How to deploy a CheckPoint as an unmanaged VNF using TCPing metric script:

The following wiki outlines how to bring up a Checkpoint VNF using CFP deployment and TCPing metric scripts:

CheckPoint Image can be downloaded from: saesol@9.9.9.210:~/datadisk/IMAGES/CHECKPOINT/Check_Point_R80.40_Cloudguard_Security_Gateway_Generic_03252020.qcow2

NED: saesol@9.9.9.210:~/datadisk/IMAGES/CHECKPOINT/NEDS/ncs-5.2.2-checkpoint-gaiaos_rest-1.8.10.tar.gz

Day0 File: checkpoint-new

CREATE METRIC

1. Copy the following files to your "ACTIVE" ESC directory - /var/tmp/ : **dmam.py, TCPing_Metric.xml and TCPing_Monitor.py (Files attached below, download accordingly)**

- **TCPing_Monitor.py**
- **dmam.py**
- **TCPing_Metric.xml (Value of vm_ip_address is left blank intentional in this xml file because the device_ip is automatically populated by ESC when the script is called)**

2. Please edit the privileges for all the files in /var/tmp directory to be executable. - **sudo chmod 0777 *.***

REGISTER METRIC

3. **[MAJOR]** Run the command: "**/var/tmp/dmam.py create-metric --payload_xml /var/tmp/TCPing_Metric.xml**" from the same directory /var/tmp/ -- This will apply the TCPing_Metric to ESC Manager. **[MAJOR]**

REGISTER METRIC

```
[admin@esc-ha-249 ~]$ /var/tmp/dmam.py create-metric --payload_xml /var/tmp/TCPing_Metric.xml
Executing  create-metric
 Payload =>  /var/tmp/TCPing_Metric.xml
```

VERIFY METRIC

4. Run the following command "**curl -X GET http://localhost:8080/ESCManager/internal/dynamic_mapping/metrics| xmllint --format -**" -- To verify whether the metric has been applied to ESC manager or not.

metrics

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<metrics xmlns:ns2="urn:ietf:params:xml:ns:netconf:base:1.0">
  <metric>
    <metaData>
      <properties>
        <property>
          <name>remote_url</name>
          <value/>
        </property>
        <property>
          <name>enable_events_after_success</name>
          <value>true</value>
        </property>
        <property>
          <name>vm_gateway_ip_address</name>
          <value/>
        </property>
        <property>
          <name>enable_check_interface</name>
          <value>true</value>
        </property>
        <property>
```

```
        <name>script_location</name>
        <value>/opt/cisco/esc/esc-scripts/escadm.py</value>
      </property>
    </properties>
    <type>http_get</type>
  </metaData>
  <name>HTTPGET</name>
  <type>MONITOR_SUCCESS_FAILURE</type>
  <userLabel>HTTP GET</userLabel>
</metric>
<metric>
  <metaData>
    <properties>
      <property>
        <name>agent_protocol</name>
        <value>udp</value>
      </property>
      <property>
        <name>oid_current_value</name>
        <value>.1.3.6.1.4.1.2021.4.6.0</value>
      </property>
      <property>
        <name>compute_algorithm</name>
        <value>COMPUTE_TOTAL_AVAILABILITY_BASED</value>
      </property>
      <property>
        <name>agent_port</name>
        <value>161</value>
      </property>
      <property>
        <name>agent_address</name>
        <value/>
      </property>
      <property>
        <name>community</name>
        <value>public</value>
      </property>
      <property>
        <name>oid_total_value</name>
        <value>.1.3.6.1.4.1.2021.4.5.0</value>
      </property>
    </properties>
    <type>snmp_get_threshold_ratio</type>
  </metaData>
  <name>MEMORY</name>
  <type>MONITOR_COMPUTE_THRESHOLD</type>
  <userLabel>Memory (MIB:Ref)</userLabel>
</metric>
<metric>
  <metaData>
    <properties>
      <property>
        <name>agent_protocol</name>
        <value>udp</value>
      </property>
      <property>
        <name>agent_port</name>
        <value>161</value>
      </property>
      <property>
        <name>target_oid</name>
        <value>.1.3.6.1.4.1.2021.10.1.3.2</value>
      </property>
      <property>
        <name>agent_address</name>
        <value/>
      </property>
      <property>
        <name>community</name>
        <value>public</value>
      </property>
```

