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

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| **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 |

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