**Use cases (Non HA deployment) summary**

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| --- | --- | --- |
| **Root Cause ->** | **Symptoms** | **Required API** |
| 1. **Physical Switch down**
 | * Management port down
* Neighbor switches port down
* Neighbor hosts port down
* VMs connectivity lost
* Apps connectivity lost
 | * Get physical topology – Find out all existing switches in the domain, connectivity, connection to racks, connection to hosts
* Get virtual topology
* Get mappings: VMs to hosts, Hosts to racks, racks to switch ports, apps to VMs
* SNMP Manager – Receive SNMP traps
* Get switch status/ event
* Get switch port status /event
* Get NIC status /event
* Get VMs status /Event
* Activate link OAM tool
 |
| 1. **Switch port down**
 | * Switch port down
* Neighbor switch/ host port down
* VMs connectivity lost
* Apps connectivity lost
 | * Get physical topology – Find out all existing switches in the domain, connectivity, connection to racks, connection to hosts
* Get virtual topology
* Get mappings: VMs to hosts, Hosts to racks, racks to switch ports, apps to VMs
* SNMP Manager – Receive SNMP traps
* Get switch port status /event
* Get VMs status /Event
* Activate link OAM tool
 |
| 1. **Host’s Nic Down**
 | * Switch port down
* VMs connectivity lost
* Apps connectivity lost
 | * Get mappings: VMs to hosts, Hosts to racks, racks to switch ports, apps to VMs
* SNMP Manager – Receive SNMP traps
* Get NIC status /event
* Get VMs status /Event
* Activate link OAM tool
 |
| 1. **Damaged host cable (Not disconnected)**
 | * Lost packets and CRC errors in one port of switch
* Lost packets and CRC errors in and NIC of one host
* Apps retransmissions may result in app performance degradation
 | * Get mappings: VMs to hosts, Hosts to racks, racks to switch ports, apps to VMs
* Get switch’s port statistics
* Get host’s NIC statistics
* Get virtual topology
* Activate link quality OAM tool – measure quality of link
 |
| 1. **OVS crash**
 | * Host connectivity lost
* VMs connectivity lost
* Apps connectivity lost
 | * Get mappings: VMs to hosts, apps to VMs
* Get virtual topology
* Get host process list and status
* Get OVS switch status
* Activate connection tool
 |
| 1. **L2 agent crash**
 | * OVS may be reconfigured
* don’t know if effect traffic
 | * Get host process list and status
* Get L2 agent status
 |
| 1. **OVS port down**
 | * No communication to a single VM
* Apps connectivity lost
 | * Get mappings: VMs to hosts, apps to VMs
* Get OVS/ SDN switch port status
* Get OVS port down event
 |
| 1. **Hypervisor crash**
 | * No connectivity to VMs
* Couldn’t access VMs via VNC proxy
 | * Get mappings: VMs to hosts, apps to VMs
* Get Hypervisor status/ event
* Check process up time
 |
| 1. **Host restarted**
 | * VMs connectivity lost
* Apps connectivity lost
 | * Get virtual topology – mapping VMs to hosts
* Get host restarted event
* IPMI – sys up time
 |
| 1. **vNIC crash**
 | * No communication to a single VM
* Apps on that VM, connectivity lost
 | * Same as OVS port down
* Get vNIC status
 |
| 1. **MTU misconfigure**
 | * Host/ VM/ App Degraded communication
 | * Get mappings: VMs to hosts, Hosts to racks, racks to switch ports, apps to VMs
* Get virtual topology
* Get actual MTU from all devices
* Get expected MTU of all devices
 |
| 1. **IP address misconfigure**
 | * No communication to Host/ VM/ App
 | * Get mappings: VMs to hosts, apps to VMs
* Get virtual topology
* Get actual IP address all hosts and VMs
* Get expected IP address of all hosts and VM
 |

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| --- | --- | --- |
|  | **No communication** |  |
|  | **Bandwidth degradation** |  |
|  | **Bandwidth quality degradation** |  |
|  | **QoS misbehavior** |  |
|  | **VM not responding** |  |
|  | **Host not responding** |  |
|  | **Tenant not responding** |  |
|  |  |  |

