Application Note for Avaya Solutions Platform (ASP) 130 Release **6.0.0.4.0** (KVM on RHEL 8.10) or later

VLAN & VLAN TRUNKING CONFIGURATION GUIDE

January 2026

Issue 1

Contents

Change History

Issue	Date	Description
1.0	**01/2026**	Initial release. Information in this document will be incorporated into the 'Installing the Avaya Solutions Platform 130 Series R6.0.x' documentation at future time.

1. Introduction

1.1. Purpose

This application note provides guidance for configuring VLANs and enabling VLAN trunking on ASP **R6.0.0.4.0** (KVM on RHEL 8.10) or later release. It is intended for system administrators and technical users responsible for deploying and managing virtual infrastructure on Avaya Solutions Platform (ASP) compute servers.

The purpose of this document is to ensure that VLAN configurations are implemented consistently and correctly across the ASP R6.0.0.4.0 and later solution, enabling secure, scalable, and efficient network segmentation for Avaya application virtual machines (VMs). The procedures outlined here apply to both initial VLAN setup and modifications to existing environments, using command-line tools where appropriate.

The configurations described in this document are intended to **complement**, not replace, the existing information documented in the *Installing the Avaya Solutions Platform 130 Series R6.0.x documentation.*

The information in this document will be incorporated into the Installing the Avaya Solutions Platform 130 Series R6.0.x documentation in a future date. This document will continue to be updated until then. Ensure that you are signed up for Avaya E-notifications so that you will be notified when new issues of this Application Note are posted.

1.2 Overview of ASP 130 R6.0.0.4.0 or later Supported Network Topologies

Note: Customers can now use the updated **configNetwork** script to configure the following supported network topologies.

Scenario	Supported	Details
Single VLAN per physical adapter	✅	Standard setup using one VLAN per NIC.
Multiple VLANs on separate NICs (no bonding)	✅	Each VLAN configured on a different NIC and bridge; allows network segregation without trunking.
Multiple VLANs on same NIC (VLAN trunking)	✅	VLAN tagging (802.1Q) enabled; up to 5 VLANs per 1 Gbps adapter. Each VLAN must use its own bridge.
VLAN trunking with bonded interfaces	✅	VLANs configured on a bonded interface (bond0); one bridge per VLAN is created. Recommended scalable design.
OOBM VLAN tagging	✅ (Single VLAN)	Single VLAN only! on OOBM NIC. VLAN trunking is not supported on the NIC reserved for OOBM.
VLAN tagging within guest OS (VM layer)	❌	VLANs must be configured at hypervisor layer only; VM-level tagging is not supported in ASP R6.x.
LAG (802.3ad) / Active-Active bonding	✅	LACP supported with 10/25 GbE ports **ONLY.** Requires extra configuration on customer switch ports connecting server.

2. VLAN Configuration Overview

2.1 VLAN Fundamentals

A VLAN (Virtual Local Area Network) is a logical grouping of devices within a network, designed to segment and isolate traffic for improved security, performance, and management. Devices within the same VLAN can communicate with each other, regardless of their physical location, while devices in different VLANs **require a router** or **layer 3 switch** for communication (Not provided by Avaya).

2.2 Recommended Practices

General Considerations

Although bandwidth is not limited by the number of VLANs configured, all traffic—regardless of VLAN segmentation—shares the physical constraints of the underlying link, in this case 1 Gbps ports. Excessive VLAN configuration can lead to unmanaged traffic that may exceed link capacity if not properly planned, resulting in saturation, degraded performance, and unpredictable network behavior.

⚠ **Warning** **Bridge name must be unique.** Do NOT assign the same name to multiple bridges.

VLAN Design & Segmentation

- Use separate VLANs for:
  - Management traffic (e.g., servers, switches, application management traffic)
  - VoIP traffic (e.g., IP phones, voice gateways, Avaya application traffic).
- Avoid placing **all VLANs on a single physical adapter** (server and switch side). Instead, separate high-traffic VLANs using dedicated links for **load spreading** when possible.

Enable 802.1Q Trunking

- Use IEEE 802.1Q to tag VLAN traffic.
- Ensure matching trunk configurations on both ends (Customer Data switches/routers- ASP 130 servers).

Limit Allowed VLANs

- Only allow necessary VLANs on the trunk.
- For the **Avaya ASP R6.0.0.4.0 solution**, allocate **1–5 VLANs max per dedicated 1/10/25 Gbps port** to ensure optimal performance.

Apply Quality of Service (QoS)

- Prioritize time-sensitive traffic like VoIP or video:
  - Use **DSCP EF (Expedited Forwarding)** or **802.1p CoS/PCP = 5 or above marking.**
  - Follow each Avaya Application best practices when setting QoS.
- Implement **traffic shaping or prioritization** as needed to prevent congestion (e.g., LLQ or priority queues).
- Ensure low latency (<150 ms), low jitter (<30 ms), and minimal packet loss (<1%) for VoIP traffic.

Bandwidth Monitoring & Capacity Planning

- (Customer Network) Continuously monitor trunk port utilization, using 3rd party NMS tools (not provided by Avaya) such as: PRTG, LibreNMS, NetFlow/sFLOW, ntopng, SolarWinds etc.
- Estimate bandwidth usage (consult with each Avaya application documentation):

VoIP (audio only):

- G.729 (low bandwidth): ~8–24 Kbps per call
- G.711 (standard quality): ~80–100 Kbps per call
- G.722 / Opus (wideband/high-fidelity): ~64–128 Kbps per call

VoIP with video:

- 480p (SD): ~500 Kbps – 1 Mbps
- 720p (HD): ~1 – 1.5 Mbps
- 1080p (Full HD): ~1.5 – 3 Mbps
- 4K (UHD): ~4 – 8 Mbps

VoIP with Audio, Video, and Collaboration

- **Screen sharing or document collaboration typically adds:**
- **150 – 500 Kbps (static content)**
- **1 – 2 Mbps (dynamic screen sharing with motion/video)**

Management traffic: Typically low, with occasional spikes during remote sessions, firmware updates, or backups.

