



## 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”

Table 2.2 Connection requirements list

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Connection No.※1** | **FROM** | **TO** | **Protocol**  **[Port No. ※2]** | **Main application** |
|  | 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 function) | http(s)  [80(443)/tcp] | Input REST API Request  () |
| ⑦ | 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. |

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

※2 Describe a standard port number.

※3 Standard examples. The protocol differs depending on the Ansible module.

# 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 |  |
| pywinrm |  | Python module. If installation fails when using yum, please use pip to install. |
| Pexpect |  | Python module. |
| telnet | － | Required for telnet connection to the configuration target. |
| Apache | 2.4 series | Required when operating the function on the server different from the ITA system.  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 | 3.5.0 or later | The user/password authentication method under version 3.5.0 is not supported |

# Playbook link

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

ITA

Ansible Core

Playbook set

Playbook set

DB

②

①

Contents file

Shared Directory

Playbook set

1. Extract Playbook set to shared directory
2. Notify that the Playbook set has been stored in the Shared directory through RestAPI

Figure 4-1Playbook link between ITA and Ansible Core

ITA

Ansible Tower3.x

Data resources needed  
for running Playbooks

Playbook set

DB

②

①

Playbook set

ITA operation directory (/var/lib/exastro)

Content files

③

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

1. Extract Playbook set
2. Create data resources needed to run Playbooks through RestAPI
3. Redirect Playbook set to ITA Operation directory and SCM Management directory (scp)

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.

ITA

Ansible Automation Controller4.x

Data resources needed  
for running Playbooks

Playbook set

DB

②

①

Playbook set

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

Content files

④

③

Git repository

ITA operation directory (/var/lib/exastro)

⑤

1. Extract Playbook set
2. Create Git repository that will link the Playbook set and   
   Ansible Automation Controller
3. Generate Data resources needed for running Playbooks through RestAPI (Git connection information, etc.)
4. Transfer Playbook set to ITA operation directory (scp)
5. ITAに作成されているGitリポジトリをSCM管理ディレクトリに連携

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

# 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 Core | Ansible Tower3.x | Ansible Automation Controller4.x |
| Prepare shared directory | 〇 | × | × |
| Prepare ITA Operation directory | × | 〇 | 〇 |
| Publish ITA Operation directory | × | × | 〇 |
| Prepare user for transferring files to Ansible Automation Controller. | × | 〇 | 〇 |
| Prepare user for linking Ansible Automation Controller and Git | × | × | 〇 |
| Check packages | × | 〇 | × |
| Prepare required resources | × | 〇 | 〇 |
| Configure Proxy | × | × | △ |

〇:Required　×:Not required　△:As necessary

## 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”

## 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.

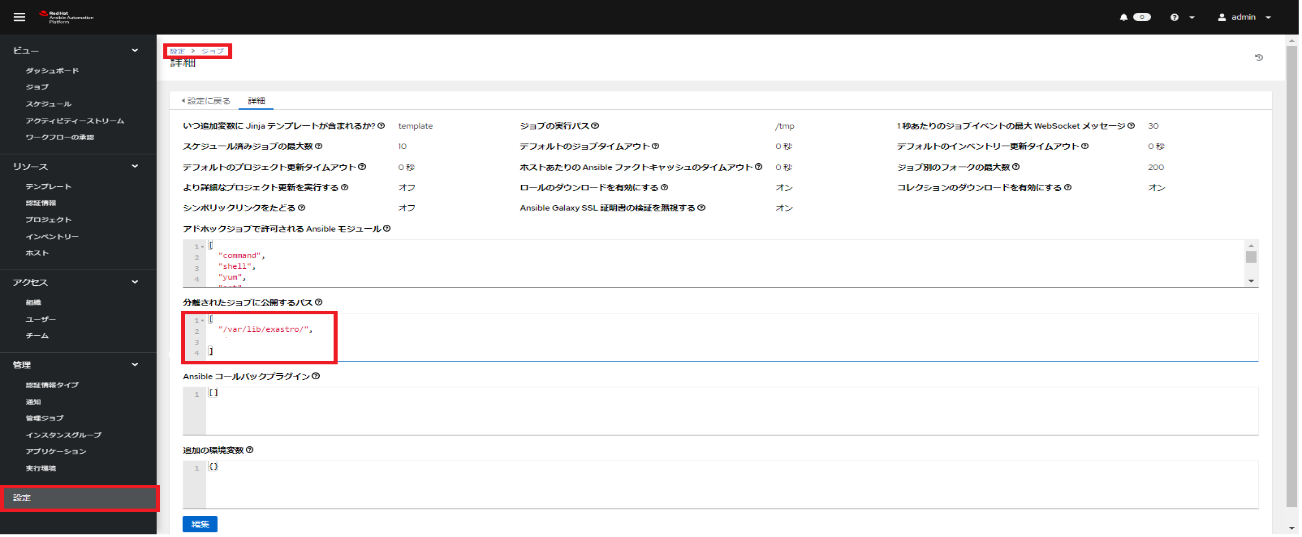
Note that it is not necessary to create a directory for Ansible Automation Controller's hop node.

Table 5.1-1 ITA operation directory creation information

|  |  |
| --- | --- |
| Item | Setting value |
| Directory path | /var/lib/exastro |
| 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”



## 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)

※If 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 pre-existing 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 |

## 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

|  |  |  |  |
| --- | --- | --- | --- |
| **Type** | **Use** | **Name** | **Description** |
| Application | Authentication application | o\_auth2\_access\_token | Application information for authentication when 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 ：　Default
* Authorization Grant Type ：　Password base of resource owner
* Client type ： Secret

5.4.2　User Token

* AnsibleTower settings
* APPLICATION ：　o\_auth2\_access\_token
* 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