```
    </properties>
    <type>snmp_get_threshold</type>
  </metaData>
  <name>CPU_LOAD_5</name>
  <type>MONITOR_THRESHOLD</type>
  <userLabel>CPU 5 Minutes Average Load (MIB:Ref)</userLabel>
</metric>
<metric>
  <metaData>
    <properties>
      <property>
        <name>agent_protocol</name>
        <value>udp</value>
      </property>
      <property>
        <name>agent_port</name>
        <value>161</value>
      </property>
      <property>
        <name>target_oid</name>
        <value>.1.3.6.1.4.1.2021.10.1.3.3</value>
      </property>
      <property>
        <name>agent_address</name>
        <value/>
      </property>
      <property>
        <name>community</name>
        <value>public</value>
      </property>
    </properties>
    <type>snmp_get_threshold</type>
  </metaData>
  <name>CPU_LOAD_15</name>
  <type>MONITOR_THRESHOLD</type>
  <userLabel>CPU 15 Minutes Average Load (MIB:Ref)</userLabel>
</metric>
<metric>
  <metaData>
    <properties>
      <property>
        <name>agent_protocol</name>
        <value>udp</value>
      </property>
      <property>
        <name>agent_port</name>
        <value>161</value>
      </property>
      <property>
        <name>target_oid</name>
        <value>.1.3.6.1.4.1.9.9.715.1.1.6.1.13</value>
      </property>
      <property>
        <name>agent_address</name>
        <value/>
      </property>
      <property>
        <name>community</name>
        <value>public</value>
      </property>
    </properties>
    <type>snmp_get_threshold</type>
  </metaData>
  <name>OUTPUT_TOTAL_BIT_RATE</name>
  <type>MONITOR_THRESHOLD</type>
  <userLabel>CSR Total Bit Rate</userLabel>
</metric>
<metric>
  <metaData>
    <properties>
      <property>
```

```
        <name>ip_address</name>
        <value/>
      </property>
      <property>
        <name>enable_events_after_success</name>
        <value>true</value>
      </property>
      <property>
        <name>vm_gateway_ip_address</name>
        <value/>
      </property>
      <property>
        <name>enable_check_interface</name>
        <value>true</value>
      </property>
      <property>
        <name>script_location</name>
        <value>/opt/cisco/esc/esc-scripts/escadm.py</value>
      </property>
    </properties>
    <type>icmp_ping</type>
  </metaData>
  <name>ICMPPING</name>
  <type>MONITOR_SUCCESS_FAILURE</type>
  <userLabel>ICMP Ping</userLabel>
</metric>
<metric>
  <metaData>
    <properties>
      <property>
        <name>agent_protocol</name>
        <value>udp</value>
      </property>
      <property>
        <name>agent_port</name>
        <value>161</value>
      </property>
      <property>
        <name>target_oid</name>
        <value>.1.3.6.1.4.1.2021.10.1.3.1</value>
      </property>
      <property>
        <name>agent_address</name>
        <value/>
      </property>
      <property>
        <name>community</name>
        <value>public</value>
      </property>
    </properties>
    <type>snmp_get_threshold</type>
  </metaData>
  <name>CPU_LOAD_1</name>
  <type>MONITOR_THRESHOLD</type>
  <userLabel>CPU 1 Minute Average Load (MIB:Ref)</userLabel>
</metric>
<metric>
  <metaData>
    <properties>
      <property>
        <name>agent_protocol</name>
        <value>udp</value>
      </property>
      <property>
        <name>oid_current_value</name>
        <value>.1.3.6.1.4.1.2021.11.50.0,.1.3.6.1.4.1.2021.11.51.0,.1.3.6.1.4.1.2021.11.52.0</value>
      </property>
      <property>
        <name>compute_algorithm</name>
        <value>COMPUTE_TOTAL_CURRENT_BASED</value>
      </property>
```

