



Monitoring Virtual Network Functions

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Monitoring Virtual Network Functions Using ETSI API

During the deployment of a VNF, metrics must be defined to instruct the ESC monitoring agent component (MONA) how to determine if the VNF is healthy. The definition of metrics is within the Key Performance Indicator (KPI) section of the VNFD and allow MONA to periodically monitor the VNF to check its health and workload, defined on a per-VNFC basis. Actions are then associated with these KPIs and executed when the appropriate conditions are met.

There are several built-in monitoring methods such as ICMP Ping and SNMP. Some of the metrics to monitor on the constituent VNFCs include:

- reachability
- resource usage (such as CPU, memory, disk and network throughput)

The following pre-requisites must be met for the deployed VNFCs to be monitored:

- The deployed VNFCs must be alive
- Monitoring is enabled
- KPIs must be configured

Example:

```
vdu2:
  type: cisco.nodes.nfv.Vdu.Compute
  properties:
    name: Example VDU 2
    description: Example VDU
    ...
  kpi_data:
    VM_ALIVE-1:
      event_name: 'VM_ALIVE-1'
      metric_value: 1
      metric_cond: 'GT'
      metric_type: 'UINT32'
      metric_occurrences_true: 1
      metric_occurrences_false: 30
      metric_collector:
        type: 'ICMPPing'
```

```

    nicid: 1
    poll_frequency: 10
    polling_unit: 'seconds'
    continuous_alarm: false
    property_list:
      - name: vmname
        value: vdu2
      - name: status
        value: ERROR
  admin_rules:
    VM_ALIVE-1:
      event_name: 'VM_ALIVE-1'
      action:
        - 'ALWAYS log'
        - 'FALSE recover autohealing'
        - 'TRUE esc_vm_alive_notification'
      property_list:
        - name: vmname
          value: vdu2
        - name: status
          value: SUCCESS
  ...

```

The `kpi_data` shown above is the default KPI required that is required in all deployments at a minimum so that the `VM_ALIVE` message is generated to tell ESC Manager that the VNFC has been deployed successfully; it consists of the KPI, how it is collected and the actions to be executed when the KPI is met.

Cisco data structure properties

Data Type	Property Name	Description	Values
cisco.datatypes.nfv.data.Kpi	KPI label	Unique user-defined KPI name	Any
cisco.datatypes.nfv.data.Kpi	event_name		
cisco.datatypes.nfv.data.Kpi	metric_value		
cisco.datatypes.nfv.data.Kpi	metric_cond		
cisco.datatypes.nfv.data.Kpi	metric_type		
cisco.datatypes.nfv.data.Kpi	metric_occurrences_true		
cisco.datatypes.nfv.data.Kpi	metric_occurrences_false		
cisco.datatypes.nfv.metric.Collector	type	See the NETCONF API Guide	See the NETCONF API Guide
cisco.datatypes.nfv.metric.Collector	nicid		
cisco.datatypes.nfv.metric.Collector	poll_frequency		
cisco.datatypes.nfv.metric.Collector	polling_unit		
cisco.datatypes.nfv.metric.Collector	continuous_alarm		
cisco.datatypes.nfv.metric.Collector	property_list		

Data Type	Property Name	Description	Values
cisco.datatypes.nfv.data.Admin_rules	Rule label	Unique user-defined name	Any
cisco.datatypes.nfv.data.Admin_rules	event_name	This value must match a Kpi event_name	
cisco.datatypes.nfv.data.Admin_rules	action		
cisco.datatypes.nfv.data.Admin_rules	property_list		

For more information on KPIs and Rules, see the *Cisco Elastic Services Controller User Guide*.

