

# **ITA\_User Instruction Menual**

**Terraform-driver** 

- Version 1.10 -

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

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# Introduction

This document explains the function and the operation method of ITA.

# 1 Terraform driver overview

This chapter describes Terraform and Terraform driver.

### 1.1 About Terraform

Terraform is an Orchestration tool that streamlines the infrastructure provided by HashiCorp.

For the infrastructure configuration coded in the language called HCL (HashiCorp Configuration Language), generate an execution plan and then execute the construction. Additionally, you can code and manage access policies with Policy as Code.

For more information about Terraform, please refer to the Terraform product Menual.

### 1.2 About Terrform driver

Terraform driver functions as an option for ITA systems, allowing Terraform registered with ITA systems to create organizations, Workspaces and execute operations (Plan/PolicyCheck/Apply) and acquire operation logs.

Module files used to perform operations (Plan/Apply) and Polycy files for PolicyCheck can be managed so that they can be made in to components and reused on the ITA system.



Figure 1.2-1 ITA System Overview

In addition, Terraform driver can set variables in Module from the screen.For details, please refer to "Variable handling in Terraform driver" in this document.

# 2 Variable handling in Terraform driver

### 2.1 Variable type

In Terraform driver, user can set the specific value of the variable in module from the ITA configuring screen.

**%**For more information on the configuring method, please refer to "<u>6.2.12 Substitution value</u> <u>list</u>" in this document.

There is one type of variable in module that can be handled as an ITA variable:

Туре	Content
	A variable that allows you to define one specific value for the variable name.
	The variables in the Module should be written in the following format according to the
	variable rules of the HCL (HashiCorp Configuration Language). In this case, "xxx" is
Normal variable	extracted from Module as a variable.
	variable "xxx" {
	~Shortened~
	}

2.2 Extraction of variables and registration of specific values

User can register specific values by extrating variables out from module files uploaded to ITA.

For the specific value of the extracted variable, register the specific value in <u>"6.2.11 substitution value automatic registration"</u> and <u>"6.2.12 Substitution value list"</u>.

The registered variables and concrete values are registered as "Key" for "Variable name" and "Value" for "Specific value" for Variables managed in Workspace on the Terraform side when the work is executed.

# 2.1 Variable types

Users can configure types within variables.

When describing variables within Modules, make sure to follow the HCL (HashiCorp Configuration Language) variable rules. The variables handled in ITA are as follows:

For description examples, please see"<u>9.1</u> Module file input example/ register example

type	Detailed description	Input order Target ※1	Member variable Target <b>※</b> 2	Type description	Default description
string	Character string。	×	×	string	ABC
number	Numeric value	×	×	number	2022
bool	True or false	×	×	bool	true
list	Array type	0	×	list(string)	["A", "B", "C"]
set	Array type. A unique value configuration is required.The specific value will not be checked if it is unique or not by ITA.	0	×	set(number)	[1, 2, 3]
tuple	уа	×	0	tuple([string, number])	["ABC", 2022]
map	Key-value type. If there a type that contains more than one map type configured on ITA, the user will not be able to specify KEY value from the type information. It is therefore important that you make sure that the HCL SETTINGS are set to ON if the user plans to configure substitute values. For more information regarding HCL settings, please see Chapter "6.2.13 Substitute value auto	×	×	map(string)	{ "key" = "value" }

	registration" or "6.2.14 substitute value list".				
object	key-value type。 ITA handles keys as Member variables. Do not include japanese characters in the key name.	×	0	object({ key = number })	{ "key" = 2022 }
any	Type that fits all. Handled the same as string type on ITA.	×	×	any	ABC
No description	If no "type" is described, it will be handled the same as a string type.	×	×		ABC

 $\divideontimes 1 \cdots \text{Substitute order}$ 

The substitute order is the order of which specific values are set to variables (starting from top). If the variable type (or the type for the lowest variable in a hierarchy configuration) is "list" or "set", they can be configured in the Substitute value auto registration settings menu/Substitute value list

Example: For "list" type variables •tf file and registration values

variable "VAR\_hoge" {
 type = list(string)
 }

1. Substitute value example (Substitute value auto registration settings/Substitute value list)

ltem	Variable	Member	Substitute	Specific
No.	name	variable	order	value
1	VAR_hoge	No input	1	ABC
		required		
2	VAR_hoge	No input	2	DEF
		required		

### 2. Value sent to Terraform

["ABC", "[	DEF"]		

menu.

Example: If the type of the variable at the lowest level of the variable hierarchy is "set" •tf file and registration value



1. Substitute value example (Substitute value auto registration settings/Substitute value list)

ltem No.	Variable name	Member variable	Substitute order	Specific value
1	VAR_hoge	key	1	1
2	VAR_hoge	key	2	2

### 2. Value sent to Terraform

2...Member variable

Member variable is the key name if the variable type is "key-value". If the variable type is "object", the Member variable is "<KEY> = <TYPE> $\mathcal{O}$ <KEY>"

If the variable type is tuple, the Member variable is the numbered variables defined in the tuple (Numbered [0],[1],[2]... ).

If the variable type is a registration target in the variable nest list menu, the variable is numbered [0],[1],[2]... based on the maximum number of repetitions and is designated as Member variable. For more information regarding Variable nests, please see Chapter "6.2.12 Variable nest list".

Example: If the variable type is "object" •tf file and registration value variable "VAR\_hoge" { type = object({ NAME = string, IP = string }) default = { "NAME" = "machine\_01", "IP" = "127.0.0.1" }

1. Substitute value example (Substitute value auto registration settings/Substitute value list)

ltem No.	Variable name	Member variable	Substitute order	Specific value
1	VAR_hoge	NAME	No input	my_machine
			required	
2	VAR_hoge	IP	No input	192.168.0.1
			required	

2. Value sent to Terraform

{ NAME = "my\_machine", IP = "192.168.0.1" Example: If the variable type is "tuple".

•tf file and registration value

}

variable "VAR_hoge" {
type = tuple([string, number])
default = ["aaa", 2022]
}

2. Susptitute value example (Substitute value auto registration settings/Substitute value list)

ltem No.	Variable name	Member variable	Substitute order	Specific value
1	VAR_hoge	[0]	No input	bbb
			required	
2	VAR_hoge	[1]	No input	2023
			required	

2. Value sent to Terraform

["bbb", 2023:

Example: If the variable type is target for variable nest list.

•tf file and registration value

```
variable "VAR_hoge" {
    type = list(set(string))
    default = [
         ["aaa", "bbb"],
         ["ccc", "ddd"]
    ]
```

1. Susbtitute value example (Substitute value auto registration settings/Substitute value list)

ltem No.	Variable name	Member variable	Substitute order	Specific value
1	VAR_hoge	[0]	1	AAA
2	VAR_hoge	[0]	2	BBB
3	VAR_hoge	[1]	1	CCC
4	VAR_hoge	[1]	2	DDD

2. Value sent to Terraform [

]

["AAA", "BBB"],
[ "CCC", "DDD"]

# 3 Terraform driver console menu structure

This chapter describes the menu configuration of the ITA console. Please refer to the "First Step Guide" for information on how to log in to the web console and the components/basic operations of the menu screen.

No	Menu Group	Menu Screen	Hidden menu <b>※</b>	Description
1		Interface information		Manage Terraform information that links with ITA.
2		Organizations list		Manage the Organization information used in Terraform.
3		Workspaces list		Manage the Workspace information used in Terraform.
4		Movement list		Manages the list of Movements that you want to register with Symphony.
5	-	Module files		Manage Module files.
6	-	Policies list		Manage policy files.
7		Policy Sets list		Manage Policy Set.Policy Set is linked with Polycy and Workspace to enable Polycy for the workspace of target when you execute work.
8		PolicySet- Policy link list		Manages the linking between PolicySet and Polycy.
9	Terrafo	PolicySet- Workspace link list		Manages the linking between PolicySet and Workspace.
10	rm	Movement module link		Manages the linking between Movement and Module files.
11		Variable nest list		Manages the maximum number of repetitions of the member variable ifIf the type of the variable defined in the tf file registered in the Module file collection is list,set and list,set,tuple,object is defined in the variable.
12		Substitution value automatic registration		Manage movements and variables that link items and values for each operation registered in the parameter sheet menu.
13		Substitution value list		Manages the subsituted value of a variable.
14		Operation		Select the Movement and Operation to execute and indicate
	-	execution		the execution.
15		Check operation status		Displays the operation status.
16		Work list		Manages execution history.

17	Module variable O link list	C	Manages links between Module variables and Module files.
18	Member O variable list	C	Manages Member variables.
19	Movement C variable link list	C	Manages links between Movements and Variable names
20	Terraform registration list		Users can list and delete Organizations, Workspaces, Policies and PolicySets that are registered in Terraform.

%1 The hidden menus are menus used to register and update data using the backyard function. They are set to be hidden when the Terraform driver is installed.

If you want to display the hidden menus, you can do so from the "Management console > Role/Menu link list" menu. For more information, please see the Management console user manual.

Note that the backyard function might not function normally if the data in the hidden menus are changed. We recommend not changing any of the data.

### 3.1 Menu/Screen list

### ① ITA basic console menu

The menu list of ITA basic console used in Terraform driver is described below.

	Table 3.1-1 Basic console menu/screen list						
No	Menu Group	Menu Screen	Description				
1	ITA	Operation list	The Operation list can be maintained				
I	Basic console		(browsing/register/update/abolish).				

### 2 Console menu of Terraform driver

The menu list for the Terraform driver console is described below.

Table 3.1-2Terraform driver console menu/screen list

# 4 Terraform driver user instruction

Description about user instruction of each Terraform console.

### 4.1 Terraform workflow

The standard work flow for each Terraform console is as follows.

Details of each operations are described in the next section.

For information on how to use the ITA Basic Console, please refer to "User Instruction Menual\_Basic Console".

### The flow to operation in Terraform are as follows.





### • Work flow details and references

#### **①** Register Operation name

Register the Operation name for work from the Operation list screen of the ITA basic console. For details, refer to "<u>6.1.1 Operation list</u>".

#### **②** Register interface information

Register the information of Terraform that links with the ITA system. For details, refer to "<u>6.2.1 Interface Information</u>".

### ③ Organization registration and cooperation Register Organization information and link with Terraform. For details, refer to "6.2.2 Organizations list".

Workspace Registration and cooperation Register Workspace information and link with Terraform. For details, refer to "6.2.3 Workspace list"

# **(5)** Register work pattern (Movement)

Register a movement for operation. For details, refer to "<u>6.2.4 Movement list</u>".

#### 6 Register module files

Register the Module file to be executed in the operation. For details, refer to "<u>6.2.5 Module files</u>".