```
        <property>
          <name>agent_port</name>
          <value>161</value>
        </property>
        <property>
          <name>agent_address</name>
          <value/>
        </property>
        <property>
          <name>community</name>
          <value>public</value>
        </property>
        <property>
          <name>oid_total_value</name>
          <value>.1.3.6.1.4.1.2021.11.50.0,.1.3.6.1.4.1.2021.11.51.0,.1.3.6.1.4.1.2021.11.52.0,.
1.3.6.1.4.1.2021.11.53.0</value>
        </property>
      </properties>
      <type>snmp_get_threshold_ratio</type>
    </metaData>
    <name>CPU</name>
    <type>MONITOR_COMPUTE_THRESHOLD</type>
    <userLabel>CPU (MIB: Ref)</userLabel>
  </metric>
  <metric>
    <metaData>
      <properties>
        <property>
          <name>agent_protocol</name>
          <value>udp</value>
        </property>
        <property>
          <name>agent_port</name>
          <value>161</value>
        </property>
        <property>
          <name>target_oid</name>
          <value>.1.3.6.1.4.1.9.9.786.1.2.1.1.5.1.1.1</value>
        </property>
        <property>
          <name>agent_address</name>
          <value/>
        </property>
        <property>
          <name>community</name>
          <value>public</value>
        </property>
      </properties>
      <type>snmp_get_threshold</type>
    </metaData>
    <name>SUBSCRIBER_SESSION</name>
    <type>MONITOR_THRESHOLD</type>
    <userLabel>CSR Subscriber Session</userLabel>
  </metric>
  <metric>
    <metaData>
      <properties>
        <property>
          <name>agent_protocol</name>
          <value>udp</value>
        </property>
        <property>
          <name>agent_port</name>
          <value>161</value>
        </property>
        <property>
          <name>target_oid</name>
          <value>.1.3.6.1.4.1.9.9.715.1.1.6.1.14</value>
        </property>
        <property>
          <name>agent_address</name>
```

```
          <value/>
        </property>
        <property>
          <name>community</name>
          <value>public</value>
        </property>
      </properties>
      <type>snmp_get_threshold</type>
    </metaData>
    <name>PROCESSING_LOAD</name>
    <type>MONITOR_THRESHOLD</type>
    <userLabel>CSR Processing Load</userLabel>
  </metric>
  <metric>
    <metaData>
      <properties>
        <property>
          <name>script_filename</name>
          <value>/var/tmp/ESC/TCPing_Monitor.py</value>
        </property>
        <property>
          <name>timeout_sec</name>
          <value>3</value>
        </property>
        <property>
          <name>tcp_port</name>
          <value>22</value>
        </property>
        <property>
          <name>vm_ip_address</name>
          <value/>
        </property>
        <property>
          <name>enable_events_after_success</name>
          <value>true</value>
        </property>
      </properties>
      <type>custom_script</type>
    </metaData>
    <name>TCPING_SSH_3SEC</name>
    <type>MONITOR_SUCCESS_FAILURE</type>
  </metric>
</metrics>
```

5. Create a device template as shown below and load merge to your NSO. Please make sure the name of esc and other parameters are edited according to your setup.

esc-vmalive-cp-kpi-data-nic

