



IT Automation

CI/CD for IaC

【Classroom】

※In this Document “Exastro IT Automation” will be written as “ITA”.

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1. Introduction



1.1 About this document

Main Menu

- This document aims to explain the CI/CD for IaC Menu group.
- The Practice document provides scenarios where users can learn about the CI/CD for IaC function by having first-hand experience.

The screenshot displays the Exastro IT Automation dashboard. At the top right, the user is identified as 'System Administrator' with a login ID of 'administrator'. Navigation options include 'Role', 'Change password', and 'Logout'. The main menu on the left lists various tools: Management, Basic Console, Export/Import, Symphony, Conductor, Create Menu, Input, Substitution, Reference, Compare, HostGroup, Ansible Com..., Ansible-Legacy, Ansible-Pion..., Ansible-Lega..., Cobbler, Terraform, and CI/CD for IaC (highlighted with a red box). The dashboard features three primary metrics: Movement (6 Total, 100%), Work status (0 Total), and Work result (0 Total). Below these are detailed tables for Movement, Status, and Result.

Movement	SUM
Ansible Legacy	@
Ansible Pioneer	@
Ansible Legacy Role	@
Terraform	@

Status	CON	SYM	SUM
Executing	0	0	0
Unexecuted (schedule)	0	0	0
Unexecuted	0	0	0

Result	CON	SYM	SUM
Normal end	0	0	0
Abnormal end	0	0	0
Unexpected error	0	0	0
Emergency stop	0	0	0
Schedule cancellation	0	0	0

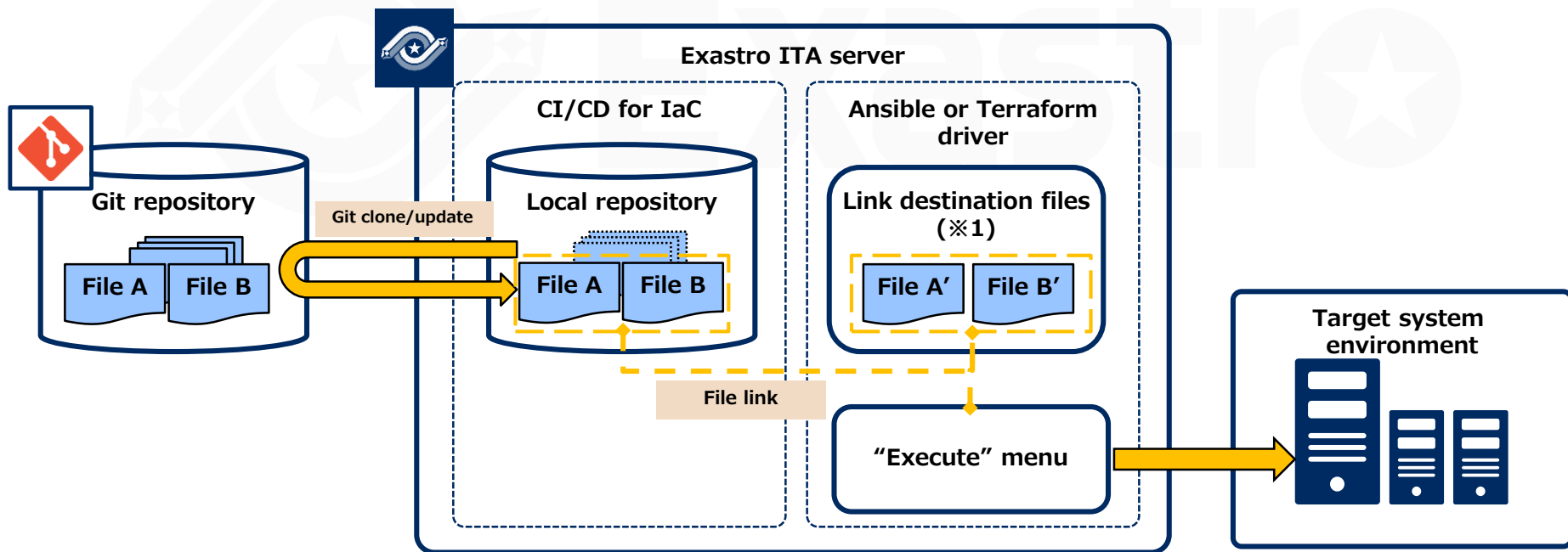
2. CI/CD for IaC



2.1 CI/CD for IaC

● What is CI/CD for IaC?

