

# Ansible Integration Function for IBM Resilient

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## About This Package:

This package contains functions that integrate with Ansible to run playbooks and modules for remote host execution.

## History

Version	Comment
1.2	Support for App Host
1.1	Change result payload format to JSON returned to Resilient

- For customers upgrading from 1.0, the example workflows will use different post-processing script logic, based on the json results returned.

## Features:

- Run pre-written Ansible Playbooks from the Resilient platform, using parameter substitution.
- Run Ansible Modules for ad-hoc command execution.
- Run Resilient Rules at the Incident and Artifact levels.

Additional documentation on Ansible can be found at [the Ansible website](#).

## Package Components

- Functions:
  - fn\_ansible
  - fn\_ansible\_module
- Workflows:
  - Example: Ansible - Run a Module
  - Example: Ansible - Run a Playbook from an Incident
  - Example: Ansible - Run a Playbook on an Artifact
- Rules:
  - Example: Ansible - Run a Module

- Example: Ansible - Run a Playbook
- Example: Ansible - Run a Playbook from an Artifact

## App Host Installation

All the components for running Ansible in a container already exist when using the App Host app. The remainder of this section details the Ansible configuration file changes.

Under the Configuration Tab for an App, build out the ansible-runner files needed per the [ansible-runner convention](#). The necessary files are the **hosts** file, **ssh\_key** and your yml playbooks. Build these files under **/var/rescircuits/ansible** and ensure that the app.config file contains the same reference:

```
[fn_ansible]
runner_dir=/var/rescircuits/ansible
artifact_dir=/tmp
```

## Playbooks

When adding playbooks through the Configuration tab of an App, ensure the File Path is **/var/rescircuits/ansible/project**.

Note: Playbooks and modules cannot be run within the container environment.

The minimum Ansible files needed are:

- hosts, and
- playbooks

Your environment may require more configuration files, such as **ssh\_key** and **envvars**.

This is an example of the configuration files used including several yaml files.

The screenshot shows a web browser window with the URL `https://minerva.example.com/#admin?tab=apps`. The browser's address bar and tabs are visible at the top. The application interface has a dark theme. At the top, there's a navigation bar with 'Dashboards', 'Inbox', 'Incidents', and a 'Create' button. Below this, the page title is 'fn\_ansible' with a status 'Ready For Use!'. There are three tabs: 'Details', 'Customizations', and 'Configuration' (which is active). The 'App Settings' section explains that an app can consist of software code and configuration settings, and that the `app.config` file contains settings for communication with the Resilient platform. A 'New File' button is present. Below this is a search bar and a table of configuration files.

File Name	File Location	File Type	Created At	Last Modified
djDemoSetup.yml	/var/rescircuits/ansible/project	Yaml	06/12/2020 17:48	06/12/2020 18:03
create_file.yml	/var/rescircuits/ansible/project	Yaml	06/12/2020 15:52	06/12/2020 17:57
djDemoFindMalwarePattern.yml	/var/rescircuits/ansible/project	Yaml	06/12/2020 17:47	06/12/2020 17:51
djDemoRmMalware.yml	/var/rescircuits/ansible/project	Yaml	06/12/2020 17:48	06/12/2020 17:48
djDemoFindMalware.yml	/var/rescircuits/ansible/project	Yaml	06/12/2020 17:46	06/12/2020 17:46
gainful.yml	/var/rescircuits/ansible/inventory/group_vars	Yaml	06/12/2020 15:47	06/12/2020 17:28
ssh_key	/var/rescircuits/ansible/env	Plain Text	06/12/2020 17:19	06/12/2020 17:19
hosts.yml	/var/rescircuits/ansible/inventory	Yaml	06/12/2020 15:43	06/12/2020 15:49
app.config	/etc/rescircuits	Initialization	06/12/2020 15:14	06/12/2020 15:29
cert.cer	/etc/rescircuits	Plain Text	06/12/2020 15:14	06/12/2020 15:14

If you require additional ansible modules, additional effort is needed to include them as files in the Configuration tab.

## Limitations

Presently, there are limitations in the use of containers when playbook parameters sent from Resilient are used with any file defined in `/var/rescircuits/ansible/env`.

## Integration Server Installation

### Prerequisites:

This integration relies on the installation of the ansible solution on the integration server. The process of installing ansible can be followed [here](#).

- ansible >= 2.8.1
- ansible-runner >= 1.3.4
- Resilient platform >= v31.0.0
- Integrations Server Resilient Circuits >= v30.0.0
- Ansible config directory per the [ansible-runner convention](#)
- Ansible relies on a system library `sshpas`. Depending on your Integration Server operation system, different procedures are required to install this system library.

- For RHEL servers, the [Red Hat Developer Toolset](#) is needed to build the ansible runtime environment. This may also require a registered subscription manager to install.

This package requires that it is installed on a RHEL or CentOS platform and uses the Resilient Circuits framework.