```
<config xmlns="http://tail-f.com/ns/config/1.0">
  <devices xmlns="http://tail-f.com/ns/ncs">
 <template>
      <name>esc-vmalive-cp-kpi-data-nic</name>
      <ned-id>
        <id xmlns:esc-id="http://tail-f.com/ned/esc-id">esc-id:esc</id>
        <config>
          <esc_datamodel xmlns="http://www.cisco.com/esc/esc">
            <tenants>
              <tenant>
                <name>{$TENANT}</name>
                <deployments>
                  <deployment>
                    <name>{$DEPLOYMENT_NAME}</name>
                    <vm_group>
                      <name>{$VM_GROUP_NAME}</name>
                      <kpi_data>
                        <kpi>
                          <event_name>VM_ALIVE_TCP</event_name>
                          <metric_value>0</metric_value>
                          <metric_cond>EQ</metric_cond>
                          <metric_type>UINT32</metric_type>
                          <metric_occurrences_true>5</metric_occurrences_true>
                          <metric_occurrences_false>5</metric_occurrences_false>
                          <metric_collector>
                            <type>TCPING_SSH_3SEC</type>
                            <nicid>0</nicid>
                            <poll_frequency>15</poll_frequency>
                            <polling_unit>seconds</polling_unit>
                            <continuous_alarm>false</continuous_alarm>
                          </metric_collector>
                        </kpi>
                      </kpi_data>
                      <rules>
                        <admin_rules>
                          <rule>
                            <event_name>VM_ALIVE_TCP</event_name>
                            <action>ALWAYS log</action>
                            <action>FALSE recover autohealing</action>
                            <action>TRUE servicebooted.sh</action>
                          </rule>
                        </admin_rules>
                      </rules>
                    </vm_group>
                  </deployment>
                </deployments>
              </tenant>
            </tenants>
          </esc_datamodel>
        </config>
      </ned-id>
    </template>
</devices>
</config>
```

6. Load merge the CheckPoint payloads provided below:

V_CHECKPOINT

```
nfv {
vnfd V_CHECKPOINT {
    provider         Checkpoint;
    product-name     CHECKPOINT;
```

```
    software-version 1;
    version          1;
    vnfm-info        [ csp-vim:csp-vim ];
    vdu VDU_SRIOV_CHECKPOINT {
        name                 VDU_SRIOV_CHECKPOINT;
        int-cpd EXTERNAL {
            int-virtual-link-desc EXTERNAL;
            virtual-network-interface-requirement R-SRIOV {
                support-mandatory true;
                network-interface-requirements NIC_TYPE {
                    value "X520|X710|XL710";
                }
                network-interface-requirements NW_TYPE {
                    value SRIOV;
                }
            }
            layer-protocol        [ ethernet ];
            interface-id          2;
        }
        int-cpd INTERNAL {
            int-virtual-link-desc INTERNAL;
            virtual-network-interface-requirement R-SRIOV {
                support-mandatory true;
                network-interface-requirements NIC_TYPE {
                    value "X520|X710|XL710";
                }
                network-interface-requirements NW_TYPE {
                    value SRIOV;
                }
            }
            layer-protocol        [ ethernet ];
            interface-id          1;
        }
        int-cpd MGMT {
            int-virtual-link-desc MGMT;
            layer-protocol        [ ethernet ];
            interface-id          0;
            management;
        }
        virtual-compute-desc vcd;
        virtual-storage-desc [ root ];
        sw-image-desc        SID$18;
        device-type {
            generic {
                ned-id checkpoint-gaiaos_rest-gen-1.8;
            }
        }
        artifact             [ user-data ];
    }
    virtual-compute-desc vcd {
        virtual-memory {
            size 4.0;
        }
        virtual-cpu {
            num-virtual-cpu 2;
        }
    }
    virtual-storage-desc root {
        type-of-storage root-storage;
        size-of-storage 100;
    }
    sw-image-desc Check_Point_R80.40_Cloudguard_Security_Gateway_Generic_02282020.qcow2 {
        name             Check_Point_R80.40_Cloudguard_Security_Gateway_Generic_02282020.qcow2;
        version          916.12.01a;
        container-format bare;
        disk-format      qcow2;
        image            file://opt/cisco/nso/images/Check_Point_R80.
40_Cloudguard_Security_Gateway_Generic_02282020.qcow2;
        additional-setting disk_type {
            value virtio;
        }
```