- When using IaC (Infrastructure as Code) files, such as Ansible's Playbook files or Terraform's IaC files, for development, we can use CI (Continuous Integration) to automatically test and build, and CD (Continuous Delivery) to automatically construct environments.
- We can have the Git repository's **IaC files be automatically applied to the system when they are updated.**
- As we are linking the IaC files to Git, this allows us to manage versions and check commit histories as well.



※1 The link destination file types depends on the link destination driver. (E.g. If linking to Ansible-Legacy, use "Playbook file collection")

2.2 CI/CD for IaC Function

The Ci/CD for IaC menu contains 2 functions.

① Git link

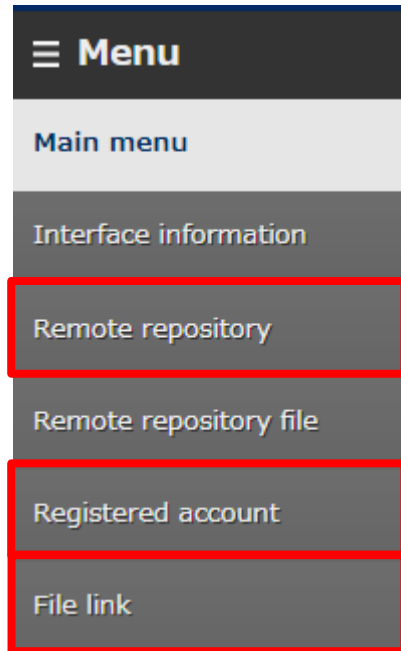
- Creates a **Clone of the Git repository** within ITA.
- Leverages the clone to regularly detect any changes in the files and registers them to the “Remote repository file” menu.
- Files registered to the “Remote repository file” menu can be specified by the “②File link function” as a **Link source file**.

② File link function

- Registers a link between the source files and the destination files.
- Registers an Operation and a Movement to check if the link destination files are working correctly.
- **Automatically updates the Link destination files when the Link source files are updated** and runs an Operation and Movement to check if they are working correctly.

2.3 CI/CD for IaC Menus (1/6)

- The main menus for the Ci/CD for IaC function are as following.



① Remote Repository

This menu manages the Git repository information.

② Registered account

This menu manages the account information needed to access the cloned files with ITA's RestAPI.

③ File link

This menu manages the link information between the source files and the cloned files.

2.3 CI/CD for IaC Menus (2/6)

● Remote Repository

- In the Remote Repository menu, users can register the information of the Git repository they want to link.

URL of the Git Repository used when running Git clone command.

If you are connecting to a remote Git repository with https, select https
If you are connecting to a local Git, select Local

Item	Repository Name*	Remote Repository (URL)*	Branch	Protocol*	Visibility type	Git Account information		Proxy	
						User	Password	Address	Port
Auto-input	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="password"/>	<input type="text"/>	<input type="text"/>

Remote Repository Synchronization information		Connection retry information		Access permission		Remarks	Last update date/time	Last updated by
Automatic Synchronization*	Cycle (Seconds)	Retry number	Cycle(ms)	Setting	Role to allow access			
VALID	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="Setting"/>			Auto-input	Auto-input

Decides if synchronization with the Git repository is done automatically or not.
If the "cycle(seconds)" field is blank, it will be set to the default value (60 seconds)

2.3 CI/CD for IaC Menus (3/6)

●Registered account

- In this menu, users can register the account information needed to access the clones files from ITA's RestAPI.
- Keep in mind that the account must also be registered in the "Management console > User list" menu.

RestAPI Login ID

RestAPI Login Password

Item number	Exastro IT Automation account		Access permission		Remarks	Last update date/time	Last updated by
	Login Id*	Login Password*	Setting	Role to allow access			
Auto-input	<input type="text"/>	<input type="password"/>	<input type="button" value="Setting"/>			Auto-input	Auto-input

File link

- Registers a link between the Sources file and the destination files.
- Registers an Operation and a Movement to check if the destination files works correctly.
- Automatically updates the Link destination files when the Link source files are updated and runs an Operation and Movement to check if they are working correctly.