- Register policy (Execute if needed)
   Register the Polycy file to run with PolyCheck before you execute the work.
   For details, refer to "6.2.6 Policies list".
- (8) Register PolicySet (Execute if needed) Register a PolyCySet to link to Workspace to which you want to apply Policy. For details, refer to "6.2.7 Policy Sets list".

#### **(9)** Link Policy to PolicySet

Register the linking between PolicySet and Policy. For details, refer to "<u>6.2.8 PolicySet-Policy link list</u>".

### **1** Link Workspace to PolicySet

Register the linking between PolicySet and Workspace. For details, refer to "<u>6.2.9 PolicySet-Workspace link list</u>".

#### **(1)** Set module files in Movement

Specify the Module files in the registered Movement. For details, refer to "<u>6.2.10 Movement module link</u>".

#### 12 最大繰返数の設定(必要に応じて実施)

Member variable の最大繰返数を設定します。 詳細は「エラー!参照元が見つかりません。エラー!参照元が見つかりません。」を参照してください。

#### **(13)** Set variable value (Execute if needed)

Set the value of the variable defined in the Module files registered in Movement. If you are not using variables, user do not need to set them. For details, refer to "6.2.12 Substitution value list".

### **Execution**

Select and set the execution date and time, and the Operation to indicate the execution of the operation.

For details, refer to "6.2.13 Execution".

#### (1) Check operation status

The status of the work executed is displayed in real time. User can also monitor work emergency stops, execution logs and error logs. For details, refer to "<u>6.2.14 Check operation status</u>".

### **(b)** Check operation history

A list of the work executed is displayed and the history can be checked. For details, refer to "<u>6.2.15 Execution list</u>".

# **5** Policy operation in Terraform Driver

### 5.1 About link Policy/PolicySet/Workspace

In order to apply Policy, it is necessary to make a linking setting after each setting registration for Policy is made.

The first Polycy registered in "<u>6.2.6 Policies list</u>" and the PolyCySet registered with "<u>6.2.7 Policy Sets</u> <u>list</u>" will be linked with "<u>6.2.8 PolicySet-Policy link list</u>".

Next, workspace registered in "<u>6.2.3 Workspaces list</u>" and PolycySet registered with "<u>6.2.7 Policy Sets</u> list" will be linked with "<u>6.2.9 PolicySet-Workspace link list</u>".

PolicySet and its associated Polycy are applied to Workspace tied to Movement when you execute operation.



Figure 5.1-1 about linking Policy/PolicySet/Workspace

# 6 Terraform driver function and operation method explanation

This document explains each console function used in Terraform driver.

### 6.1 Basic console

This section describes the operation in the ITA Basic Console.

Please refer to the ITA basic console Menual for this operation and perform the operation in the ITA basic console screen.

#### 6.1.1 **Operation list**

(1) The "Operation list" screen manages the operations on the target host that the Orchestrator executes. Select the work from the menu in the ITA basic console.

Exastre IT Automation	Basic Console						User name [System Administrator] Login ID (administrator) Change password Logout
⊒ Menu							
Main menu	Description						⊽Open
Device list	Display filter						∆Close
Input operation list	Discard	No.	Operation ID	Operation name	Scheduled date for execution	Last upd	ate date/time Last updated by
Movement list	Exclude discarded records 🗸	▼ Search from pulldown	✓ Search from pulldown	▼ Search from pulldown	~		✓ ▼ Search from pulldown
	4						
	Filter	Clear filter					
	Auto-filter						
	List/Update						⊽Open
	Register						⊽0pen
	Download all and edit file	uploads					⊽0pen
	Trace history						⊽0pen
Contact administrator							

Figure 6.1.1-1 Submenu screen (list of Operations)

For details on the registration method, please refer to "User Instruction Menual\_Basic Consol" in the related Menual.

### 6.2 Terraform driver console

This section describes the operation on the Terraform console.

### 6.2.1 Interface information

(1) In [Interface Information], user can maintain (browsing/update) the information of Terraform that is associated with the ITA system. User will need a User Token issued by Hostname of Terraform and User of Terraform to be targeted with.

	Terraform							User name (Syste Login I Change password	m Administrator] D [administrator] Logout
≡ Menu									
Main menu	Description								⊽Open
Interface information	Display filter								∆Close
Organizations list	Discard	No.	Hostname Sta	tus monitoring cycle (milliseconds)	Number of rows to display progress	status Remarks	Last update date/time	Last updated by	
Workspaces list	Exclude discarded records	▼ Search from pulldown	▼ Search from pulldown	Comparison of the search from pulldown	✓ Search from pulldown	Search from pulldown	~	▼ Search from pulldow	n
Movement list									
Module files									
Policies list	Filter	Clear filter					,		_
Policy Sets list	Auto-filter								
PolicySet-Policy link list									
PolicySet-Workspace link list	List								∆Close
Movement details	Update Discard No. — Update linter	Hostname	User Token Statu terprise ******	s monitoring cycle (milliseconds) 🖨   3,000	lumber of rows to display progress	status@ Remarks@ Last upd 1,000 2015/04/0	ate date/time@ Last updat 18:00:00 System Admin	ed by <del>0</del> istrator	
Substitution value list	Filter result count: 1								
Execution	Output Excel								
Check operation status									
Execution list									
	Download all and edit file u	iploads							⊽Open
	Trace history								⊽Open

Figure 6.2.1–1 Submenu screen (Interface Information)

(2) Clicking the "List" button and then "Update" button will manage the registration of interface informations.

If you execute with interface information unregistered or multiple records registered, the work execution will be an unexpected error.

List							∆Clo
No.	Hostname*	User Token	Status monitoring cycle (milliseconds)*	Number of rows to di	splay progr	Last update date/time	Last updated b
1	inter the host nam	Q	3000		1000	Auto-input	Auto-input
•							
*is	a required item.						
		Upda	te				

Figure 6.2.1-2 Registration screen (Interface Information)

(3) The list of items on the interface information screen is as follows.

lte	m		Innut	Innut	Restriction
	,	Beeenpaon	required	type	Received
Hostname		Enter hostname for Terraporrm Enterprise, which	0	Menual	Maximum length
		the target for link with the ITA system.		input	256 bytes
User Token		Enter the User Token issued by User Settings in	0	Menual	Maximum length
		Terraform.		input	256 bytes
Proxy	Address	Input the Proxy server address.		Menual	
		If ITA is under a Proxy environment, you might		input	
		need to configure it to connect to Terraform.			
	Port	Input the Proxy server port.		Menual	
		If ITA is under a Proxy environment, you might		input	
		need to configure it to connect to Terraform.			
Condition of	observation	Enter the refresh space for the log displayed in	0	Menual	Minimum value
period (Un	it milli	"6.2.14 Check operation status". Usally, about		input	1000 ms
second)		3000 milliseconds is the recommended value.			
Number of	lines	Enter the maximum number of lines to be	0	Menual	-
progress s	tatus	displayed in the progress log and error log in		input	
displayed		"6.2.14 Check operation status ". Usally, about			
		1000 lines is the recommended value.			
NULL link		If the specific value of the parameter sheet in the "	0	List	
		Substitution value auto-registration setting" is		selection	
		NULL(blank), users can set registrations to the list			
		to have the value NULL(blank) or not.			
		This value is applied when "NULL Link" (In the			
		Substitution value auto-registration setting menu)			
		is blank.			
		If "Enable", any value in the parameter sheet is			
		registered in the substitution value list.			
		If "Disable", the value is registered in the value			
		list only if the parameter sheet contains a value.			
Remarks		Free description field.	-	Menual	Maximum length
				input	4000 bytes

# Table 6.2.1-1 Item list(interface information)

# 6.2.2 Organizations list

(1) In "Organizations list", performs maintenance (browsing/registration/update/abolition) of the Organizations used in Terraform is performed. In addition, the Organization registered with the ITA system can be linked (register/update/delete) to Terraform.

Exastre	Terraform							U: Chang	er name [System Administrat Login ID [administrat e password Logout
	Description								⊽Open
	Display filter								∆Close
ר	Discard	Organization ID	Organization Name	Email address	Remarks	Last update	date/time	Last updated by	
	Exclude discarded records $\checkmark$	~				~	-		
		<ul> <li>Search from pulldown</li> </ul>	<ul> <li>Search from pulidown</li> </ul>	<ul> <li>Search from pulldown</li> </ul>	<ul> <li>Search from pulldown</li> </ul>			<ul> <li>Search from pulldown</li> </ul>	
	Filter	Clear filter							
	Auto-filter								
	List/Update								∆Close
					Terraform Enterprise a	ssociation			
	Update Discard Organizati	on ID Organization Names	⊖ Email address⊖	Status check	Association status	Register u	pdate Delet	Last update date/time:	) Last updated by⊖
	Update Discard	1 Organization_001	ita-exastro@example.co	Association status che	eck	Register	pdate Delete	2020/10/08 16:01:51	System Administrator
	Update Discard	2 Organization_002	it-automation@example	Com Association status che	KK	Register	pdate Delete	2020/10/08 16:02:15	System Administrator
	Filter result count: 2								
	Output: Excel								
		•							

Figure 6.2.2-1 Submenu screen (Organizations list)

(2) Clicking the "Register" button and then "Start registration" button will register the Organization informations.

Register				∆Close
Organization ID rganization	Name" Email address	Remarks	Last update date/time	Last updated by
Auto-input			Auto-input	Auto-input
4				►
**is a required item.				
Death	Desister			
Back	Register			

Figure 6.2.2-2 Registration screen (Organizations list)

(3) After registering your Organization, user can check the link status with Terraform by clicking the "Check link status" button from "List/Update".

Depending on the link status, the Link to Terraform (Register/ Update / Delete) button changes to active and you can perform the integration with Terraform by clicking.

If the work is executed without the Organization being linked (registered) with Terraform, the work execution will be an unexpected error.

If hostname and User Token registered in <u>"6.2.1 Interface Information"</u> are incorrect, the link with Terraform will fail, and the following message will be displayed in the link status. "Failed to connect to Terraform. Check the interface information".

Clicking the Workspaces button will move the user to the target Organization "6.2.3 Workspaces list"

List/Upd	iate										∆Close
Update Discard Organization TD+ Organization Name* Email address*					Terraform Enterprise association					lact undate date/time∆	Last updated by
				v	Status check	Association status⊜	Register	update	Delete		
Update	Discard	1	Organization_001	ita-exastro@example.com	Association status check	Registered	Register	update	Delete	2020/10/08 16:01:51	System Administrator
Update	Discard	2	Organization_002	it-automation@example.co	Association status check	No registration	Register	update	Delete	2020/10/08 16:02:15	System Administrator
<											>
Filter result	t count: 2										
		l i									

# Figure 6.2.2-3 Terraform link (Organizations list)

(4) The list of items on the organizations list screen is as follows.