```
        additional-setting e1000_net {
            value false;
        }
        additional-setting serial_console {
            value true;
        }
        additional-setting virtio_net {
            value false;
        }
    }
    sw-image-desc SID$18 {
        name             Check_Point_R80.40_Cloudguard_Security_Gateway_Generic_03252020.qcow2;
        version          Check_Point_R80.40_Cloudguard_Security_Gateway_Generic_03252020.qcow2;
        container-format bare;
        disk-format      qcow2;
        image            file://opt/cisco/nso/images/Check_Point_R80.
40_Cloudguard_Security_Gateway_Generic_03252020.qcow2;
        additional-setting disk_type {
            value virtio;
        }
        additional-setting e1000_net {
            value false;
        }
        additional-setting serial_console {
            value true;
        }
        additional-setting virtio_net {
            value false;
        }
    }
    int-virtual-link-desc EXTERNAL {
        connectivity-type {
            layer-protocol [ ethernet ];
        }
    }
    int-virtual-link-desc INTERNAL {
        connectivity-type {
            layer-protocol [ ethernet ];
        }
    }
    int-virtual-link-desc MGMT {
        connectivity-type {
            layer-protocol [ ethernet ];
        }
    }
    ext-cpd EXTERNAL {
        int-virtual-link-desc EXTERNAL;
    }
    ext-cpd INTERNAL {
        int-virtual-link-desc INTERNAL;
    }
    ext-cpd MGMT {
        int-virtual-link-desc MGMT;
    }
    df VDU_SRIOV_CHECKPOINT {
        vdu-profile VDU_SRIOV_CHECKPOINT;
        instantiation-level V_CHECKPOINT {
            vdu-level VDU_SRIOV_CHECKPOINT;
        }
        default-instantiation-level V_CHECKPOINT;
    }
    artifact user-data;
    service-type     OTHERS;
}
}
```

N_CHECKPOINT

```
nfv {
nsd N_CHECKPOINT {
    version 1.0;
    vnfd-id [ V_CHECKPOINT ];
    sapd FACING_CONSUMER {
        virtual-link-desc FACING_CONSUMER-vld;
        endpoint-type     consumer;
    }
    sapd FACING_FABRIC {
        virtual-link-desc FACING_FABRIC-vld;
        endpoint-type     chain;
    }
    sapd management {
        virtual-link-desc management-vld;
    }
    virtual-link-desc FACING_CONSUMER-vld {
        df small;
    }
    virtual-link-desc FACING_FABRIC-vld {
        df small;
    }
    virtual-link-desc management-vld {
        df small;
    }
    df N_CHECKPOINT {
        vnf-profile V_CHECKPOINT {
            vnfd-id             V_CHECKPOINT;
            flavour-id          VDU_SRIOV_CHECKPOINT;
            instantiation-level V_CHECKPOINT;
            virtual-link-connectivity FACING_CONSUMER-vld {
                constituent-cpd-id V_CHECKPOINT {
                    constituent-cpd-id EXTERNAL;
                }
            }
            virtual-link-connectivity FACING_FABRIC-vld {
                constituent-cpd-id V_CHECKPOINT {
                    constituent-cpd-id INTERNAL;
                }
            }
            virtual-link-connectivity management-vld {
                constituent-cpd-id V_CHECKPOINT {
                    constituent-cpd-id MGMT;
                }
            }
        }
        virtual-link-profile FACING_CONSUMER-vld {
            virtual-link-desc-id FACING_CONSUMER-vld;
            flavour-id           small;
        }
        virtual-link-profile FACING_FABRIC-vld {
            virtual-link-desc-id FACING_FABRIC-vld;
            flavour-id           small;
        }
        virtual-link-profile management-vld {
            virtual-link-desc-id management-vld;
            flavour-id           small;
        }
        ns-instantiation-level N_CHECKPOINT {
            vnf-to-level-mapping V_CHECKPOINT;
            virtual-link-to-level-mapping FACING_CONSUMER-vld;
            virtual-link-to-level-mapping FACING_FABRIC-vld;
            virtual-link-to-level-mapping management-vld;
        }
    }
    nodes FACING_CONSUMER {
        x-cord 268;
        y-cord 220;
    }
```

```
    nodes FACING_FABRIC {
        x-cord 796;
        y-cord 202;
    }
    nodes V_CHECKPOINT {
        x-cord 490.65;
        y-cord 270;
    }
}