Select the Remote repository/file path and the link source file

Select file type.
E.g. Ansible-Legacy/Playbook file collection

Git Repository (From)		Exastro IaC (To)		Template Management	
Item number	Link file name*	Remote Repository*	File path*	Link file type*	Variable Definition
Auto-input	<input type="text"/>	<input type="text" value="Please select a Repository."/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Ansible-Pioneer		File Synchronization information		Delivery Information		
Dialogue type	OS Type	Execution Login ID*	Assign Access permission role.	Automatic Synchronization*	Operation	Movement
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="VALID"/>	<input type="text"/>	<input type="text" value="Select a link file type."/>

Specify Operation/Movement to check if the link destination files are working correctly

● File link

- For the "Link destination file name" item, register the file name used when registering to the Link destination menu.
The link destination item names that can be used for the "Link destination type list" are as following.
- Make sure to follow the restrictions when inputting for the items below. (The restrictions are the same as the ones for "Link destination menu" items)

Link destination file type	Item name
Ansible-Legacy/Playbook file list	Playbook files name
Ansible-Pioneer/Dialogue file list	No item
Ansible-LegacyRole/Role package list	Role package name
Ansible common/File list	File embedded variable name
Ansible common/Template list	Template embedded variable name
Terraform/Module files	Module file name
Terraform/Policy list	Policy name

E.g.

Input **"yum_package_install"** into the "Link destination file name" item and select "Ansible-Legacy/Playbook file collection" for the "Link destination file type".

The **"yum_package_install"** is used as a registration value for the "Playbook file name" item in the record registered to the "Ansible-Legacy/Playbook file collection"

● File link

- If the Link destination type is from the Ansible-LegacyRole/RolePackage list menu, refer to "[Exastro-ITA User Instruction Manual CICD For IaC](#)" for more information.

Displays registered remote repositories

Displays the source files

Item number	Link file name	Git Repository (From)		Exastro IT automation(To)	
		Remote Repository	File path	Link file type	Template Management Variable Definition
Auto-input	<input type="text"/>	<input type="text"/>	Please select a Repository.	<input type="text"/>	

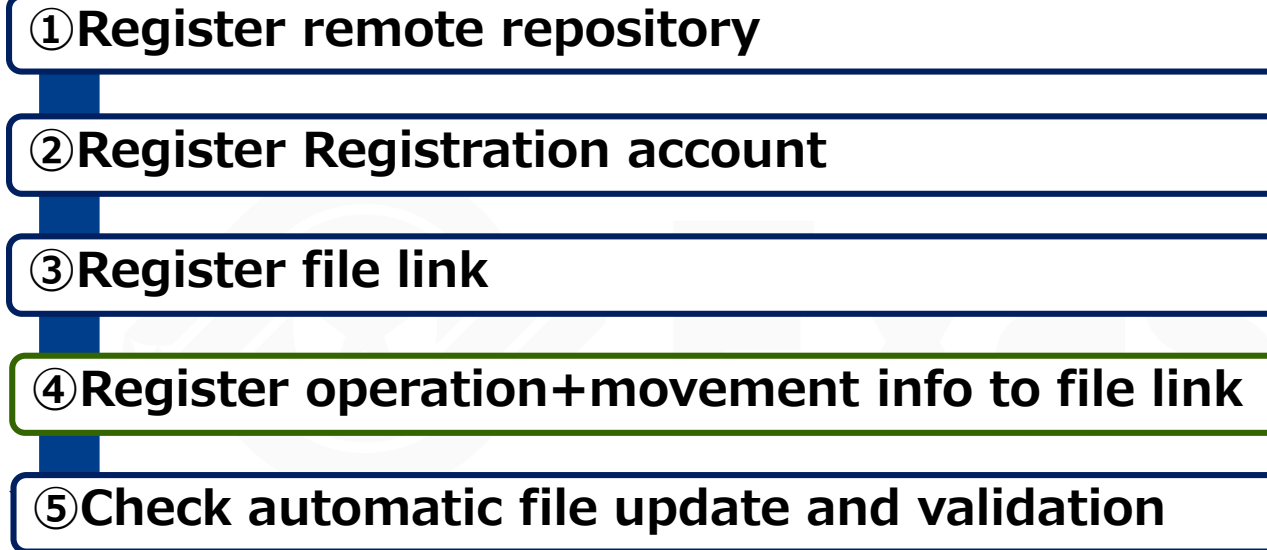
Displays the registered ID for the registration account.

Decides if the cloned files are automatically updated when the source files are.

Ansible-Pioneer		File Synchronization information			Delivery Information			Access permission	
Dialogue type	OS Type	Execution Login ID	Assign Access permission role.	Automatic Synchronization	Operation	Movement	Dry run	Setting	Role to allow access
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	VALID	<input type="text"/>	Select a link file type.	<input type="text"/>	<input type="button" value="Setting"/>	

2.4 CI/CD for IaC workflow

- The figure below illustrates a standard workflow for the CI/CD for IaC function. Please refer to the Practice document for information regarding operating it.



【Legend】

Required

Optional



Exastro