		Table 0.2.2-1 Item ist (Organizatio	ma nat/		
li	tem	Description	Input required	Input type	Restriction
Organization	n Name	Enter the name of the Organization.	0	Menual	Maximum length 40
		Alphanumeric characters and symbols (_ ,-)		input	bytes
		only (underbars and hyphens) are available.			
Email addres	SS	Enter the Email address of the Organization.	0	Menual	Maximum length
				input	128 bytes
Terraform	Link status	Button to execute the link status check.	-	-	
Link	check				
	Link status	For the target Organization, the status of link	-	-	
		with Terraform is displayed.			
		If you are not registered with Terraform, "No			
		registration". If you are registered the			
		difference email address, "Updated".			
		If it is registered, it will be displayed as			
		"Registered".			
	Registration	Button to execute registration. It is activated	-	-	
		in the case of "No registration". Click to			
		register the target organization in Terraform.			
	Update	Update button. It is activated in the case of	-	-	
		"update". Click to update the email address			
		of the target organization registered in			
		Terraform.			
	Delete	Delete button. It is activated in the case of	-	-	
		"registered", "update". Click to delete the			
		target organization registered in Terraform.			
		※Deleted Organization cannot be restored.			
		Workspace under the organization will also			
		be deleted.			
Workspace I	ist	Moves the user to "6.2.3 Workspaces list"			
Remarks		Free description field.	-	Menual	Maximum length
				input	4000 bytes

# Table 6.2.2-1 Item list (Organizations list)

### 6.2.3 Workspaces list

(1) In "Workspaces list", performs maintenance (browsing/registration/update/abolition) of Workspace used in Terraform.

Also, Workspace registered in the ITA system can be linked (register/update/delete) to Terraform.

Workspace is linked to Organization, first it is necessary to register the target in "<u>6.2.2</u> <u>Organizations List</u>".

Exastre	Terraform Charge ga	ame [System Administra Login ID [administra assword Logout
Menu	Description	⊽Open
rface information	Display filter	∆Close
nizations list	Discard Horkspace ID Organization Horkspace Name Terraform Version Remarks Last update date/time La	st updated by
spaces list	Exclude discarded records v v Search from pulldown v Search from pul	sarch from pulldown
ment list		
e files		
s list	Filter Clear filter	
Sets list	⊠ Auto-Atter	
iet-Policy link list		
Set-Workspace link	List/Update	∆Clos
nent details	Update Discard Workspace ID@ Organization@ Workspace Name@ Terraform Version@ Terraform Enterprise association Last update date/time@ L	Last updated by 🖨
rs_assign_master	Status check Association status (kejister update D Update Decard 1 Organization_801 Workspace_801 Association status (heck Register update 2020/10/08 16:06:43 Sy	ystem Administrator
ution value list	Update Docard 2 Organization_882 Workspace_892 0.12.22 Accordition status theol Register update 2808/10/88 16:87:88 5	ystem Administrator
on	Filter result count: 2	
operation status	Output Excel	
ion list		
ect administrator		

Figure 6.2.3-1 Submenu screen (Workspaces list)

(2) Clicking the "Register" button and then "Start registration" button will register the Workspace informations.

Register					∆Close
Workspace ID Organization	* Workspace Name*	Terraform Version	Remarks	Last update date/time	Last updated by
Auto-input				Auto-input	Auto-input
4					Þ
$\%^*$ is a required item.					
Back	Register				

Figure 6.2.3-2 Registration screen (Workspaces list)

(3) After registering your Workspace, user can check the link status with Terraform by clicking the "Check link status" button from "List/Update".

Depending on the link status, the Link to Terraform (Register/ Update / Delete) button changes to active and you can perform the integration with Terraform by clicking.

If the work is executed without the Organization being linked (registered) with Terraform, the work execution will be an unexpected error.

If hostname and User Token registered in <u>"6.2.1 Interface Information"</u> are incorrect, the link with Terraform will fail, and the following message will be displayed in the link status.

"Failed to connect to Terraform. Check the interface information".

If the selected Organization is not connected (registered) to Terraform, a similar message is displayed.

Clicking the "Organization" link will move the user to the target "6.2.2 Organizations list". Clicking the Movement list will move the user to the target Organization:Workspace "6.2.4 Movement list".

Clicking the PolicySet-Workspace Link List button will move the user the target Organization:Workspace "6.2.8 PolicySet-Policy link list".

List/U	pdate								∆Close
	al			Terraform Enterprise association					
Update	e Uiscard Work	cspace IV₩	Status check	Association status⊕				last update date/time⇔	Last updated by
Update	Discard	1	Association status check	Registered	Register	update	Delete	828/18/08 16:06:43	System Administrator
Update	Discard		Association status check	Failed to connect to Terraform Enterprise. Please check the interface information.	Register	update	Delete	828/18/08 16:07:08	System Administrator
<									>
Filter re	sult count: 2								Table setting
	Output Evcel								
	ouput Exter								

# Figure 6.2.3-3 Terraform link (Workspaces List)

(4) The list of items on the Workspaces list screen is as follows.

	ltem	Description	Input required	Input type	Restric	tion
Organization Name		Select the Organization Name registered in	0	List		
		"6.2.2 Organizations list".		selection		
Workspace	Name	Enter the name of the Workspace name.	0	Menual	Maximum	length
		Alphanumeric characters and symbols (_ ,-)		input	90 bytes	
		only (underbars and hyphens) are available.				
Terraform V	ersion	Enter the version of Terraform. If it is blank,		Menual		
		the new version will be automatically applied		input		
		at the time of link (registration).				
Terraform	Check link	Button to execute the integration check link	-	-		
Link	status	status.				
	Link status	For the target Workspace, the status of link	-	-		
		with Terraform is displayed.				
		If you are not registered with Terraform, "No				
		registration". If you are registered the				
		difference Terraform version, "Updated".				
		If it is registered, it will be displayed as				
		"Registered".				
	Registration	Button to execute registration. It is activated	-	-		
		in the case of "No registration". Click to				
		register the target Workspace in Terraform.				
	Update	Button to execute update. It is activated in	-	-		
		the case of "update". Click to update the				
		Terraform driver of the target Workspace				
		registered in Terraform.				
	Delete	Button to execute deletion. It is activated in	-	-		

### Table 6.2.3-1 item list(Workspaces list)

	the case of "registered", "update". Click to			
	delete the target Workspace registered in			
	Terraform.			
	※Deleted Workspace cannot be restored.			
Movement list	This button moves the user to "6.2.4			
	Movement list"			
PolicySet-Workspace Link	This button moves the user to "6.2.8			
list	PolicySet-Policy link list"			
Remarks	Free description field.	-	Menual	Maximum length
			input	4000 bytes

### 6.2.4 Movement list

(1) In "Movement list", performs maintenance (browsing/registration/update/abolition) for Movement names.

Movement needs to be linked with Organization: Workspace as Terraform usage information, first it is necessary to register the target in <u>"6.2.2 Organizations list"</u> and "<u>6.2.3 Workspaces list"</u>.

Exastro IT Automation	Terraform	User name [System Administrator] Login ID [administrator] Change password Logout
≡ Menu		
Main menu	Description	⊽Open
Interface information	Display filter	∆Close
Organizations list	Discard Novement TD Novement Name Orchestrator Delay timer Terraform Enterprise in Last update date/ti	me Last updated by
Workspaces list	Exclude discarded records v v v v v v v v v v v v v v v v v v v	
Movement list	Search from pulldown     Y Search from pulldown	<ul> <li>Search from pulldown</li> </ul>
Module files		
Policies list		
Policy Sets list	Filter Clear filter	
PolicySet-Policy link list	☑ Auto-filter	
PolicySet-Workspace link list		
Movement details	List, Update	∆Close
col_vars_assign_master	Update Discard Novement IDa Novement Name@ Orchestrative@ Delay time@ Terriform Enterprise integration OrganizationNovexce@ Last update date/time@ Last updated by@	
Substitution value list	Update Discard 1 Movement_001 Terraform Organization_001:Workspace_001 2020/10/08 16:15:00 System Administrator	
Execution	Observe         2         Novement_002         Terreform         10         Organization_0021korkspace_002         2020/10/00         10:15:44         System Administrator           Filter result count: 2         2	
Check operation status		
Execution list	Output Dool	
Contact administrator		

Figure 6.2.4-1 Submenu screen (Movement list)

(2) Clicking the "Register" button and then "Start registration" button will register the Movement informations.

Register					∆Close
Movement ID Name*	Delay timer	Terraform Enterprise integration Organization:Workspace*	Remarks	Last update date/time	Last updated by
Auto-input				Auto-input	Auto-input
**is a required item.					,
Back		Register			

Figure 6.2.4-2 Registration screen (Movement list)

(3) Clicking the Movement-Module link button will move the user to the target Movement's "6.2.10 Movement-Module link"

List/Upc	late							
							Toppaform integration	
History	Update	Discard	Movement ID⇔	ment Name⊖	Orchestrator⇔	Delay timer⇔	Organization:Workspace♦	Movement-Module link
History	Update	Discard	3	L	Terraform		ExaTest:docs	Movement-Module link

Figure 6.2.4-3 Submenu screen (Movement list)

(4) The items on the Movement list screen are as follows.

lte	em	Description	Input	Input	Restriction
			required	type	
Movement N	lame	Enter the name of the Movement.	0	Menual	Maximum length
				input	256 bytes
Orchestrator		"Terraform" is automatically entered.	-	-	-
Delay timer		Enter the specified period (1~) if you want the	-	Menual	-
		status to be displayed as a warning when the		input	
		movement is delayed for the specified period.			
		(Unit: minutes)			
		If it is not entered, no warning will be			
		displayed.			
Terraform	Organizati	Select the Workspace registered (linked to	0	List	
use	on:	Organization) in "6.2.3 Workspaces list".		selection	
information	Workspace				
Movement-Module link		Moves the user to "6.2.10 Movement-Module	-	-	
		link".			
Remarks		Free description field.	-	Menual	Maximum length
				input	4000 bytes

### Table 6.2.4-1 Item list(Movement list)

### 6.2.5 Module files

(1) In "Module files", performs maintenance (browsing/registration/update/abolition) of the module created by the user.

For more information about Module description, refer to "7.1 Module description".

Exastro IT Automation	Uer name (System Administr Logn ID (Jadministr Charge password Logaut	or] or]
≡ Menu		
Main menu	Description	
Interface information	Display filter $\triangle$ Close	Į.
Organizations list	Discard Module file ID Module file name Module file Last update date/time Last updated by	
Workspaces list	Exclude discarded records V V Search from pulidown V Search from pulidown V Search from pulidown V Search from pulidown	
Movement list		
Module files		
Policies list		
Policy Sets list	Filter Clear filter	
PolicySet-Policy link list		
PolicySet-Workspace link list	List/Update $\triangle$ Close	
Movement details	Update Discard Module file ID 👌 Module file name) Module file Remarks) Last update date/time) Last updated by)	
col_vars_assign_master	Update Oscard 1 msin_module_001 msin_tf 2020/10/08 17:27:11 System Administrator	H
Substitution value list	Filter result count: 1	
Execution	Output Excel	
Check operation status		
Execution list		
	Register	
Contact administrator		

Figure 6.2.5-1 Submenu screen (Module files)

(2) Clicking the "Register" button and then "Start registration" button will register the Movement informations.