- Maintain average trunk utilization **below 80%** to avoid congestion and preserve voice/video quality.

Regularly Audit Traffic Flows

- Verify expected inter-VLAN routing behavior and enforce separation between management and VoIP VLANs.
- Review firewall/ACL rules to minimize unnecessary traffic between VLANs.

⚠️ Warning Signs of Overuse or Saturation

Symptom	Possible Cause
🌐 **Slow network performance**	**Aggregate traffic exceeding 1 Gbps**
📉 **High latency, jitter, VoIP/video struggling**	**Network congestion**
❌ **Dropped packets**	**Buffer overflow from oversubscription**
❌ **Dropped VoIP calls or registration failures**	**QoS misconfiguration or bandwidth saturation**
📦 **Excessive broadcast/multicast**	**Poorly segmented or unmanaged VLANs**
🚦 **Sustained port utilization > 80%**	**Risk of saturation during peak times**
🔁 **Frequent re-transmissions**	**Collisions or congestion-induced packet loss**
🚨 **SNMP/monitoring alerts on CPU or interface load**	**Potential network congestion or broadcast storm**

3 VLAN Configuration Scope, Limitations, and Supportability

This section outlines the supported VLAN deployment models for ASP 130 R6.0 systems running KVM on RHEL 8.10. It defines tested configurations, documents known limitations, and provides clear guidance on what changes are allowed or restricted to preserve supportability across the platform.

Supported and Validated VLAN Configuration Methods

The following VLAN configuration methods are validated and supported on ASP 130 R6.0:

- VLAN tagging must be configured **at the hypervisor level** (host OS layer). VLAN tagging within guest operating systems (VMs) is **not supported**.
- The default VLAN configuration workflow uses the *configNetwork* script for assigning a single VLAN per physical NIC or per bridge (e.g., `bridge0`, `bridgeoob`).

- Advanced VLAN trunking and multi-VLAN configurations are now supported with the "configNetwork" script , specifically for:
    - Multiple VLANs on a single NIC
    - VLAN trunking with bonded interfaces (e.g., `bond0`)
    - LACP on 10/25 GbE ports.
- Each VLAN will be mapped to a dedicated Linux bridge (e.g., `bridge0-2011`, `bridge0-2014`).
- These supported methods apply to both initial deployments and subsequent reconfigurations of ASP 130 servers.

3.1 Supported and Validated VLAN Configuration Methods

The following VLAN configuration methods are officially supported and validated by Avaya for the ASP 130 R6.0 solution. Any deviations from these methods require prior written approval from Avaya.

Supported Methods

- **Single VLAN per Interface (Standard Configuration):**
  The *configNetwork* script can be used to assign a single VLAN to a physical interface. This is the default and most supported deployment for basic management and application separation.

- **VLAN Trunking on a Single Adapter:**
  VLAN tagging using 802.1Q can be applied to a single NIC using the "configNetwork" script. Multiple VLANs are supported, with each VLAN requiring its own Linux bridge (e.g., `bridge0-2011`,`bridge0-2014`). This method enables multiple traffic segments over a single 1/10/25 GbE port.

- **VLAN Trunking with Bonded Interfaces:**

    - Bonded interfaces in active-standby mode (1 GbE Ports ONLY) may be used as parent interfaces for trunked VLANs. VLANs must be created on the bond (e.g., `bond0.1010`, `bond0.2011`) and assigned to independent bridges. This topology offers resiliency and simplifies cable management while preserving VLAN segmentation.

- Bonded interfaces in active-active mode (10/25 GbE Ports ONLY) may be used as parent interfaces for trunked VLANs. VLANs must be created on the bond (e.g., `bond0.1010`, `bond0.2011`) and assigned to independent bridges. This topology offers resiliency and simplifies cable management while preserving VLAN segmentation. This configuration requires having Link Aggregation Control Protocol (LACP) configured on the customer switch ports connecting ASP 130 servers to the network.

IEEE 802.3ad (Link Aggregation)

IEEE 802.3ad, also known as **Link Aggregation Control Protocol (LACP)**, is a standard for bundling multiple Ethernet links into a single logical link. This approach enhances **bandwidth**, provides **redundancy**, and ensures **fault tolerance**. It is widely used in networking environments to improve performance and reliability.

Key Features of IEEE 802.3ad

1. **Link Aggregation**: Combines multiple physical Ethernet links into one logical interface, increasing aggregate bandwidth and providing failover capabilities.
2. **Dynamic Negotiation**: Uses LACP to dynamically negotiate and manage link aggregation between devices, ensuring compatibility and optimal configuration.
3. **Load Balancing**: Distributes traffic across aggregated links based on algorithms like source/destination MAC or IP addresses, ensuring efficient utilization of all links.
4. **Fault Tolerance**: Automatically reroutes traffic to active links if one or more links in the bundle fail, maintaining uninterrupted communication.