}
```

VD_CHECKPOINT

```
cfp-catalog {
nf-deployments {
vnfd V_CHECKPOINT {
    vnfd-deployment VD_CHECKPOINT {
        vnfm-type netconf;
        vim-type  csp;
        deployment-flavor {
            name VDU_SRIOV_CHECKPOINT;
            vdu-profile VDU_SRIOV_CHECKPOINT {
                vnf-config VNF_CONFIG_CHECKPOINT;
            }
        }
    }
    vnf-config VNF_CONFIG_CHECKPOINT {
        intangible;
        monitoring {
            bootup-time               300;
            recovery-wait-time        120;
            polling-frequency         15;
            metric-occurrences-success 3;
            metric-occurrences-failure 1;
        }
        day0 user-data {
            url http://9.9.9.203:8080/day0/checkpoint-data;
        }
        extensions {
            mode             routed;
            support-remote-as true;
        }
    }
}
}
}
```

ND_CHECKPOINT

```
cfp-catalog {
catalog SAE_CATALOG {
networkservice-deployment ND_CHECKPOINT {
    nsd-id N_CHECKPOINT;
    deployment-flavor N_CHECKPOINT {
        vnf-profile V_CHECKPOINT {
            vnfd-deployment VD_CHECKPOINT;
        }
    }
}
}
}
```

7. Apply the device template to VNFD_DEPLOYMENT of your CHECKPOINT payloads by running the following command: "**set cfp-catalog nf-deployments vnfd <V_CHECKPOINT> vnfd-deployment <VD_CHECKPOINT> deployment-flavor vdu-profile VDU_SRIOV_CHECKPOINT vnfm-device-templates vnfm-device-template <esc-vmalive-cp-kpi-data-nic>**

Setting VNFM DEVICE TEMPLATE

```
set cfp-catalog nf-deployments vnfd V_CHECKPOINT vnfd-deployment VD_CHECKPOINT deployment-flavor vdu-profile
VDU_SRIOV_CHECKPOINT vnfm-device-templates vnfm-device-template esc-vmalive-cp-kpi-data-nic
```

8. Deploy the Checkpoint VNF, example below: EXTERNAL ENDPOINT is CONSUMER22 with 22.22.22.1 IP ADDRESS.

DEPLOY_CP

```
set sae-site SANJOSE sae-provider SAE_PROVIDER sae-tenant SAE_TENANT endpoint-gateway-vnf CP deployment
ND_CHECKPOINT deployment-flavor N_CHECKPOINT external-end-point CONSUMER22 connectivity external-access-point
FACING_CONSUMER ip 22.22.22.8 nf-profile V_CHECKPOINT
```

9. If the **esc_nc_cli get-notif** notification shows "**VM_ALIVE**" and "**SERVICE_ALIVE**" notifications -- This indicates the VM/Service has been successfully deployed.

10. You can also verify by performing a tcping <vnf ip address> 22 to see port open response. -- This indicates the VM is reachable using tcping and ssh can be done.

HELPFUL COMMANDS pertaining to this VM Deployment Status/Execution using ESC:

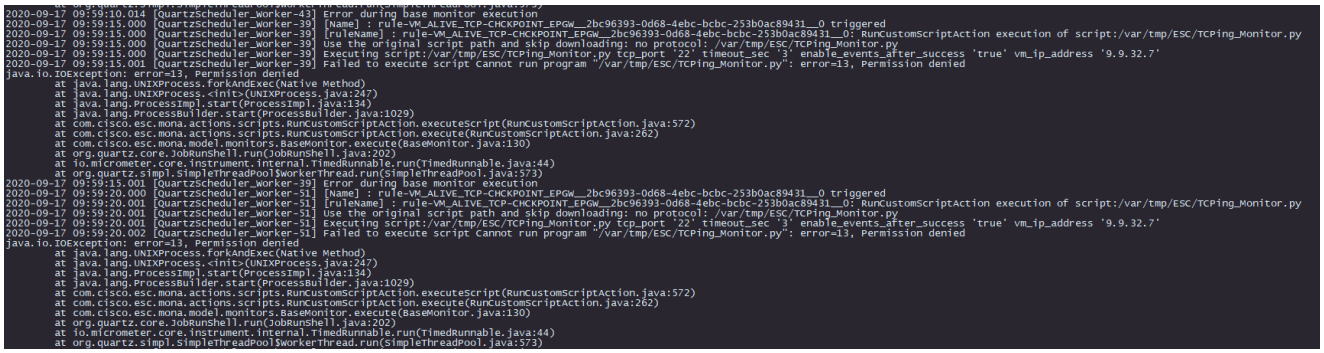
- esc_nc_cli get-notif -- This will give all ESC notifications while the deployment is in progress/completed.