Register					∆Close
Module file ID Module	file name* M	odule file	Remarks	Last update date/time	Last updated by
Auto-input	Choose File N	lo file chosen		Auto-input	Auto-input
	Upload	in advance			
	Upload status:				
•					
*is a required item.					
		_			
Back	Register				

Figure 6.2.5-2 Registration screen (Module files)

Please "Upload in advance (1)" the "Module files" before "register". Please click the "Register" button after checking the Module file name displayed in the "Upload status(2)".



(3) Clicking the Movement-Module link button will move the user to the target Movement's "6.2.10 Movement-Module Link".

List/Up	date						
History	Update	Discard	Module file	ID⇔	Module file name⊖	Module file	Movement-Module link
History	Update	Discard		2	main_module_001	<u>main.tf</u>	Movement-Module link

Figure 6.2.5-3 Submenu screen (Module files)

(4) The list of items in the Module files is as follows.

Item	Description	Input requi red	Input type	restriction
Module files name	Enter the module file name that you want to list in ITA.	0	Menual	Maximum length 256
			input	bytes
Module files	Upload the created Module files.	0	File	Maximum size 4G
			selection	bytes
Movement-	Moves the user to "6.2.10 Movement-Module link"			
Module link				
Remarks	Free description field.	-	Menual	Maximum length
			input	4000 bytes

# Table 6.2.5-1 Item list (Module files)

# 6.2.6 Policies list

(1) In "Policies list", performs maintenance (browsing/registers/updates/abolition) of Policy created by the users.

	For more information	about Policy	description,	refer to	" <u>7.2 Policy</u>	<u>description</u>	<b>'</b> .
--	----------------------	--------------	--------------	----------	---------------------	--------------------	------------

Exastro	Terraform					User name [System Login ID	Administrator] [administrator]
IT Automation						Change password	Logout
≡ Menu							
Main menu	Description						⊽Open
Interface information	Display filter						∆Close
Organizations list	Discard	Policy ID	Policy Name	Policy file	Last update d	ate/time Last update	ed by
Workspaces list	Exclude discarded records 👻	The second secon	- County from an Ablance	County from each trans	~	T Smarth former	- Diana
Movement list				·			
Module files							
Policies list	4						
Policy Sets list	Filter	Clear filter					- 1
PolicySet Policy link list	Auto-filter						
PolicySet Workspace							
link list	List/Update						∆Close
Movement details	Update Discard Policy 10	Policy Name 🖨 Policy file	Remarksé Last up	date date/time@ Lav	st updated by		
col vans assign master	Update Discard	1 policy_001 policyl.sentin	el 2020/10/0	88 17:32:39 Syst	em Administrator		
Substitution value list	Filter result count: 1						
Execution	Output Excel						
Check operation status							
Execution list	Register						⊽Open
	Register						vopen
Contact administrator							

Figure 6.2.6-1 Submenu screen (Policies list)

(2) Clicking the "Register" button and then "Start registration" button will register the Policy.

Register				∆Close
Policy ID Policy Name	Policy file	Remarks	Last update date/time	Last updated by
Auto-input	Choose File No file chosen Uploud in advance Upload status:		Auto-input	Auto-input
**is a required item.				,
Back	Register			

Figure 6.2.6-2 Regristration screen (Policies list)

Please "Upload in advance (1)" the "Policy list" before "register". Please click the "Register" button after checking the Playbook file name displayed in the "Upload status(2)".

Policy file*						
Choose File policy1.sentinel						
Upload in advance 1						
Upload status: Uploaded. File name policy1.sentinel Size178bytes	2					

(3) Clinking the PolicySet-Policy link list button will move the user to "6.2.8 PolicySet-Policy link list".

List/Up	date							
History	Update	Discard	Policy ID⇔	Policy Name⇔	Policy file	PolicySet-Policy	link list	Access permission
History	Update	Discard	1	TestPolicy	Policy.sentinel	PolicySet-Policy	link list	Role to allow access⇔

### Figure 6.2.6-3 Submenu screen (Policies list)

(4) The list of items managed by Policies is as follows.

ltem	Description	Input required	Input type	Restriction
Policy name	Enter the Polycy name that you	0	Menual	Maximum length
	want to list in the ITA.		input	256 bytes
Policy file	Upload the created Module files.	0	File	Maximum size 4G
			selection	bytes
PolicySet-Policy link	Moves the user to "6.2.8			
list	PolicySet-Policy Link list"			
Remarks	Free description field.	-	Menual	Maximum length
			input	4000 bytes

### Table 6.2.6-1 Item list(Policies list)

### 6.2.7 Policy Sets list

(1) In "Policy Sets list", performs maintenance (browsing/register/update/abolish) of the Policy Sets. Policy Set is linked with Polycy and Workspace in "<u>6.2.8 PolicySet-Policy link list</u>" and "<u>6.2.9</u> <u>PolicySet-Workspace link list</u>" to apply Polycy to Workspace at the time of operation executing.

Exastro	Terraform	User name [System Administrator] Login ID (administrator) Change password Logout
≡ Menu 🄶		
Main menu	Description	⊽Open
Interface information	Display filter	∆Close
Organizations list	Discard PolicySet ID PolicySet Name Remarks Last update date/time	Last updated by
Workspaces list	Exclude discarded records V V Search from pulidown V Search from pulidown	▼ Search from pulldown
Movement list		
Module files		
Policies list	Filter Clear filter	
Policy Sets list	☑ Auto-filter	
PolicySet-Policy link list		
PolicySet-Workspace link list	List/Update	∆Close
Movement details	Update Discard PolicySet ID⊕ PolicySet Name⊕ Remarks⊕ Last update date/time⊕ Last updated by⊕	
col_vars_assign_master	Update Discard 1 PolicySet_001 2020/10/08 17:34:45 System Administrator	
Substitution value list	FILER PESUL COURT 1	
Execution	Output Excel	
Check operation status		
Execution list	Register	∇Open
Execution list		
Contact administrator		

Figure 6.2.7-1 Submenu screen (Policy Sets list)

(2) Clicking the "Register" button and then "Start registration" button will register the PolicySet.

Register					∆Close
PolicySet ID PolicySet Name*		Remarks	Last update date/time	Last updated by	
Auto-input			Auto-input	Auto-input	
*is a required item.					
Back	Register				

#### Figure 6.2.7-2 Registration (Policy Sets list)

(3) Clicking the PolicySet-Policy link list button will move the user to "6.2.8 PolicySet-Policy link list". Clicking the user to PolicySet-Workspaces link list button will move the user to "6.2.9 PolicySet-Workspace link list".

List/Up	date					
History	Update	Discard	PolicySet ID⊖	PolicySet Name⇔	PolicySet-Policy link list	PolicySet-Workspace link list
History	Update	Discard	1	TestPolicySet	PolicySet-Policy link list	PolicySet-Workspace link list

Figure 6.2.7-3 Submenu screen (Policy Sets list)

(4) The list of items on the registration screen is as follows.

ltem	Description	Input requi red	Input type	Restriction
PolicySet name	Enter the PolycySet name that you want to list in	0	Menual	Maximum length 256
	the ITA.		input	bytes
PolicySet-Policy link	Moves the user to "6.2.8 PolicySet-Policy link list".			
list				
PolicySet-	Moves the user to "6.2.9 PolicySet-Workspace link			
Workspaces link list	list".			
Remarks	Free description field.	-	Menual	Maximum length
			input	4000 bytes

# Table 6.2.7-1 Item list(PolicySets list)

### 6.2.8 PolicySet-Policy link list

(1) In "PolicySet-Policy link list", performs maintenance (browsing/registration/update/abolition) for the linking of Policy created in "<u>6.2.6 Policies list</u>" and PolicySet created in "<u>6.2.7 Policy Sets</u> <u>list</u>".

Exastre	Terraform	User name [System Administrator] Login ID [administrator] Change password Logout
≡ Menu ^		
Main menu	Description	⊽Open
Interface information	Display filter	∆Close
Organizations list	Discard PolicySet-Policy Limk ID Policy Set Policy Last update date/time	E Last updated by
Workspaces list	Exclude discarded records v ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	▼ Search from pulldown
Movement list		
Module files		
Policies list		*
Policy Sets list	Filter Clear filter	
PolicySet-Policy link list		
PolicySet-Workspace link list	List/Update	∆Close
Movement details	Update Discard PolicySet-Policy Link ID⊕ Policy Set⊖ Policy⊕ Remarks⊕ Last update date/time⊕ Last updated by⊕	
col_vars_assign_master	Update         Discard         1         1:PolicySet_001         1:policy_001         2020/10/08         17:36:12         System Administrator	
Substitution value list	Filter result count: 1	
Execution	Output Excel	
Check operation status		
Execution list	Parister	
-	Register	⊽Open
Contact administrator		

Figure 6.2.8-1 Submenu screen (PolicySet-Policy link list)

(2) Clicking the "Register" button and then "Start Registration" button will register the PolicySet-Policy link.

Register					∆Clos
PolicySet-Policy Link ID	Policy Set*	Policy*	Remarks	Last update date/time	Last updated by
Auto-input	•	•		Auto-input	Auto-input
				-	
*is a required item.					
	Regist	er			

Figure 6.2.8-2 Registration screen (PolicySet-Policy link list)

(3) Clicking the Policy Set link will move the user to "6.2.7 Policy sets list" Clicking the Policy link will move the user to "6.2.6 Policies list".

List/Update						
History	Update	Discard	PolicySet-Policy Link ID⊖	Policy Set⊖	Policy≑	
History	Update	Discard	1	1:TestPolicySet	1:TestPolicy	

Figure 6.2.8-3 Submenu screen (PolicySet-Policy Link list)

(4) The list of items on the PolicySet-Policy link list is as follows.

ltem	Description	Input requi red	Input type	Restriction
Policy Set	Select the Policy Set name registered in "6.2.7 Policy	0	List	
	Sets list".		selection	
Policy	Select the Policy name registered in "6.2.6 Policies	0	List	
	list".		selection	
Remarks	Free description field.	-	Menual	Maximum length
			input	4000 bytes.

Table 6.2.8-1 Item list (PolicySet-Policy link list)

### 6.2.9 PolicySet-Workspace link list

(1) In "PolicySet-Workspace link list", performs maintenance (browsing/registration/update/abolition) for the linking of Workspace created in "<u>6.2.3 Workspaces list</u>" and PolicySet created in "<u>6.2.7</u> Policy Sets list".