Configuration Requirements

- All aggregated links must operate at the **same speed** and in **full-duplex mode**.
- LACP must be supported and enabled **on both** the host **(ASP 130 KVM on RHEL 8.10 server)** and the **connected customer data switch**.
- Adapters of different line speeds or duplex modes may cause performance issues if improperly configured.

Modes of Operation

- **Active Mode**: The port actively sends LACP packets to negotiate link aggregation.
- **Passive Mode**: The port responds to LACP packets but does not initiate negotiation.

Note: Both modes can form a link aggregation if at least one side is in **active mode**.

LACP Link Detection rate

LACP periodically transmits keepalive frames over an aggregated link to verify the connectivity of each member link and to trigger a failover in the event of a malfunction. LACP can be configured with a **fast or slow periodic rate**, resulting in an effective detection time of approximately **~3 seconds or ~90 seconds**, respectively, assuming the standard default timeout of three missed LACP PDUs.
In VoIP environments, the **fast rate** is recommended to ensure rapid failover and minimize

call disruption, while the **slow rate** can significantly delay failure detection and impact active calls.

LACP Load Balancing Hash Policy

For KVM workloads carrying real-time VoIP traffic, **Layer 3+4 hashing is recommended** to ensure even traffic distribution, minimize jitter, and avoid congestion on individual links. However, the selected policy must also be supported and configured consistently on the customer switch; mismatched policies can lead to uneven traffic flows and degraded performance.

- **Layer 2 (MAC-based hashing):** Uses source and destination MAC addresses to determine the outgoing interface. This provides predictable distribution but may not effectively balance traffic when most flows share the same MAC pairs, which is common in virtualized servers.
- **Layer 3+4 (IP and port-based hashing):** Uses source/destination IP addresses and transport-layer ports (TCP/UDP) in the calculation. This method provides more granular distribution across links and is generally preferred for environments running multiple sessions or real-time applications, such as VoIP. It reduces the risk of oversubscription on a single link and helps maintain consistent call quality.

Benefits of IEEE 802.3ad

- **Increased Bandwidth**: Aggregates the capacity of multiple links.
- **Redundancy**: Ensures continuous operation even if one link fails.
- **Interoperability**: Adheres to a standard, allowing compatibility across devices from different vendors.
- **Cost Efficiency**: Utilizes existing hardware to achieve higher performance without requiring upgrades.

Considerations

- Ensure that the **customer data switch** supports IEEE 802.3ad.
- Use consistent configurations across all aggregated links to avoid issues.
- Monitor the aggregation to ensure proper load balancing and fault tolerance.

IEEE 802.3ad is a robust solution for environments requiring high availability and scalable bandwidth, making it a cornerstone of modern network design.

- **OOBM VLAN Support:**
  A single VLAN ID can be applied to the Out-of-Band Management interface using the configNetwork script. VLAN trunking is **not** supported on OOBM interfaces.

⚠ **Constraints**

- Only the above configurations are validated and supported.
- **VLAN tagging within the guest OS** is not supported.

3.2 Configuration Scope and Known Limitations

The following constraints are enforced to ensure system integrity and predictable behavior:

Scope

- The updated configNetwork script (ASP 6.0.0.4 and later) now supports:
  - Dual bridge configuration (bridge0 & bridge1).
  - Dual bond configuration when configuring 2 bridges:
    - bond0 > bridge0
    - bond1 > bridge1
  - VLAN Trunking support.
    - When Configuring VLAN trunking:
      - Script can now configure 1-5 VLANs
      - Script can configure a dedicated bridge for every required VLAN.
      - VLAN trunking can be configured on either bridge0 or bridge1.
  - **10/25GB NIC on ASP 130A3/A31**
    - Introduce support of the **BCM57414 2x10/25GB** Network Interface Card exclusively on the Dell R660xs profiles A3 and A31.
    - Ports will be labeled as **P7** (**NIC 7**) / **ens1f0np0** (Hypervisor) & **P8** (**NIC 8**) / **ens1f1np1** (Hypervisor)

  Note: When bonding ports (Active/backup or LACP), both **must be** at either 10GB or 25GB.

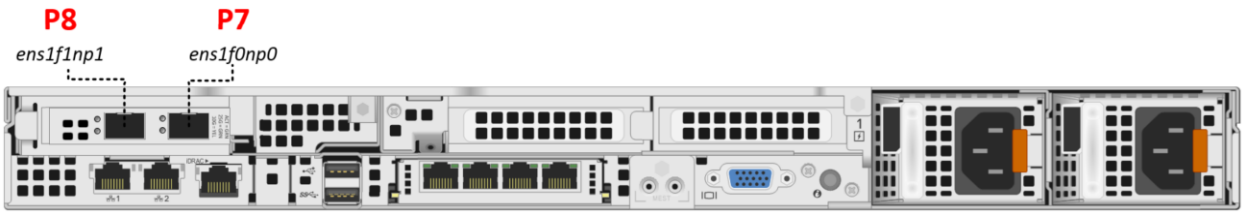


Figure 1: Rear View of Dell PowerEdge R660xs – A3/A31 Server

Limitations

- **Out-of-Band Management (OOBM)** is restricted to a single VLAN and cannot participate in trunking.
- Cockpit must **not** be used to modify:
  - bridge0, bridgeoob or bridge1 (if configured) when configured via the network script *"configNetwork".*
- VLAN tagging **within the VM guest OS** is unsupported

⚠️ *Unsupported changes may lead to network failure or require a full host re-image to restore connectivity.*

⚠️ **Note:** This guide uses P[n] and NIC[n] to refer to the same network interface. For example, P1 is the same as NIC 1.