- Unzip the package downloaded from the IBM App Exchange

```
$ unzip app-fn_ansible-<version>.zip
```

- To install the package, run:

```
$ [sudo] pip install fn_ansible-<version>.tar.gz
```

- To import the function, example rules and workflows into your Resilient platform, run:

```
$ resilient-circuits customize -l fn-ansible
```

- To update your [app.config](#) file with the required Ansible configurations, run:

```
$ resilient-circuits config -u -l fn-ansible
```

- Within the [app.config](#) file, edit the following configuration data:

```
[fn_ansible]
runner_dir=</full/path/to/your/ansible/directory>
# temporary files collected when running a module or a playbook
artifact_dir=</full/path/to/artifacts/directory>
# change this value to trim the collection of previous process runs
artifact_retention_num=0
```

- To uninstall:

```
$ [sudo] pip uninstall fn-ansible
```

- Run Resilient Circuits:

```
$ resilient-circuits run
```

Sample Workflow:



Cancel

Save &amp; Close

Save

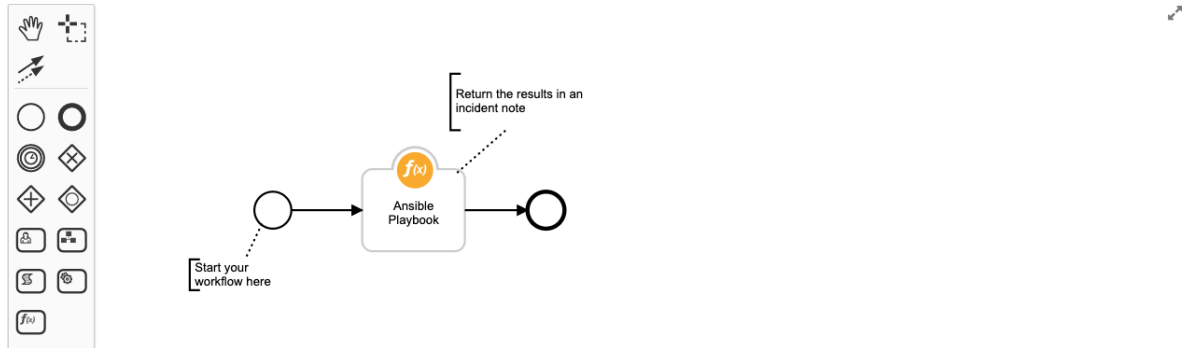
Name \*

API Name \*

Description

Object Type \*

Creator able baker  
 Last Modified 06/19/2019 14:58  
 Last Modified By able baker  
 Associated Rules Example: Ansible - Run a Playbook



## Function Inputs:

Input Name	Type	Required	Example	Info
ansible_playbook_name	String	Yes	"my_playbook" or "my_playbook.yml"	Identifies target playbook to run
ansible_parameters	String	No	"host_names=192.168.1.4"	Substitution variables for a Playbook at runtime. For example, a Playbook containing <b>hosts:</b> "" will be replaced using the example value of 196.168.1.4. Use semi-colons (👉) to separate different parameters.

Some parameters can contain more than one value. In these cases, use a comma (,) to separate the values. Example: **host\_names=192.168.56.1,192.168.56.2**.

When using playbooks run against artifacts, an additional parameter is sent specifying the artifact value to the playbook as **artifact\_value=<artifact\_value>**. Therefore, in your playbook, ensure to add for value substitution.

## Function Output:

Results returned to the Resilient platform from an Ansible function are in the following payload pattern:

```
{
  'version': '1.0',
  'success': True,
  'reason': None,
  'inputs': {
    u'ansible_playbook_name': u'find_files2',
    u'ansible_parameters': u'age=-2d; host_names=192.168.56.3,192.168.56.4;
path=/usr/local/bin/'
  },
  'metrics': {
    'package': 'fn-ansible',
    'timestamp': '2019-06-19 11:06:39',
    'package_version': '1.0.0',
    'host': 'xxx.cambridge.ibm.com',
    'version': '1.0',
    'execution_time_ms': 12549
  },
  'content': {
    u'192.168.56.4': {
      'detail': 'fatal: [192.168.56.4]: UNREACHABLE! => {"changed": false, "msg": "timed out",
"unreachable": true}',
      'summary': 'failed'
    },
    u'192.168.56.3': {
      'detail': '',
      'summary': 'failed'
    }
  },
  'raw': '{"192.168.56.4": {"detail": "fatal: [192.168.56.4]: UNREACHABLE! => {"\\\"changed\\\"":
false, "\\\"msg\\\"": "\\\"timed out\\\"", "\\\"unreachable\\\"": true}}, "summary": "failed"}, "192.168.56.3":
{"detail": "", "summary": "failed"}'
}
```

The following Post-Processing Script cleans up the payload and adds it as an incident note:

```
if len(results['content'].keys()) == 0:
    note = u"No results returned on parameters: {}".format(results['inputs'])
else:
    for item in results['content']:
        note = u"{ } - {}\n{}".format(item, results['inputs'], str(results['content'][item]['detail']))

incident.addNote(helper.createPlainText(note))
```

For very large data results, it may not be practical to save the results as a Note. Instead, the `fn_utilities` function **Utilities: String to Attachment** can be added to your workflow to send your Ansible results to an attachment. In this case, workflow properties are used to retain the results of this function for use by downstream functions.

## Considerations

- Only the ansible-runner **synchronous** capability is supported.
- Playbook and artifact names must not contain unicode characters. This is a limitation in the ansible-runner package ( <= 2.8.1) which should be resolved in a future release.
- The app.config setting **artifact\_retention\_num** is available to clean up previous execution files older than the specified days. Use a value of 0 to specify no deletion.
- Consider using Rule Activity Field select lists for Ansible module name and parameter restrictions. This ensures that only specific commands are used for ad-hoc executions.
- Also consider using Rule Activity Field select lists for Ansible playbook names for similar reasons to ensure only specific playbooks are supported through Resilient.
- The workflow associated with a module or playbook function will remain blocked until all host executions are complete and the results are returned. The ansible-runner **Asynchronous** operation corrects this restriction but remains a future enhancement.
- Playbooks should use the **debug** statement to return findings back to Resilient. The example below runs the **find** module, returning the file found using the debug statement.

```
- hosts: ""
tasks:
- name: Recursively find files
  find:
    paths: ""
    age: ""
    recurse: yes
    pattern: '*'
    register: files_matched

- debug:
  msg: ""
```