Exastro	User name (System Login II)	m Administra D [administra
- Il Automation	Change password	Logout
≡ Menu	Description	∀Open
Main menu		V Open
Interface information	Display filter	∆Close
Organizations list	Discard PolicySet-Workspace Link ID Policy Set Organization:Workspace Last update date/time Last updat	ted by
Workspaces list	Exclude discarded records v Caardy from militiana V Caardy from militiana V Caardy from militiana	pulidowo
Movement list	search from pullowin     reaction from pullowin     reaction from pullowin     reaction from pullowin	pundown
Module files		
Policies list	c	Þ
Policy Sets list	Filter Clear filter	
	☑ Auto-filter	
PolicySet-Policy link list		
PolicySet-Workspace link list	List/Update	△Close
Movement details		
	Ugdate Discard PolicySet-Morkspace Link 10 policy Set Organization:Morkspace at Relarks Last uppate bate/reline tast uppated by Update Discard 1 1:PolicySet_001 Organization_001:Norkspace_001 2020/10/08 17:37:22 System Administrator	
col_vars_assign_master	Filter result count: 1	
Substitution value list		
Execution	Output Excel	
Check operation status		
Execution list		
EXECUTION IISC	Register	⊽Open
Contact administrator		

Figure 6.2.9-1 Submenu screen (PolicySet-Workspace link list)

(2) Clicking the "Register" button and then "Start Registration" button will manage register of PolicySet-Workspace link.

Register $\triangle$ Close						
Policy Set*	Organization:Workspace*	Remarks	Last update date/time	Last updated by		
•	•		Auto-input	Auto-input		
			1	► ►		
Register						
	Policy Set*	Policy Set Organization:Workspace	Policy Set Organization:Workspace Remarks           Policy Set         Organization:Workspace         Remarks           Remarks         Image: Comparison of the set	Policy Set Organization:Workspace Remarks Last update date/time           Policy Set         Organization:Workspace         Remarks         Last update date/time           Image: Im		

Figure 6.2.9-2 Registration screen (PolicySet-Workspace link list)

(3) Clicking the Policy Sets link moves the user to the target "6.2.7 Policy Sets list"

Clicking the Organization: Workspace link moves the user to the target "6.2.3 Workspaces list".

List/Update				
History Update	Discard PolicySet-Works	pace Link ID⊖ Po	olicy Set⊖	Organization:Workspace😝
History Update	Discard	1 <mark>1:T</mark>	<u>TestPolicySet</u>	<u>ExaTest:docs</u>

# Figure 6.2.8-3 Submenu screen (PolicySet-Workspace Link list)

(4) The list of items for PolicySet-Workspace association list is as follows.

Item	Description	Input	Input	Restriction		
		required	type			
Policy Set	Select the PolicySet name registered in "6.2.7 Policy	0	List			
	Sets list".		selection			
Organization:Work	Select the Workspace registered (link to	0	List			
space	Organization) in "6.2.3 Workspaces list".		selection			
Remarks	Free description field.	-	Menual	Maximum length		
			input	4000 bytes		

# Table 6.2.9-11tem list (PolicySet-Policy link list)
### 6.2.10 Movement module link

(1) In "Movement module link", performs maintence (browsing/register/update/ abolition) of the module files executed in the Movement.

	Terraform					User name (System Administrator) Login ID (administrator) Change password Logout
≡ Menu 🄶						
Main menu	Description					⊽Open
Interface information	Display filter					∆Close
Organizations list	Discard	Associated item number	Movement	Mocule file	Last update date/tim	e Last updated by
Workspaces list	Exclude discarded records 🗸	✓ Search from pulldown	▼ Search from pulldown	▼ Search from pulldown	▼	▼ Search from pulldown
Movement list						
Module files						
Policies list	<				1	· · · · · · · · · · · · · · · · · · ·
Policy Sets list	Filter	Clear filter				
PolicySet-Policy link list						
PolicySet-Workspace link list	List/Update					∆Close
Movement details	Update Discard Associated	litem number⊖ Movement⊖	Mocule file⊖ Remar	ks⊜ Last update date/t	:ime⊖ Last updated by⊖	
col_vars_assign_master	Update Discard	1 1:Movement_001	1:main_module_001	2020/10/08 17:38:35	System Administrator	
Substitution value list	Update Discard	2 1:Movement_001	2:main_module_002	2020/10/08 17:38:57	System Administrator	
Execution	Filter result count: 2					
	Output Excel					
check operation status						
Execution list						
Contact administrator						20

Multiple Module files can be linked to the Movement.

Figure 6.2.10-1 Submenu screen (Movement module link)

(2) Clicking the "Register" button and then "Start Registration" button will manage the Movement module link.

Register					∆Close
Associated item number Auto-input	Movement*	Module file	Remarks	Last update date/time Auto-input	Last updated by Auto-input
**is a required item				4	Þ
Back	Reg	ister			

Figure 6.2.10-2 Registration screen (Movement module link)

(3) Clicking the Movement URL will move the user to "6.2.4 Movement list". Clicking the Module file URL will move the user to "6.2.5 Module files"

List/Upd	late						
History	Update	Discard	Associated item	number⇔	Movement⇔	Mocule file⊖	/ Rol
History	Update	Discard		1	<u>3:Test1</u>	2:main_module_001	

(4) The item list of Movement module link is as follows

ltem	Description	Input requi red	Input type	Restriction
Movement	Select the Movement registered in "6.2.4 Movement	0	List	-
	<u>list</u> ".		selection	
Module files	Select the Module file registered in "6.2.5 Module files".	0	List	-
			selection	
Remarks	Free description field.	-	Menual	Maximum length 4000
				bytes

### Table エラー! 参照元が見つかりません。-1 Item list(Movement module link)

### 6.2.11 Variable Nest list

In the "Variable Nest list" menu, users can see the type for the variables defined in the tf file registered in the "Module file collection" menu,

and if list, set, tuple, or object is defined in said variables, the user can also change and see the set maximum repetitions for the Member variables.

The items in this menu cannot be registered, discarded or restored as BackYard manages the records based on the Module file collection.

For more information, please see " 9.1Module file input example/ register example

For more information regarding the examples of flows with the Variable Nest list, please see 9.2Variable nest list flow example".

Exastre	Terraform	ı						ようこそ[システム管理] ログインID [adminis パスワード変更 ログアウ	ぎ]さん trator
≡ Menu 🄶									
メインメニュー	説明							▽開・	۲.
インターフェース情報	表示フィルタ							△閉じる	5
Organizations管理	廃止	項番	変数名	メンバー変数名(経返し有)	最大繰返数	アクセス権	最終更新日時	最終更新者	I
Workspaces管理	廃止含まず 🗸	~~			~		~		
Movement一覧		▼ プルダウン検索	▼ プルダウン検索	▼ ブルダウン検索	▼ プルダウン検索	▼ プルダウン検診		▼ プルダウン検索	
Module奏材集	マイルタ	フィル	タクリア						1
Policies管理	オートフィルタ	<u> </u>							
Policy Sets管理									
PolicySet-Policy紐付管理	一覧							▽開・	<
PolicySet-Workspace紐 付管理	全件ダウンロードと	ファイルアップロード編	譙					▽開・	<
Movement-Module 組付	変更履歷							▽開	<
変数ネスト管理									
代入佈自動登録設定									





(5) Press the "List">"Update" button to edit the maximum amount of repetitions.

項	番 変数名	メンバー変数名(繰返し有)	最大縵返数	設定	アクセス権 アクセス許可ロール	備考	最終更新日時	最終更新者
	12 VAR_sample	key-object_0	2	設定			自動入力	自動入力
3	**は必須項目で	च.						
	声。	<	雨柴					

### Figure 6.2.11-2 Update screen (Variable nest list)

Item	Description	Input requi	Input method	Restrictions
Variable name	Displays the variable(s) used in the file registered with the Movement-Module link.	-	No input required	
Member Variable name(With repetitions)	If the Nest variable list target is a Member variable, the Member variable name will be displayed. The Member variables are displayed concatenating with variables with "." for each stage.	-	No input required	
Maximum amount of repetitions	Input a number between 1 and 99,999,999. The initial value is set to the number obtained from the defauly value in the tf file. If there is not "default" in the tf file, the value "1" will be set. If it is not last updated by "Terraform variable update procedure", it is not possible to change the value from updating the Module file.	0	Manual input	Input value: 1~99,999,999
Remarks	Free description field	-	Manual input	Maximum length 4000 bytes

### (6) The item list is as following

※Initial registrations and repetition updates are not happening in real-time, so it might take a couple of minutes before the variables can be used in "6.2.13 Substitute value auto registration" and "6.2.14 Substitute value list"

Chapter "8.2 Maintenance and Maintaining" contains more information regarding the timing of when they are updated.

### (7) Access permission role

The permission roles set for variable nesting management are set to the permission roles of the Module material collection in which the relevant variable is defined.

### 6.2.12 Substitution value automatic registration

(1) In "Substitution value automatic registration", users can link Parameter sheets created with the Menu creation tool (With Operation) and Movement variables.
 The registered information will be reflected to the Substitution value list by the BackYard Process.
 The reflection rules is mentioned in <u>7.3 BackYard Content (2) substitution value automatic registration configuratio.</u>

Exastre	Terraform							Cha	User name (System Adminis Login ID (adminis inge password Logou	trator] strator] it
<u> =</u> Menu										
Main menu	Description								⊽Ope	n
Interface information	Display filter								∆Clos	se
Organizations list					Parameter sheet(From)					11
Workspaces list	Discard			group 				Last update date/time	Last updated by	11
Novement list	Exclude discarded records V	~	10	Nane	ID	Nane		~		1
MOVEMENT ISC		▼ Search from pulldown	▼ Search from pt		▼ Search from pulldown					
Module files										
Policies list										
Policy Sets list	4									,
PolicySet-Policy link list	Filter	Clear filter								
	✓ Auto-filter									
link list										
Movement details	List/Update								⊽Оре	en
Substitution value auto-registration	Register								⊽Ope	an
setting	Download all and edit file u	uploads							⊽Ope	en
Substitution value list	Trace history								⊽Ope	en
Execution										
Check operation status										
Execution list										

Figure 6.2.11-1 Sub-menu screen (Substitution value automatic registration)

(2) Clicking the "Register" button and then "Start Registration" button will manage the substitute values.

Register										∆Close
No.	Parameter shee	t(From)	Registration method	1	TaC variable(To) Key variable Va	alue variable	HCL setting*	NULL link	Last update date/time	Last updated by
Auto-input	wenu group:wenu	Select menu	¥	Movement	Variable name Va Select Movement Sel	ariable name Hect Movement	OFF 💌	<b></b>	Auto-input	Auto-input
4										÷
is a re	quired item. Back	Re	gister							

### Figure 6.2.11-2 Registration Screen (Substitution value automatic registration)

(3) Clicking the Menu ID or the Menu name link will move the user to the target menu.