3.3 Supportability Guidelines and Change Control

Strict adherence to supported configurations is required to maintain eligibility for Avaya support. Any deviation from these guidelines should be treated as a controlled change.

Support Guidelines

- Only the VLAN configuration procedures outlined in this document are validated by Avaya
- Use of system tools such as `nmcli` is permitted only as outlined in this document. Any other tools, commands, or procedures not documented here are, by default, considered unsupported.
- Changes to `OOBM`, `bridge0`, or existing bonded interfaces via Cockpit are **not supported** if those components were originally configured using the script.

Change Control Requirements

- Submit a request to Avaya support before applying custom VLAN or bond configurations outside the documented models
- Maintain configuration backups and change logs before applying VLAN changes
- If unsupported configurations are applied and connectivity is lost, a full re-image of the host may be required

📌 *To confirm whether a specific VLAN topology is supported, customers are advised to contact Avaya technical support prior to implementation.*

4 Supported VLAN Topologies in the ASP 130 R6.0 Solution

Red Hat Enterprise Linux (RHEL) offers a variety of options and configurations for VLAN setup and 802.1Q VLAN tagging. While the Red Hat vendor does not provide a single "best" recommended configuration, it is important to note that for Avaya ASP R6.0, the only tested and supported configuration methods are the ones included in this document.

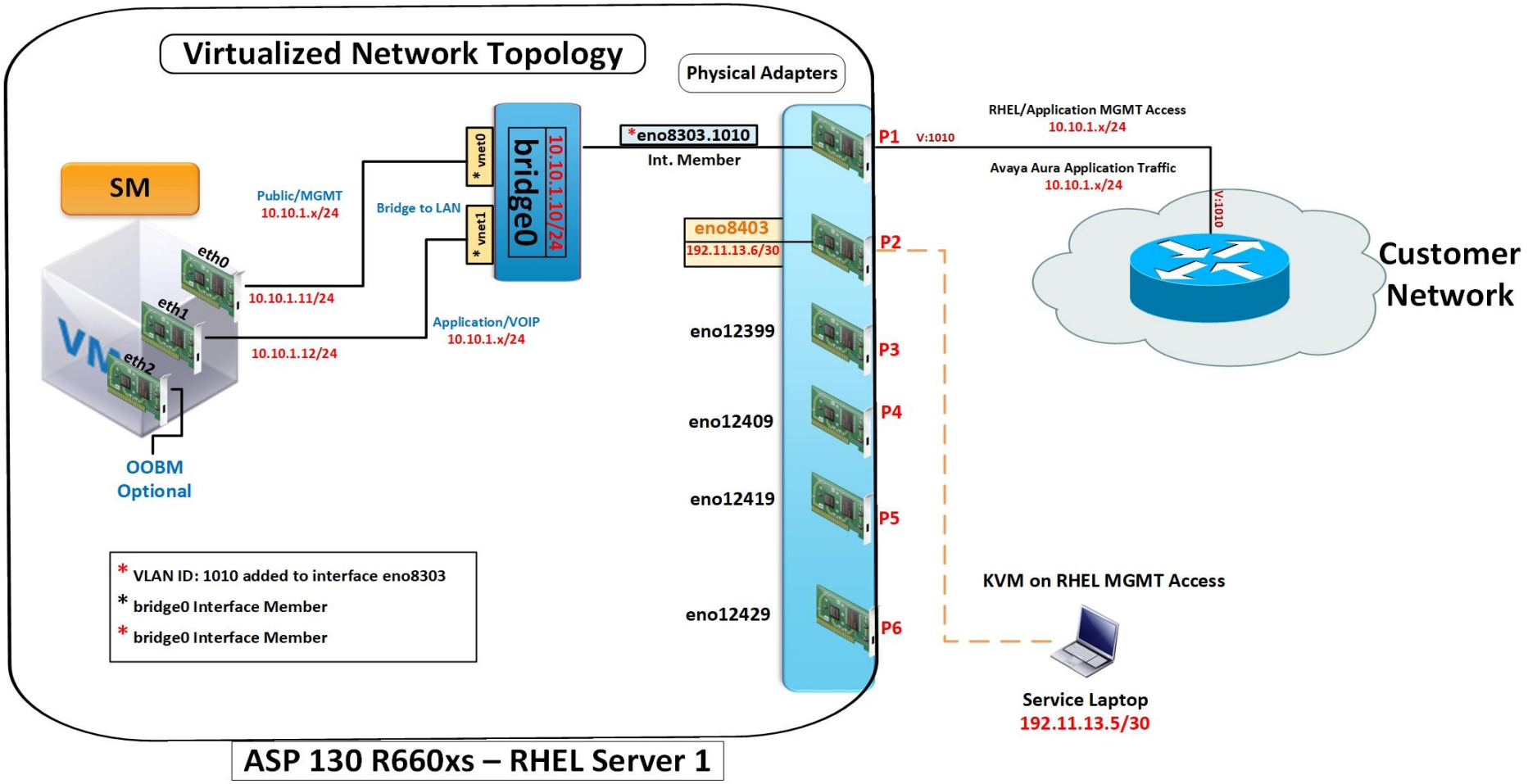
Warning While alternative configurations may be supported, they require prior approval from Avaya. If the desired configuration is not listed in this section, contact Avaya support for approval before proceeding with implementing network changes on the host.

Note: Following topologies are also applicable to customers with ASP 130 R640 KVM on RHEL 8.10 servers, except for those with LACP configuration.