```
<?xml version="1.0" encoding="UTF-8"?>
<notification xmlns="urn:ietf:params:xml:ns:netconf:notification:1.0">
  <eventTime>2020-09-17T21:53:01.154+00:00</eventTime>
  <escEvent xmlns="http://www.cisco.com/esc/esc">
    <status>SUCCESS</status>
    <status_code>200</status_code>
    <status_message>Flavor creation completed successfully.</status_message>
    <flavor>VDU_VIRTIO_CHECKPOINT</flavor>
    <event>
      <type>CREATE_FLAVOR</type>
    </event>
  </escEvent>
</notification>
<?xml version="1.0" encoding="UTF-8"?>
<notification xmlns="urn:ietf:params:xml:ns:netconf:notification:1.0">
  <eventTime>2020-09-17T21:53:15.6+00:00</eventTime>
  <escEvent xmlns="http://www.cisco.com/esc/esc">
    <status>SUCCESS</status>
    <status_code>200</status_code>
    <status_message>VM Deployed in a service deployment. VM Generated ID: [CHCKPOINT_EPGW_Group1_0_d31525ed-9b3e-4
e7-90e9-f25051cbce69]</status_message>
    <depname>CHCKPOINT_EPGW</depname>
    <tenant>nafta</tenant>
    <depid>6787a4a1-c9ed-4c71-833d-da7fcd271fb0</depid>
    <vm_group>Group1</vm_group>
    <vm_source>
      <vmid>fbc7c4a4-e16e-4871-83b1-fd66532f2acf</vmid>
      <vmname>CP1</vmname>
      <generated_vmname>CHCKPOINT_EPGW_Group1_0_d31525ed-9b3e-48e7-90e9-f25051cbce69</generated_vmname>
      <vim_id>csp-9-39</vim_id>
      <vim_project>csp-9-39</vim_project>
      <interfaces>
        <interface>
          <nicid>0</nicid>
          <type>access</type>
          <port_id>12ebbb1b-2b84-4868-9dd3-f759c5ac63e0</port_id>
          <admin_state_up>true</admin_state_up>
          <network>MGMTPC</network>
          <subnet/>
          <ip_address>9.9.32.7</ip_address>
          <netmask>255.255.0.0</netmask>
          <gateway>9.9.9.1</gateway>
        </interface>
      </interfaces>
    </vm_source>
    <event>
      <type>VM_DEPLOYED</type>
    </event>
  </escEvent>
</notification>
```

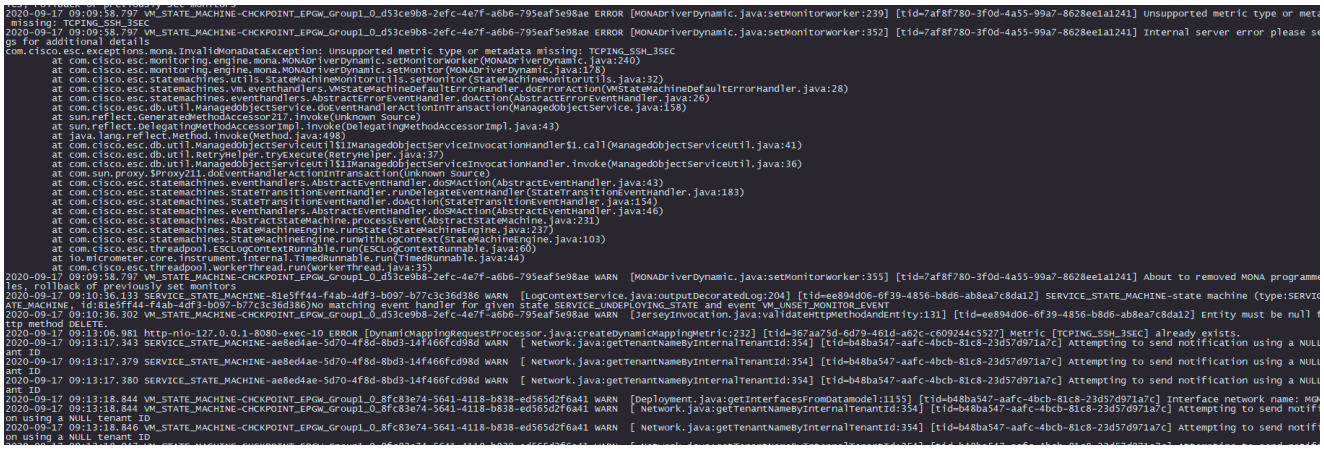
- /var/log/esc/yangesc.log -- This log will show the workflow of esc notifications similar to above command.