Lis	t/Upc	late								
						Paramete	r shee	et(From)		
His	story	Update	Discard	Item No.⇔	М	enu group		Menu	Ttem	Registration method⇔
					ID⇔	Name 🔶	ID⇔	Name⇔	1 CCm V	
Hi	istory	Update	Discard	1	2100011611	Substitution value	2	<u>Test Menu 1</u>	Parameter/Item 1	Key type
					, ,					

Figure 6.2.11-3 Submenu screen (Substitution value auto-registration settings)

(4) The list of items on the registration screen is as follows.

Column	FI	gure 6.2.11-1 Item list (Substitution value at		gistration	Destriction
Column		Description	input	tupo	Restriction
Menu group	·menu	The parameter sheet (with operation) created by		List	
Mena group	Incha	the menu creation function is displayed	Ŭ	selection	
		Select the appropriate parameter sheet		Selection	
Itom		The items in the selected parameter sheet are	0	Liet	
Item		diaplayed Select the target item	0		
Devietnetien			0	Selection	
Registration	method	value Type: Select when you want the set value	0	LIST	
		of the item to be the specified value of the linked		selection	
		Key Type: Select when you want the name of the			
		item to be the specified value of the linked			
		variable.			
		If the set value of an item is blank, it will not be			
		linkable.			
		Key-Value Type: Select when you want the name			
		of the item (Key) and the set value (Value) to be			
		used as the specified value of a linked variable.			
Movement		The movement registered in the Movement list is	0	List	
		displayed.Select Movement.		selection	
Кеу	Variable	The variables used in the materials registered in	0	List	Required if the
information	name	the Movement module link are displayed.	OR	selection	registration method is
		Select the variable you want to link to the specific	/		Key or Key-Value
		value in the Key type.			type.
Value	Variable	The variables used in the materials registered in	0	List	Required if the
information	name	the Movement module link are displayed.	OR	selection	registration method is
		Select the variable you want to link to the specific	/		Key or Key-Value
		value in the Value type.			type.
HCL setting		Select "OFF" or "ON".	0	List	
_		BackYard processing takes over the selected		selection	
		value when it is reflected in the subsititution			
		value list.			

NULL link	If the specific value of the parameter sheet in the	-	List	-
	"Substitution value auto-registration setting" is		selection	
	NULL(blank), users can set registrations to the			
	list to have the value NULL(blank) or not.			
	This value is applied when "NULL Link"(In the			
	Substitution value auto-registration setting menu)			
	is blank.			
	<ul> <li>If "Enable", any value in the parameter sheet is</li> </ul>			
	registered in the substitution value list.			
	·If "Disable", the value is registered in the value			
	list only if the parameter sheet contains a value.			
	<ul> <li>If it is blank, the "NULL link" value of the</li> </ul>			
	interface information is applied.			
Remarks	Free description field.	-	Menual	Maxumum length
			input	4000 byte

### 6.2.13 Substitution value list

(8) In "Substitution value list", substitute variables in Module used in the target Movement for each operation. Specific values can be maintained (browsing/register/update/abolition).

Exastro	Terraform					C.	User name [Syster Login II nange password	n Administrator] [administrator] Logout
≡ Menu								
Main menu	Description							⊽Open
Interface information	Display filter							∆Close
Organizations list	Discard	Item number	Operation	Movement	La	st update date/time	Last updat	ed by
Workspaces list	Exclude discarded records 🗸	✓ Comparison of the second	Search from pulldown	Search from pulldown	▼ 4	~	▼ Search from	pulldown
Movement list								
Module files								
Policies list	<	diase films	1					•
Policy Sets list	Filter	Clear niter						
PolicySet-Policy link list								
PolicySet-Workspace link list	List/Update							⊽Open
Movement details	Register							⊽Open
col_vars_assign_master	Download all and edit file u	ploads						⊽Open
Substitution value list	Trace history							⊽Open
Execution								
Check operation status								
Execution list								
Contact administrator								

Figure 6.2.12-1 Submenu screen (Substitution value list)

(9) Clicking the "Register" button and then "Start Registration" button will manage the substitute values.

Register						∆Close
Item number	Operation*	Movement	Variable name	Sensitive設定*	Specific Last update date/time	· Last updated by
Auto-input	•	•	Please select a Movement	•	Auto-input	Auto-input
**is a required iten	n.					•
Back	R	egister				

Figure 6.2.12-2 Registration screen (Substitution value list)

The variables in substitution value list are reflected from the file information registered in "<u>6.2.5</u><u>Module files</u>".

 $\therefore$  Please refer to the timing of reflection is described in "(3) Change of starting period" of "<u>8.2</u> <u>About the maintenance method</u>".

(10) For the variables registered in the substitution value list, the "variable name" is registered as "Key" and "Specific value" is registered as "Value" for the Variables managed in the Workspace on the Terraform side when the operation is executed.

If "HCL settings" is set to "ON", it will be registered with "HCL" checked.

If "Sentive settings" is set to "ON", it will be registered with "Sentive" checked.

(11) The list of items for assignment value list is as follows.

ltem	Description	Input requi	Input type	Restriction
		red		
Operation	Select the target Operation.	0	List	-
			selection	
Movement	Select the target Movement.	0	List	-
			selection	
Variable name	From the Module files registered in the Movement	0	List	-
	module link, the name of the variable attached to the		selection	
	selected Movement is displayed. Select a variable.			
HCL settings	Select "OFF" or "ON".	0	List	
	If "ON" is selected, "HCL" will be enabled for		selection	
	Variables when they are registered in the Workspace			
	on the Terraform side.			
	Use this setting when configuring a variable to a value			
	that is not a character string.			
Sensitive settings	Select "OFF" or "ON".	0	List	
	If "ON" is elected, the specific value will be encrypted		selection	
	won't be displayed on ITA.			
	Also keep in mind that when registering any variables			
	to the workspace on the Terraform side, "Sensitive"			
	for that variable will be enabled and specific values			
	will not be displayed.			
Specific value	Enter the specific value of the variable to use in	0	Menual	Maximum length
	Operations/Movements.		input	8192 bytes
Remarks	Free description field.	-	Menual	Maximum length
			input	4000 bytes

Table 6.2.12-1	Item list(Substitution	value list)
----------------	------------------------	-------------

(5) Updating ITA from Version 1.5 to 1.6 or later will make the "Variable name" of records registered in the substitution list display "ID conversion failed (ID). This happens due to how variables are extracted (2. Variable handling in Terraform driver). If this happens, the user will have to update the record and set a new variable name.

### 6.2.14 Execution

(1) Instructs to execute the operation. Select with the radio button from the Movement list and Operation list respectively, and when you press the execute button, it will move to "6.2.14 <u>Check</u> <u>operation statu</u>" and execute it.

Exastro	User name (System / Login ID (	Administrator] administrator]
	Change password	Logout
≡ Menu		
Main menu	Description	⊽Open
Interface information	Scheduling	⊽Open
Organizations list	Movement [Filter]	⊽Open
Workspaces list	Movement [List]	∆Close
Movement list	Select Movement ID & Movement Name Orchestrator Delay timer Orchestrator Remarks Last update date/time Last update	d by⊜
Module files	Organization:Morkspace	strator
Policies list	2         Hovement_002         Terraform         10         Organization_002:Norkspace_002         2020/10/08 I6:15:44         System Admini	istrator
Policy Sets list		•
PolicySet-Policy link list	Filter result count: 2	
PolicySet-Workspace link		
list	Operation [Filter]	⊽Open
Movement details	Operation [List]	∆Close
col_vars_assign_master		
Substitution value list	Select No. + Operation ID+ Operation name+ Scheduled date for execution+ Last execution date+ Remarks+ Last update date/time+ Last update	by⊜
5 - 1 <sup>2</sup>	1 1 0peration01 2020/10/08 16:00 2020/10/08 15:58:27 System Administ	trator
Execution	Filter result count: 1	_
Check operation status		
Execution list		
	Movement ID 1 Operation ID 1	
	Movement Nome Movement_Volt	
Context a desiriate text		

Figure 6.2.14-1 Submenu screen (Execution)

### ① Specify scheduled date/time

Users can reserve Execution and Plan confirmations by entering the "Scheduled date/time".

Only date/time can be registered for "Schedule date/time"

② Specify Movement

Select the Movement registered in the "6.2.4 Movement list".

### **③** Specify Operation

Select the Operation registered in the "6.1.1 Operations list".

### **④** Execution

Clicking the "Execute" button will move the user to "<u>"6.2.14 Check Operation status</u>" and execute the operation.

"Apply" will automatically be executed after the Plan and/or the PolicyCheck are completed.

### **5** Plan confirmation

Clicking the "Plan Confirmation" button will similarly to clicking the "Execute" button, start the execution. However, "Discard Run" will be applied to RUN after the Plan and PolicyCheck are completed, and "Apply" will not be executed.

If a module with an output block is run with Conductor,

the contents of the output block will be saved to the deta relay storage path(shared movement directory) as a json file.

This file allows users to use a value output by Terraform from a different Movement (in the same conductor).

File path:

[Data relay storage path]/[Conductor instance ID]/terraform\_output\_[Operation No].json Example

/exastro/data\_relay\_storage/conductor/000000001/terraform\_output\_000000001.json

Data relay storage path -[Conductor]-[Conductor interface information ] - [Data relay storage path] Conductor instance ID···[Conductor]-[Conductor list] - [Conductor instance ID](The 10 numbers from the left.)

÷

Operation No. · · · [Terraform]-[Execution list] - [Operation No.] (The 10 numbers from the left.) Description

variable "VAR\_sample" {
 type = string
 default = "sample\_string"
}
output "output\_sample" {
 value = "\${var.VAR\_sample}"

### Output

{

"output\_sample": "sample\_string"

### 6.2.15 Check operation status

(1) Monitor the execution status of operation.

🗩 Exastro	Terrafor	m				User name [Syster Login II	m Ac D (ac
IT Automation					Ch	ange password	ι
nu .							
าน	Description						
	Target operatior	1					Δ
information							_
tions list		Item		Value			
	Execution No.			5			
æs list	Execution type			Normal			
nt list	Status			Completed			
	Caller Symphony						
iles	Caller Conductor						
	Executing user			System Administrator			
ist		ID		1			
ts list		Name		Movement_001			
	Movement	Delay timer (minutes)					
-Policy link list		Terraform Dedicated information	Organization:Workspace	Organization_001:Workspace_001			
Wedness list.			RUN-ID	run-Q1e8cewTswvRf9Kv			
-workspace link		No.		1			
	Operation	Name		Operation01			
nt details		ID		1			
	Variable			Confirm			
_assign_master	Input data	Populated data		InputData 000000005.zip			
tion value list	Output data	Result data		ResultData 0000000005.zip			
		Scheduled date/time					
n	Execution status	Start date/time		2020/10/08 18:17:55			
poration status		End date/time		2020/10/08 18:18:26			
peration status							
n list							
	Progress status	(Plan log)					Δ

Figure 6.2.15-1 Submenu screen (Check operation status)

### ① Display of execution status

"Status" will be displayed to match the Execution status.