Note: For details on network port mapping and physical interface differences between Dell R640 and R660xs servers, refer to the **NIC assignment mapping** section in the *Installing the Avaya Solutions Platform 130 Series* guide.

4.1 Single VLAN configuration in an ASP 130 R6.0 – Hypervisor Layer:

Note: In this topology, the VLAN ID is assigned to the physical adapter.

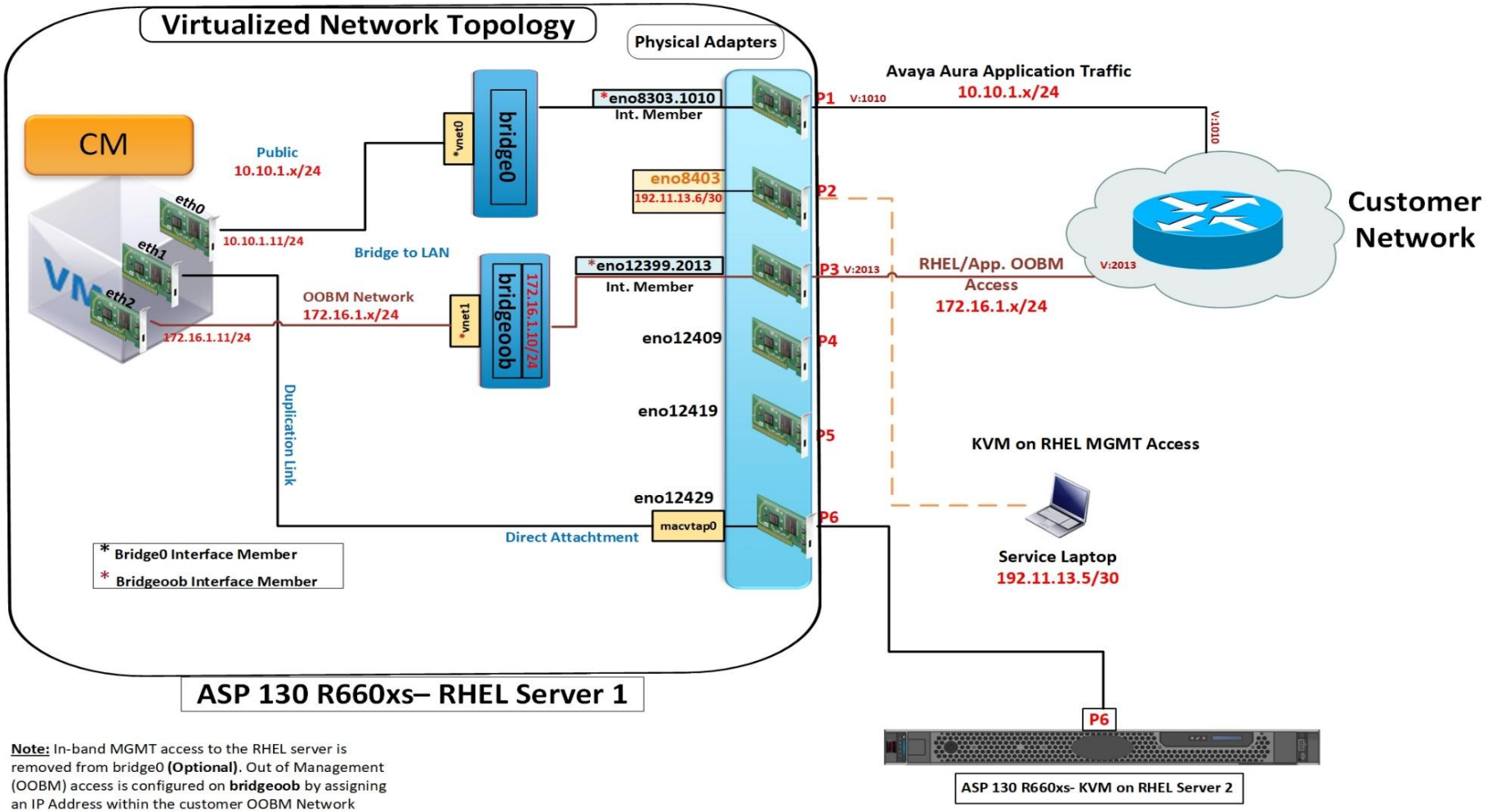


- ASP 130 KVM on RHEL Network Topology with a single VLAN configured. Bonding & OOBM is not configured.

Figure 1 – Single VLAN Configuration

4.2 Single VLAN configuration with OOBM, no Bond in an ASP 130 R6.0 – Hypervisor Layer:

Note: In this topology, each VLAN ID is assigned to a physical adapter.



Note: In-band MGMT access to the RHEL server is removed from bridge0 **(Optional)**. Out of Management (OOBM) access is configured on **bridgeoob** by assigning an IP Address within the customer OOBM Network segment.

- **ASP 130 RHEL 8 Network Topology with OOBM configured and no bonding.**

Figure 2 – Single VLAN Configuration with OOBM

4.3 VLAN configuration on separate bridges in an ASP 130 R6.0 – Hypervisor Layer:

Note: In this topology, each VLAN ID is assigned to a unique physical adapter. Bonding is not configured.