**Use cases (HA deployment) summary**

|  |  |  |
| --- | --- | --- |
| **Root Cause ->** | **Symptoms** | **Required API** |
| 1. **Physical Switch down**
 | * Management port down (logically)
* Neighbor switches port down
* Neighbor hosts port down
* Damaged service – sometimes – If the service is damaged additional indications may pop
 | * Get physical topology – Find out all existing switches in the domain, connectivity, connection to racks, connection to hosts
* Get mappings: VMs to hosts, Hosts to racks, racks to switch ports, apps to VMs – As this is HA scenario VMs and apps may be not that important
* SNMP Manager – Receive SNMP traps
* Get switch status/ event
* Get switch up time
* Get switch port status /event
* Get NIC status /event
* Get VMs status /Event ??? – through cloud infrastructure, meaning ceilometer
* Activate link OAM tool – Perform binary fault detection on the connection
 |
| 1. **Switch port down**
 | * Switch port down
* Neighbor switch/ host port down
* Damaged service – sometimes – If the service is damaged additional indications may pop
 | * Get physical topology – Find out all existing switches in the domain, connectivity, connection to racks, connection to hosts
* Get mappings: VMs to hosts, Hosts to racks, racks to switch ports, apps to VMs
* SNMP Manager – Receive SNMP traps
* OF-Config for SDN switches
* Get switch port status /event
* Get VMs status /Event ??? – through cloud infrastructure, meaning ceilometer
* Activate link OAM tool – Perform binary fault detection on the connection
 |
| 1. **Host’s Nic Down**
 | * Switch port down
* Host port down
 | * Get mappings: VMs to hosts, Hosts to racks, racks to switch ports, apps to VMs
* SNMP Manager – Receive SNMP traps
* Get NIC status /event
* Get VMs status /Event ???
* Remote fault – find in the switch that the other side is down
* Activate link OAM tool – Perform binary fault detection on the connection
 |
| 1. **Damaged host cable (Not disconnected)**
 | * Lost packets and CRC errors in one port of switch
* Lost packets and CRC errors in and NIC of one host
* Apps retransmissions may result in app performance degradation
 | * Get mappings: VMs to hosts, Hosts to racks, racks to switch ports, apps to VMs
* Get switch’s port statistics
* Get host’s NIC statistics
* Get virtual topology
* Activate link quality OAM tool – measure quality of link
 |
| 1. **OVS crash**
 | * VMs connectivity lost
* Apps connectivity lost
* Host connectivity lost
 | * Get mappings: VMs to hosts, apps to VMs
* Get virtual topology
* Get host process list and status
* Get OVS switch status
* Activate link OAM tool – Perform binary fault detection on the connection
 |
| 1. **L2 agent crash**
 | * OVS may be reconfigured
* don’t know if effects traffic
 | * Get host process list and status
* Get L2 agent status
 |
| 1. **OVS port down**
 | * No communication to a single VM
* Apps connectivity lost
 | * Get mappings: VMs to hosts, apps to VMs
* Get OVS/ SDN switch port status
* Get OVS port down event
 |
| 1. **Hypervisor crash**
 | * No connectivity to VMs
* Couldn’t access VMs via VNC proxy
 | * Get mappings: VMs to hosts, apps to VMs
* Get Hypervisor status/ event
* Check process up time
 |
| 1. **Host restarted**
 | * VMs connectivity lost
* Apps connectivity lost
 | * Get virtual topology – mapping VMs to hosts
* Get host restarted event
* IPMI – sys up time
 |
| 1. **vNIC crash**
 | * No communication to a single VM
* Apps on that VM, connectivity lost
 | * Same as OVS port down – only via vnc
* Find out if the virtlib is checking VM status via vnc
* Get vNIC status
 |
| 1. **MTU misconfigure**
 | * Host/ VM/ App Degraded communication
 | * Get mappings: VMs to hosts, Hosts to racks, racks to switch ports, apps to VMs
* Get virtual topology
* Get actual MTU from all devices
* Get expected MTU of all devices
 |
| 1. **IP address misconfigure**
 | * No communication to Host/ VM/ App
 | * Get mappings: VMs to hosts, apps to VMs
* Get virtual topology
* Get actual IP address all hosts and VMs
* Get expected IP address of all hosts and VM
 |

|  |  |  |
| --- | --- | --- |
|  | **No communication** |  |
|  | **Bandwidth degradation** |  |
|  | **Bandwidth quality degradation** |  |
|  | **QoS misbehavior** |  |
|  | **VM not responding** |  |
|  | **Host not responding** |  |
|  | **Tenant not responding** |  |
|  |  |  |