



Monitoring VNF Using D-MONA

The ESC Monitoring and Action (MONA) monitors VNFs that are deployed by ESC. To maintain accuracy, it executes actions, such as ping, custom_scripts, and so on at specific intervals.

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Onboarding D-MONA

The following prerequisites must be fulfilled before deploying D-MONA:

Prerequisites

- Ensure Connectivity exists between ESC and the D-MONA.
- Ensure connectivity exists between the D-MONA and the deployed VNFs.

The D-MONA must be deployed. Upon successful deployment, D-MONA is monitored by the local MONA running on the ESC VM.

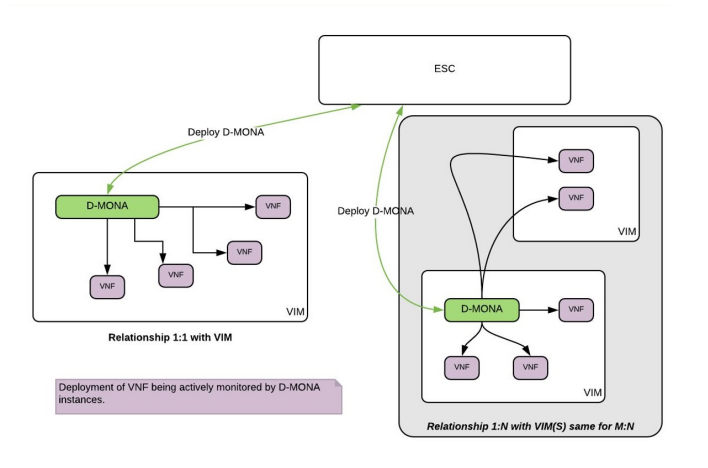
Deploying D-MONA

ESC supports 1:1 D-MONA deployment for a VIM. A single D-MONA instance monitors VNF on a single VIM.

For using D-MONA in your infrastructure, you must:

1. Deploy the D-MONA with the monitoring infrastructure.
2. Deploy the VNFs using the D-MONA for the monitoring of their respective liveness.

Figure 1: D-MONA Deployment Types



If you are not using D-MONA for monitoring, see [Monitoring Virtual Network Functions](#) section.

Configuring D-MONA

The D-MONA reuses the ESC image. You can view 2 types of runtime behavior, one where you can view the full behavior expected from a typical ESC deployment, whereas, and the other one depicts the capabilities provided by D-MONA.

The D-MONA runtime behavior are controlled by the day-0 configuration that are provided to the VM at deployment time. For more information on day zero configuration, see the [D-MONA Day Zero Configuration](#) section.

You must provide the notification URL for HA Active/Standby and Standalone. However, for the Active/Active HA, the URL is auto-generated or computed during the deployment.

D-MONA Day Zero Configuration

The following example shows D-MONA SSH VM access configuration:

```
<configuration>
  <dst>--user-data</dst>
  <file>file:///opt/cisco/esc/esc-config/dmona/user-data.template</file>
  <variable>
    <name>vm_credentials</name>
    <val>REPLACED_WITH_GENERATED_PWD</val>
  </variable>
</configuration>
```

The following example shows the notification URL for HA Active/Standby and Standalone:

```
<variable>
  <name>notification.url</name>
  <val>
    http(s)://xxx.xx.x.xx:xxxx/ESCManager/dmona/api/events/notif
  </val>
</variable>
```

The `vm_credentials` passes the encrypted password to admin for SSH access to the D-MONA.

The following example shows the D-MONA ESC certificate configuration:

```
<configuration>
  <dst>/opt/cisco/esc/moan/dmona.crt</dst>
  <data>$DMONA_CERT</data>
</configuration>
```

The following example shows the D-MONA application user data configuration:

```
<configuration>
<dst>/opt/cisco/esc/mona/config/application-dmona.properties</dst>
<file>file:///opt/cisco/esc/esc-config/dmona/application-dmona.template</file>
<variable>
  <name>monitoring.agent</name>
  <val>>true</val>
</variable>
<variable>
  <name>monitoring.agent.vim.mapping</name>
  <val>>true</val>
</variable>
<!-- Used to enable Basic Authentication for communication with the D-MONA Application.-->
<variable>
  <name>security_basic_enabled</name>
  <val>>true</val>
</variable>
<variable>
  <name>security_user_name</name>
  <val>REPLACED_WITH_USER_NAME</val>
</variable>
<variable>
  <name>security_user_password</name>
  <val>REPLACED_WITH_USER_PASSWORD</val>
</variable>
</configuration>
```

Deploying VNFs using D-Mona for Monitoring

For deploying the VNFs using D-MONA for monitoring, you must have the D-MONA with the `monitoring.agent.vim.mapping day-0` variable set to true within the same `vim_connector`. Only when the ESC detects the D-MONA, the monitoring of the VNF is assigned to that D-MONA, otherwise the local MONA handles the monitoring as per all the previous ESC releases.