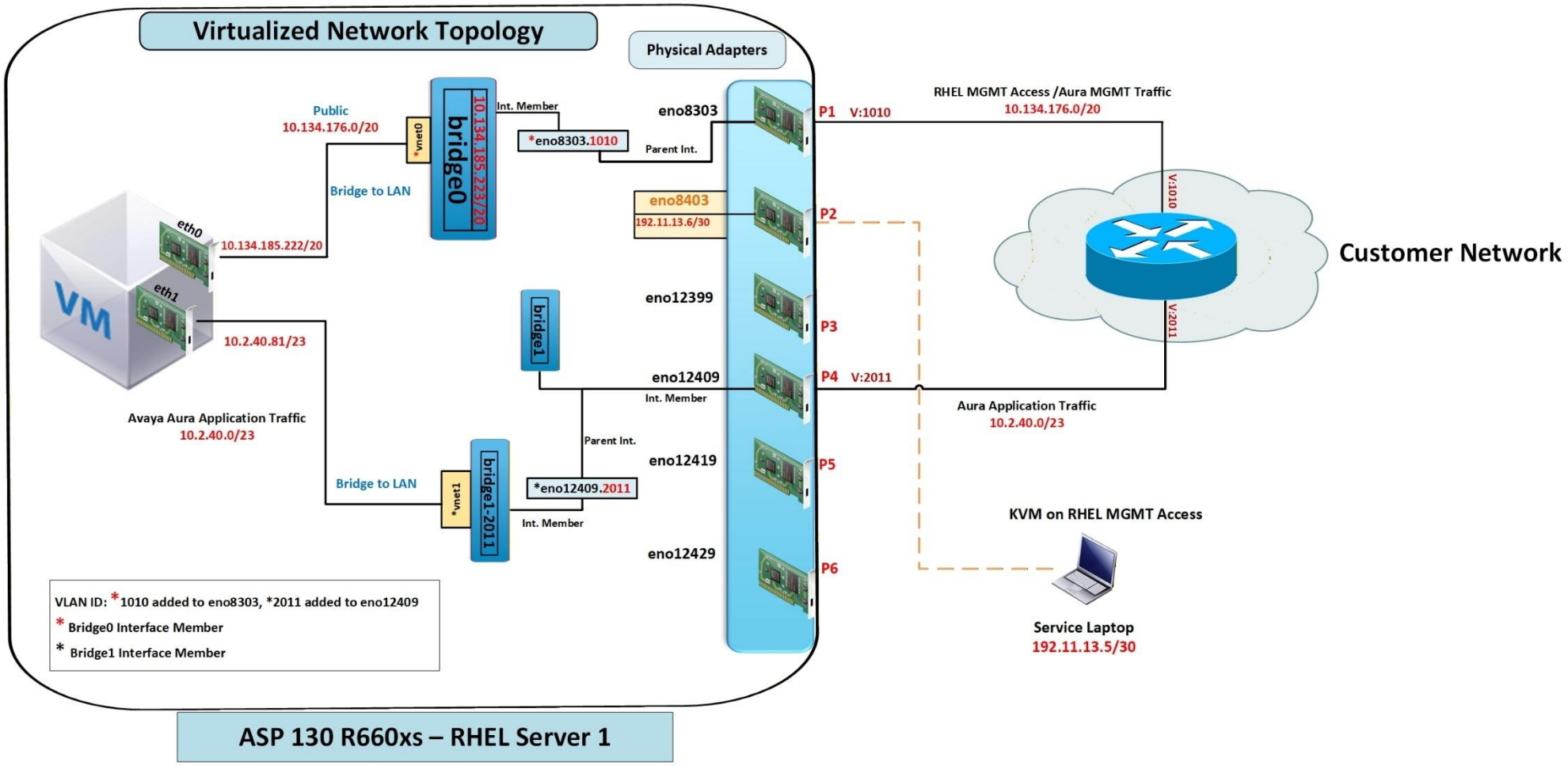
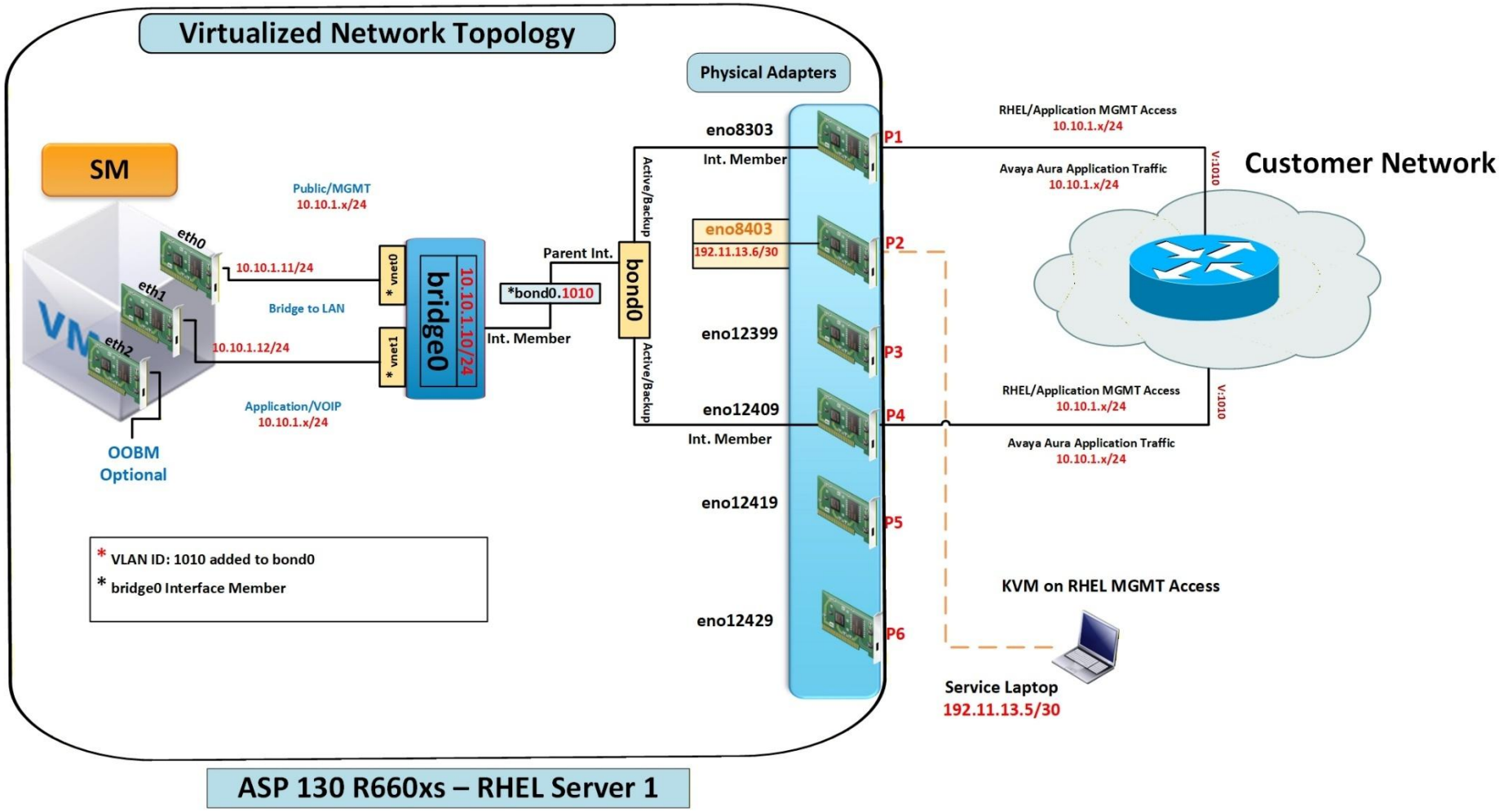