The "Execution Type" will contain "Plan Confirmation" for plan confirmations, and "Normal" for other cases.

Execution log for Progress (Plan Log), Progress (PolicyCheck Log) and Progress (Apply Log) executed in Terraform are displayed in Plan/ PolicyCheck / Apply.

If the status ends with an unexpected error, there is no registration of "<u>6.2.1 Interface</u> <u>information</u>", "<u>6.2.2 Organizations list</u>" and "<u>6.2.3 Workspaces list</u>" with Terraform. Or if it is due to unregistration of other web content, a message will be displayed in "Progress (error log)".

For other errors, the progress (error log) does not display a message. Check the process logs as needed.

\*\*Please refer to "④ Log file name" in "<u>8.2 About maintenance method</u>" for the process log.

"Call Symphony", displays which Symphony was executed. It will be blank if you execute it directly from the Terraform driver or from Conductor.

In "Call Conductor", displays which Conductor was executed. It is blank if you execute it directly from the Terraform driver or from Symphony.

"Execution user" displays the login user when the "Execute" button is pressed from the execution menu.

The "RUN-ID" displayed in "Terraform User Information" is an execution list ID managed by Terraform and is used for linking with Terraform with Backyard content.

### **②** Substitution value confirmation

By clicking the "confirmation" button, "<u>6.2.12 Substitution value list</u>" will display and the substitution value filtered by the operation and Movement of operation target will be displayed.

### **③** Emergency stop/Schedule cancellation

It is possible to stop the construction operation by clicking the "Emergency stop" button. In addition, for the "scheduled execution" operation before execution, the "schedule cancellation" button will display. Cancel the scheduled execution by clicking the "schedule cancellation" button.

### 4 Log filter

Execution log and error log can be filtered. By entering the string that the user wants to search in the filter box of each log and checking the "Display only corresponding lines" checkbox, only the corresponding line will be displayed. The display refresh cycle and the maximum display line count of exeuction and error log can be set in "Status monitoring cycle (milliseconds)" and "Number of rows to display progress status" of "<u>6.2.1 Interface information</u>" menu.

### ⑤ Input data

Users can download executed module files and a zip file containing a list of policy materials and the configured substitute values in Json format. The files are as following:

Directory name	File name	Description
-	(Name of the input	Contains all the input module files. Stored directly under
	Module file)	the zip file.
-	(Name of the input	Contains all the policy files. Stored directly under the zip
	Policy file)	file.
variables	variables.json	Contains "Variable name (key)", "Specific value (value)",
		"HCL settings" and "Sensitive settings" configured to the
		substitute value.
		The Specific value will not be included if the sensitive
		settings is active.

### 6 Result data

User can download execution logs, error logs, and state files generated by Terraform.

Directory name	File name	Description
-	plan.log	Log file that contains the contents output to the progress
		(plan) log.
-	policyCheck.log	Log files that contains the contents output to the progress
		(policy check) log.
	apply.log	Log files that contains the contents output to the progress
		(apply) log.
	error.log	Log files that contains the contents output to the progress
		(error) log.
-	sv-XXXXXX.tfstate	State file generated by Terraform. The file name is
		generated by Terraform and will therefore be different
		every time.
		The file is encrypted.

Table 6.2.15-2 Result data file
---------------------------------

### 6.2.16 Execution list

(2) The history of operation can be viewed here.

The operation list table and graph will display by specifying criteria and clicking the "filter" button.

By clicking the "Check execution status" button, the screen will transit to "<u>6.2.14 Check</u> <u>operation status</u>" and the details of execution status can be viewed.

<b>Exastre</b>	Terraform								User name [Sys Login	tem Administrator ID (administrator
IT Automation	1								Change password	Logout
∃ Menu										
Main menu	Description									⊽Open
Interface information	Display filter									∆Close
Organizations list	Discard	Execution No.	Everytion type	Status	Caller Sumphony	Caller Conductor	Everyting (	lact undate date/time	lact un/	dated by
Workspaces list	DISCOLO	EXECUTION NO.	EXECUTION CYPE		Carren Symphony		EXECUTING (	Last update date/time	cast up	aceu by
Movement list	Exclude discarded records 🗸	∼	- Carach farm and dawn	Canada farma multidarum	E Cranch from and down	Canada farma multidarum	- Carach from a	~		
Module files		<ul> <li>Search from pulldown</li> </ul>	<ul> <li>Search from pulldown</li> </ul>	<ul> <li>Search from pulidown</li> </ul>	<ul> <li>Search from pulldown</li> </ul>	<ul> <li>Search from pulldown</li> </ul>	<ul> <li>Search from pr</li> </ul>		▼ Search fro	m pulldown
Policies list										
Policy Sets list	4									÷
PolicySet-Policy link list	Filter	Clear filter								
PolicySet-Workspace	Auto-filter									
link list										
Movement details	List									⊽Open
Substitution value auto- registration setting	Download all									⊽Open
Substitution value list	Trace history									⊽Open
Execution										
Check operation status										
Execution list										
Contact administrator										

Figure 6.2.16-1 Submenu screen (Execution list)

### 6.2.17 Terraform registration list

(1) Connect to Terraform based on the information registered in "<u>6.2.1 Interface Information</u>" and register with Terraform.

You can display a list of Organization/Workspace/ Policy/PolicySets respectively. You can remove Targets from the display list from Terraform.

It is also possible to unlink Workspaces and Policies that are linked to PolicySet.

\*Operations performed on this page will not affect the registered targets on the ITA side.

Exastre	Terraform	User name (Syst Login	em Administrator] ID [administrator]
IT Automatic	n	Change password	Logout
Interface information			
Organizations list	Description		⊽Open
Wedennen liet	Organization registration list		∆Close
workspaces list			
Movement list	Get organization registration list		
Module files			
Policies list	Workspace registration list		∆Close
Policy Sets list			
PolicySet-Policy link list	Get workspace registration list		
PolicySet-Workspace			
link list	Policy registration list		∆Close
Movement details			
Substitution value auto-	Get policy registration list		
registration setting			
Substitution value list	PolicySet registration list		∆Close
Execution			
Check operation status	Get policySet registration list		
Execution list			
Terraform Enterprise			
master			

### Figure 6.2.17-1 Sub-menu screen (Terraform registration list)

(2) The list of items displayed by each list acquisition is as follows.

Item	Description
Organization	Name of the Organization registered with Terraform.
Name	
Email address	Email address registered in the Organization.
ITA registration	If the target Organization Name is registered in "6.2.2 Organizations list", it will be displayed as
status	"Registered".
	If it is not registered, it will be displayed as "Unregistered".
Deletion	Clicking this button will display a confirmation dialog box. Pressing OK will remove the target
	Organization from Terraform.
	*Deleted Organizations cannot be restored.

### Table 6.2.17-1 Items list (Organization registration list)

ltem	Description
Organization	The name of the Organization linked with the target Workspace.
Name	
Workspace Name	Name of Workspace registered with Terraform.
Terraform Version	Terraform version set to the target Workspace.
ITA registration	If the target Workspace Name is registered in <u>"6.2.3 Workspaces list"</u> , it will be displayed as
status	"Registered".
	If it is not registered, it will be displayed as "Unregistered".
Deletion	Clicking this button will display a confirmation dialog box. Pressing OK will remove the target
	Workspace from Terraform.
	*Deleted Workspace cannot be restored.

### Table 6.2.17-2 Items list (Workspace registration list)

### Table 6.2.17-3 Items list (Policy registration list)

ltem	Description
Organization	The name of the Organization linked with the target Policy.
Name	
Policy Name	Name of Policy registered with Terraform.
ITA registration	If the target Policy Name is registered in "6.2.6 Policies list", it will be displayed as "Registered".
status	If it is not registered, it will be displayed as "Unregistered".
Download Policy	Click this link to download the Policy Code file of the target Policy.
Code	
Deletion	Clicking this button will display a confirmation dialog box. Pressing OK will remove the target Policy
	from Terraform.
	※Deleted Policy cannot be restored.

### Table 6.2.17-4 Items list (PolicySet registration list)

ltem	Description
Organization	The name of the Organization linked with the target PolicySet.
Name	
PolicySet Name	Name of the target PolycySet.
Link Workspace	The name of the Workspace linked with the target PolicySet.
Link Policy	The name of the Policy linked with the target PolicySet.
ITA registration	If the target PolicySet Name is registered in <u>"6.2.7 PolicySet list"</u> , it will be displayed as
status	"Registered".
	If it is not registered, it will be displayed as "Unregistered".
Delete/Unlink	The "Delete" button is displayed for PolicySet Name and the "Un-link" button is displayed for linked
	Workspace and Policy.
	Clicking the "Delete" button will display a confirmation dialog box. Pressing OK will remove the
	target PolicySet from Terraform.
	Clicking the "Un-link" button will display a confirmation dialog box. Pressing OK will remove the link
	to the target Workspace/Policy's PolicySet.
	*Deleted PolicySets cannot be restored.

### 7 How to write construction code

Describes the description of Module and Policy in Terraform driver.

### 7.1 Module description

Module files are written in HashiCorp's own language called HCL (HashiCorp Configuration Language).

For more information on HCL, see the Terraform product documentation.

### 7.2 Policy description

The Policy file is written in HashiCorp's own language called Sentinelese language.

For more information on the Sentinel language, see the Terraform product documentation.

### 7.3 BackYard Content

### (1) Automatic variable registration

This function extracts variables from the Module files registered in "<u>6.2.5 Module files</u>". Please refer to "<u>2.1 Variable types</u>" for more information regarding "Variable extraction rules". Additionally, the timing of the extraction depends on the startup cycle of the "Automatic Terraform Variables Registration" process.

### (2) Automatic Substitute Value Registration Settings

The Information from the movement and variables linked to the set values of Operation itens in the target parameter sheets is reflected in the Substitute Value list.

The timing of the extraction depends on the startup cycle of the "Terraform Auto Registration Settings" process.

The Substitute value list can be updated by multiple operators. If the last update was performed by another operator, it will not be reflected.

If you want to reflect the data of the Automatic Substitute value registration settings, please delete the corresponding record in the Substitute Value list.

The rules for reflecting the substitution value list are written below.

① When the information registered in the Substitution value automatic registration is reflected in the Substitution value list

			With applicable reco	Record abolishing		
Substitution			c ∠ Specific value			
value list		= Specific				
status	recora	value	BackYard Other			
			process	operators		
Reflected to			Update specific		Ale alitication and	
substitution	Add new record	-	values for the	-	Abolition record	
value list			applicable record		revival	

XApplicable record: Operation + Movement + Variable name + HCL configuration + Records with the same access permission.