The following example shows the D-MONA ESC deployment descriptor:

```
<esc_datamodel xmlns="http://www.cisco.com/esc/esc">
  <tenants>
    <tenant>
      <name>sample</name>
      <deployments>
        <deployment>
          <name>sample-dmona-dep</name>
          <vm_group>
            <name>g1</name>
            <!-- Image version you want to use for dmona deployment. Image must
already exist in VIM -->
            <image>ESC-5_0_0_<latest></image>
            <flavor>m1.large</flavor>
            <bootup_time>600</bootup_time>
            <recovery_wait_time>0</recovery_wait_time>
          </vm_group>
          <interfaces>
            <interface>
```

```

        <nicid>0</nicid>
        <network>esc-net</network>
    </interface>
</interfaces>
<kpi_data>
  <kpi>
    <event_name>VM_ALIVE</event_name>
    <metric_value>1</metric_value>
    <metric_cond>GT</metric_cond>
    <metric_type>UINT32</metric_type>
    <metric_collector>
      <type>HTTPGET</type>
      <nicid>0</nicid>
      <poll_frequency>3</poll_frequency>
      <polling_unit>seconds</polling_unit>
      <continuous_alarm>>false</continuous_alarm>
      <properties>
        <property>
          <name>protocol</name>
          <value>https</value>
        </property>
        <property>
          <name>port</name>
          <value>8443</value>
        </property>
        <property>
          <name>path</name>
          <value>mona/v1/health/status</value>
        </property>
      </properties>
    </metric_collector>
  </kpi>
</kpi_data>
<rules>
  <admin_rules>
    <rule>
      <event_name>VM_ALIVE</event_name>
      <action>ALWAYS log</action>
      <action>TRUE servicebooted.sh</action>
      <action>FALSE recover autohealing</action>
    </rule>
  </admin_rules>
</rules>
<config_data>
  <!-- day 0 configuration -->
  <configuration>
    <dst>--user-data</dst>

<file>file:///opt/cisco/esc/esc-config/dmona/user-data.template</file>
  <variable>
    <name>vm_credentials</name>
    <val><REPLACE_WITH_GENERATED_PWD></val>
    <!--password field will look something like the
following-->
    <!--
<val>${6$rounds=656000$pswUsR7Iz9Nlf4$7ElsE3V8rhdiaDhc8241wL3Q8Rsp9Vts.OZBe9G/DE56Wk0KZcB.DsjATrj9pDnPe.rSQwll2r0N/</val>-->
  </variable>
</configuration>
<configuration>
  <dst>/opt/cisco/esc/mona/dmona.crt</dst>
  <data>$DMONA_CERT</data>
</configuration>
</configuration>

```

```

<dst>/opt/cisco/esc/mona/config/application-dmona.properties</dst>

<file>file:///opt/cisco/esc/esc-config/dmona/application-dmona.template</file>
  <variable>
    <name>monitoring.agent</name>
    <val>>true</val>
  </variable>
  <!-- property for one to one mapping-->
  <variable>
    <name>monitoring.agent.vim.mapping</name>
    <val>>true</val>
  </variable>
  <!-- property to enable basic auth in dmona. Not to be
confused with basic auth for esc -->
  <variable>
    <name>security_basic_enabled</name>
    <val>>true</val>
  </variable>
  <variable>
    <name>security_user_name</name>
    <val>dmona</val>
  </variable>
  <variable>
    <name>security_user_password</name>
    <val>defaultUser</val>
  </variable>
</configuration>
</config_data>
</vm_group>
</deployment>
</deployments>
</tenant>
</tenants>
</esc_datamodel>

```

Recovering the D-MONA

You can recover the D-MONA completely. During the recovery process, monitoring VNFs by D-MONA is not possible. Only on successful completion of D-MONA recovery, the VNFs monitoring state is automatically refreshed by reprogramming each VNF monitoring rule.

Retrieving D-MONA Logs

Access the D-MONA with the `vm_credentials` password that was provided as part of the D-MONA day-0 configuration.

To retrieve the D-MONA logs, use the following command:

```

MethodType:
GET
MONA EndPoint:
https://ip-address:8443/mona/v1/files/getLogs
HTTPSRequestHeaders:
--remote-name --remote-header-name --write-out "Downloaded %{filename_effective} file"
--silent -k -u <username>:<password>

```

Where ip-address is the IP Address of the targeted D-MONA and username, password are the username and password provided as day-0 configuration at deployment of the D-MONA.

For complete list of all ESC logs, see ESC Logs section in the ESC Administration Guide.

For ETSI-related information, see Monitoring VNF Using D-MONA chapter in the Cisco Elastic Services Controller ETSI NFV MANO User Guide.