Figure 3 – VLAN Configuration on Separate Bridges

4.4 Single VLAN configuration with bonding in an ASP 130 R6.0 – Hypervisor Layer:

Note: In this topology, the VLAN ID is assigned to bond interface, rather than the physical adapter.

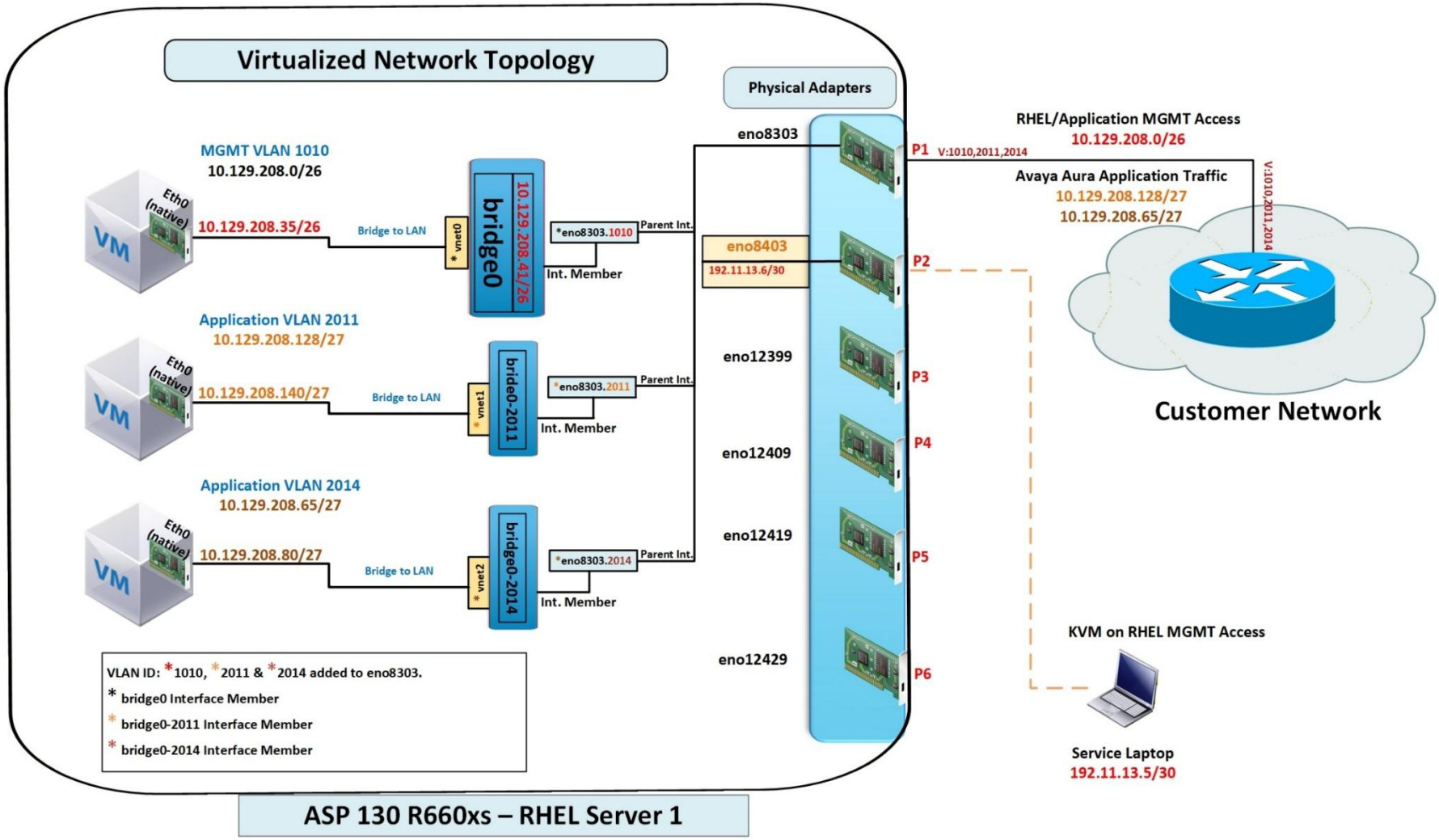


- ASP 130 RHEL Network Topology with single bridge, bond and VLAN configuration.
- OOBM is not configured.