# ② Information not registered in substitution value automatic registration (registered only for the substitution value list) is reflected in the substitution value list.

Substitution	With applicable record			
Substitution	Last update			
	BackYard process	Other operators		
Reflected to	Decender believing			
substitution value list	Record abolishing	_		

### 3 About HCL settings

The value of the "HCL setting" configured for substitution value automatic registration is set to the same value when reflected in the substitution value list.

### **④** About Sensitive settings

If the item in the Link-target parameter sheet is set to "Password", the "Sensitive settings" will be set to "ON" when reflected in the Substitution value list.

### **(5)** About access permission roles

The access permission role of the operation set in the record of the link-target parameter sheet and the access permission role of the Movement set in the record of automatic assignment value registration are referred to, and all matching access permission roles are set when reflected in the Substitute value list.

If no permission role is set for either of them (blank), the blank space will also be set when reflected in the Substitute Value list.

Additionally, if there are no single matching permission roles, no record will be created in the Substitute Value list.

## 8 Application operation

The operation to utilize ITA system contains not only inputs by user from the browser screen of client PC but also operations according to system operation and maintenance. The available operation and maintenance are as follows.

### 8.1 Maintenance

The files required to start/stop/restart Terraform driver processes are as follows.

Description	Target file name
Terraform operation execution monitoring	ky_terraform_execute-workflow.service
Execute the unexecuted Operation.	
Terraform operation execution monitoring	ky_terraform_checkcondition-workflow.service
Check the status of executing work and acquire logs.	
Terraform variable automatic registration	ky_terraform_varsautolistup-workflow.service
Remove variables from uploaded Module files.	
Terraform auto registration settings	ky_terraform_valautosetup-workflow.service
The information configured for substitution value automatic	
registration is reflected in the substitution value list.	

The target file is stored in "/usr/ lib/ystemd/system".

The method of Starting/Stopping/Restarting a process is as follows. Please execute the command with root permission.

- Start process
   # systemctl start ky\_terraform\_execute-workflow.service
- 2 Stop process

# systemctl stop ky\_terraform\_execute-workflow.service

③ Restart Process

# systemctl restart ky\_terraform\_execute-workflow.service

Please replace each target file name with a start/stop/restart.

### 8.2 Maintenance and Maintaining

① Change to NORMAL level

Rewrite line 8 of the following file with "DEBUG" to NORMAL. Log level configuration file: <installation directory> /ita-root/confs/backyardconfs/ita\_env

2 Change to DEBUG level

Rewrite line 8 of the following file with "DEBUG" to NORMAL. Log level configuration file: <installation directory>/ita-root/confs/backyardconfs/ita\_env

③ Change the startup period

Change the 5th parameter of ExecStart of each target file. (Unit: seconds) With exceptions, use the default value for the startup period.

ExecStart=/bin/sh\${ITA\_ROOT\_DIR}/backyards/common/ky\_loopcall-php-procedure.sh/bin/php/bin/php\${ITA\_ROOT\_DIR}/backyards/terraform\_driver/ky\_terraform\_execute-workflow.php\${ITA\_ROOT\_DIR}/logs/backyardlogs\${ITA\_LOG\_LEVEL} > /dev/null 2>&1

After rewriting the file, it enables after the process is restarted.

#### 4 Log file name

Process name	Log file name
ky_terraform_execute-workflow	ky_terraform_execute-workflow_YYYYMMDD.log
ky_terraform_checkcondition-workflow	ky_terraform_checkcondition-workflow_YYYYMMDD.log
ky_terraform_varsautolistup-workflow	ky_terraform_varsautolistup-workflow_YYYYMMDD.log
ky_terraform_valautosetup-workflow	ky_terraform_valautosetup-workflow_YYYYMMDD.log

Log file output directory: <a><installation directory</a> /ita-root/logs/backyardlogs

## 9 Appendix

### 9.1 Module file input example/ register example

The following section are examples of inputting and registering module files in relation to the flow number in "4.1 Terraform Workflow".

- (1) Simple pattern
  - 1. string type



### 2. number type



3. bool type

Configure Variable values     Substitute value auto registration settings/Substitute value list <u>Item Variable HCL Member Substitute value list     <u>No. name SETTINGS variable order value     1 VAR_hoge OFF No input 1 AAA     required     2 VAR_hoge OFF No input 2 BBB     required     zecute Operation     Terraform @ Variables Value registered to Terraform's Variables     <u>Yalue     </u></u></u>	Regi	ister Mo variable typ de }	dule file e "VAR_hoge" be = list(string) fault = ["aaa",	{ "bbb", "ccc"]						
Item       Variable name       HCL SETTINGS       Member variable       Substitute order       Spec value         1       VAR_hoge       OFF       No input required       1       AAA         2       VAR_hoge       OFF       No input required       2       BBB         Execute Operation	Configure Variable values     Substitute value auto registration settings/Substitute value list									
No.       name       SETTINGS       variable       order       value         1       VAR_hoge       OFF       No input required       1       AAA         2       VAR_hoge       OFF       No input required       2       BBB         Execute Operation         Terraform Ø Variables Value registered to Terraform's Variables         Key       Value		Item Variable HCL Member Substitute Specific								
1       VAR_hoge       OFF       No input required       1       AAA         2       VAR_hoge       OFF       No input 2       BBB         2       VAR_hoge       OFF       No input 2       BBB         Fercute Operation		No.	name	SETTINGS	variable	order	value			
2       VAR_hoge       OFF       No input required       2       BBB         Execute Operation         Terraform Ø Variables Value registered to Terraform's Variables         Key       Value		1	VAR_hoge	OFF	No input required	1	AAA			
Execute Operation Terraform Ø Variables Value registered to Terraform's Variables Key Value		2	VAR_hoge	OFF	No input required	2	BBB			
Terraform の Variables Value registered to Terraform's Variables Key Value	Exec	cute Ope	eration							
Key Value		Terrafor	m の Variables	Value registe	ered to Terraf	orm' s Variable	es			
	Key Value									
VAR_hoge ["AAA", "BBB"]	L	VAR_h	noge	["/	AAA", "BBB"]					

4. list type

### 5. set type

) Reg	ister Mo	dule file							
<pre>variable "VAR_hoge" {    type = set(string)    default = ["aaa", "bbb", "ccc"] }</pre>									
	Substitu	Configure	• Variable value registration s	s ettings/Subst	itute value list	t			
	Item Variable HCL Member Substitute Specific								
	No.	name	SETTINGS	variable	order	value			
	1	VAR_hoge	OFF	No input required	1				
	2	VAR_hoge	OFF	No input required	2	BBB			
Exe	cute Ope	eration							
	Terrafor Key	m の Variables	s Value registe	ered to Terrafo /alue	orm' s Variable	es			
	VAR hoge								

### 6. tuple type

) Re	gister Moo variable typ de }	dule file e "VAR_hoge" be = tuple([strir fault = ["aaa",	{ ng, number]) 2022]	)		
	Substitu	(1) Configure	• Variable value	es settings/Subst	itute value list	t
	ltem No.	Variable name	HCL SETTINGS	Member variable	Substitute order	Specific value
	1	VAR_hoge	OFF	[0]	No input required	AAA
	2	VAR_hoge	OFF	[1]	No input required	2023
Ex	ecute Ope	eration		)		
	Value re	gistered to Te	rraform' s Va	riables		
	Key	<u> </u>	۷	/alue		
	VAR_hoge			'AAA" 20231		

### 7. map type

6 Reg	ister Mo	dule file		)				
<pre>variable "VAR_hoge" {     type = map(string)     default = {         "key" = "value"      } } Configure Variable values </pre>								
	Substitu	te value auto	registration s	ettings/Substi	tute value list			
	Item	Variable	HCL	Member	Substitute	Specific		
	No.	name	SETTINGS	variable	order	value		
	1	VAR_hoge	ON	No input	No input	{ "aaa" =		
				required	required	"bbb"}		
Execute Operation     The map type needs the H0     SETTINGS to be ON.					HCL			
	Kev		V	alue				
				"~~~" — "bb b "				
	VAR_r	noge	{	"aaa" = "bbb"}				

8. object type



### 9. any type

eg	ister Mo	dule file							
	variable typ de }	∍ "VAR_hoge" be = any fault = "def-an	{ y"						
	Configure Variable values     Substitute value auto registration settings/Substitute value list								
	ltem	Variable	HCL	Member	Substitute	Specific			
	No.	name	SETTINGS	variable	order	value			
	1	VAR_hoge	OFF	key	No input required	aaa			
Execute Operation									
	Value reg	gistered to Te	rraform' s Var	lables					
	Value re Key	gistered to Te	rraform' s Var V	ables alue					

### 10. Description with no type

gi	ster Moo variable de <sup>:</sup> }	dule file e "VAR_hoge" fault = "def-str	{ ing"	]		
¢,	Substitu	Configure te value auto Variable	• Variable valu registration HCL	es settings/Subst Member	itute value list Substitute	Specific
	No.	name	SETTINGS	variable	order	value
	1	VAR_hoge	OFF	No input required	No input required	ааа
ec	ute Ope	ration	·		•	
	/alue rec	gistered to Te	rraform' s Va	ariables		_
١	Key		Ň	Value		

### (2) Complex pattern

① list typearraylist





object's list objects





### ① Map type under list type



### 9.2 Variable nest list flow example

The following example is reference to the flow number in "エラー! 参照元が見つかりません。Terraform
Work flow"

(1) Increase amount of maximum amount of repetitions.



## 6 Register Module file

-	variable	VAR	_nog	e" {	

))
},
},
}

## Variable nest list(When registering)

ltem No.	Variable name	Member Variable name (With repetitions)	Maximum amount of repetitions
1	VAR_hoge		3

## Variable nest list(When updating)

ltem No.	Variable name	Member Variable name (With repetitions)	Maximum amount of repetitions
1	VAR_hoge		2

## (2) Decreasing maximum amount of repetitions

	Variable	HCL	Member	Substitute	Specific
No.	name	SETTINGS	variable	order	value
1	VAR_noge	OFF	[0].12	No input	192.108.1.1
2	VAR hoge	OFF	[0].NAME	No input	vamamoto
-	l wat_nege		[0]	required	yumumoto
3	VAR_hoge	OFF	[1].IP	No input	192.168.1.2
				required	
4	VAR_hoge	OFF	[1].NAME	No input	suzuki
				required	
5	VAR_hoge	OFF	[2].IP	No input	
G	VAD bogo			required	
0	VAR_noge	OFF	[2].NAME	required	
	gistered to Ter	raform's Vari	ables	iable [2].IP and	I [2].NAME.
ie reg		/aluo			
ue reg Key	١				