```
2020-09-17 10:03:10.472 INFO  ===== SEND NOTIFICATION STARTS =====
2020-09-17 10:03:10.472 INFO  Type: VM_ALIVE
2020-09-17 10:03:10.472 INFO  Status: SUCCESS
2020-09-17 10:03:10.472 INFO  Status Code: 200
2020-09-17 10:03:10.472 INFO  Status Msg: VM_Alive event received during deployment, VM Generated ID: [CHCKPOINT_EPGW_Group1_0_9a69f01d-63c0-4e6f-8dab-0994278adf
2020-09-17 10:03:10.472 INFO  Tenant: nafta
2020-09-17 10:03:10.472 INFO  Deployment ID: c7b958ee-1b1d-4616-a824-344272c9206e
2020-09-17 10:03:10.472 INFO  Deployment name: CHCKPOINT_EPGW
2020-09-17 10:03:10.472 INFO  VM group name: Group1
2020-09-17 10:03:10.472 INFO  User configs: 1
2020-09-17 10:03:10.472 INFO  VM Source:
2020-09-17 10:03:10.472 INFO      VM ID: efacbe50-e1da-48f5-a712-a7da3c2fe0cd
2020-09-17 10:03:10.472 INFO      VM Name: CP1
2020-09-17 10:03:10.472 INFO      VM Name (Generated): CHCKPOINT_EPGW_Group1_0_9a69f01d-63c0-4e6f-8dab-0994278adf76
2020-09-17 10:03:10.472 INFO      VIM ID: csp-9-39
2020-09-17 10:03:10.472 INFO      VIM Project: csp-9-39
2020-09-17 10:03:10.472 INFO      Host ID:
2020-09-17 10:03:10.472 INFO      Host Name:
2020-09-17 10:03:10.472 INFO  =====  SEND NOTIFICATION ENDS  =====
2020-09-17 10:03:10.613 INFO
2020-09-17 10:03:10.613 INFO  ===== SEND NOTIFICATION STARTS =====
2020-09-17 10:03:10.613 INFO  Type: SERVICE_ALIVE
2020-09-17 10:03:10.613 INFO  Status: SUCCESS
2020-09-17 10:03:10.613 INFO  Status Code: 200
2020-09-17 10:03:10.613 INFO  Status Msg: Service group deployment completed successfully!
2020-09-17 10:03:10.613 INFO  Tenant: nafta
2020-09-17 10:03:10.613 INFO  Deployment ID: c7b958ee-1b1d-4616-a824-344272c9206e
2020-09-17 10:03:10.613 INFO  Deployment name: CHCKPOINT_EPGW
```

- /var/log/esc/mona/mona.log -- This log will show the execution of metric file to performing TCPing operation on VM.



- /var/log/esc/error_escmanager.log -- This log will show any error caused during the deployment of VM.



DELETE METRIC

- dmam.py delete-metric --name <metricName> -- To delete existing metric from ESC manager.

Reference Links:

1. https://confluence-eng-sjc1.cisco.com/conf/pages/viewpage.action?pageId=47078158
2. https://confluence-eng-sjc1.cisco.com/conf/display/ESCWIKI/ESC+-+CSP+2100+-+ASAv+HA+Deployment