Figure 4 – Single VLAN Configuration with Bonding

4.5 Single Bridge selection with VLAN Trunking and No Bonding in an ASP 130 R6.0 – Hypervisor Layer:

Note: In this topology, each VLAN ID is assigned to a physical adapter.



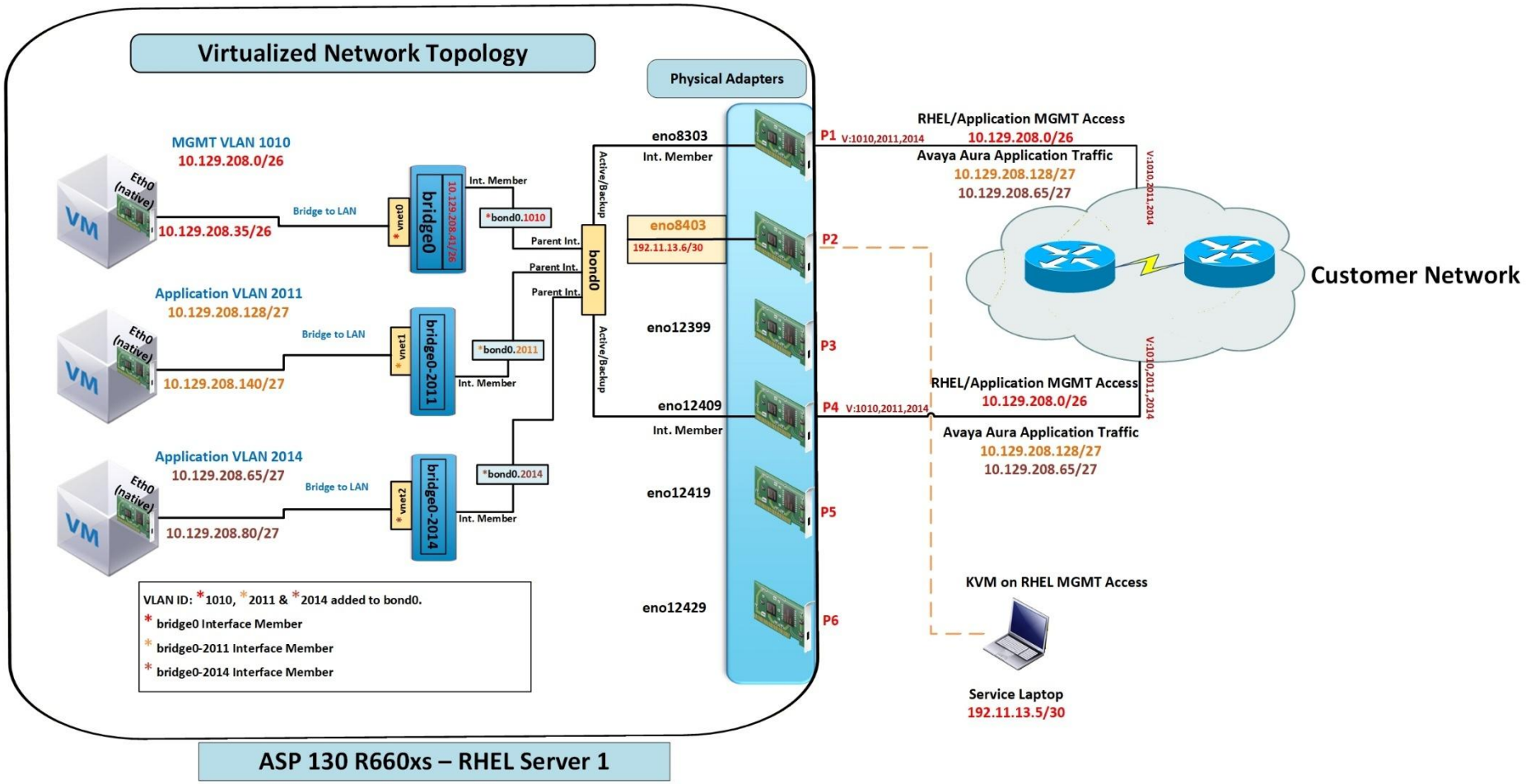
- ASP 130 KVM on RHEL Network Topology with single bridge selection (bridge0) and VLAN trunking configuration.
- Bonding & OOBM is not configured.

Figure 5 – Single Bridge with VLAN Trunking and no Bonding Configuration

4.6 Single Bridge Selection with VLAN trunking and bonding in an ASP 130 R6.0 – Hypervisor Layer:

Note: This topology can support up to two bonds if necessary, leaving one remaining NIC (physical adapter) available for either Out-of-Band Management (OOBM) or Communication Manager (CM) duplication traffic.

Note: In this topology, each VLAN ID is assigned to the bond rather than the physical adapter.

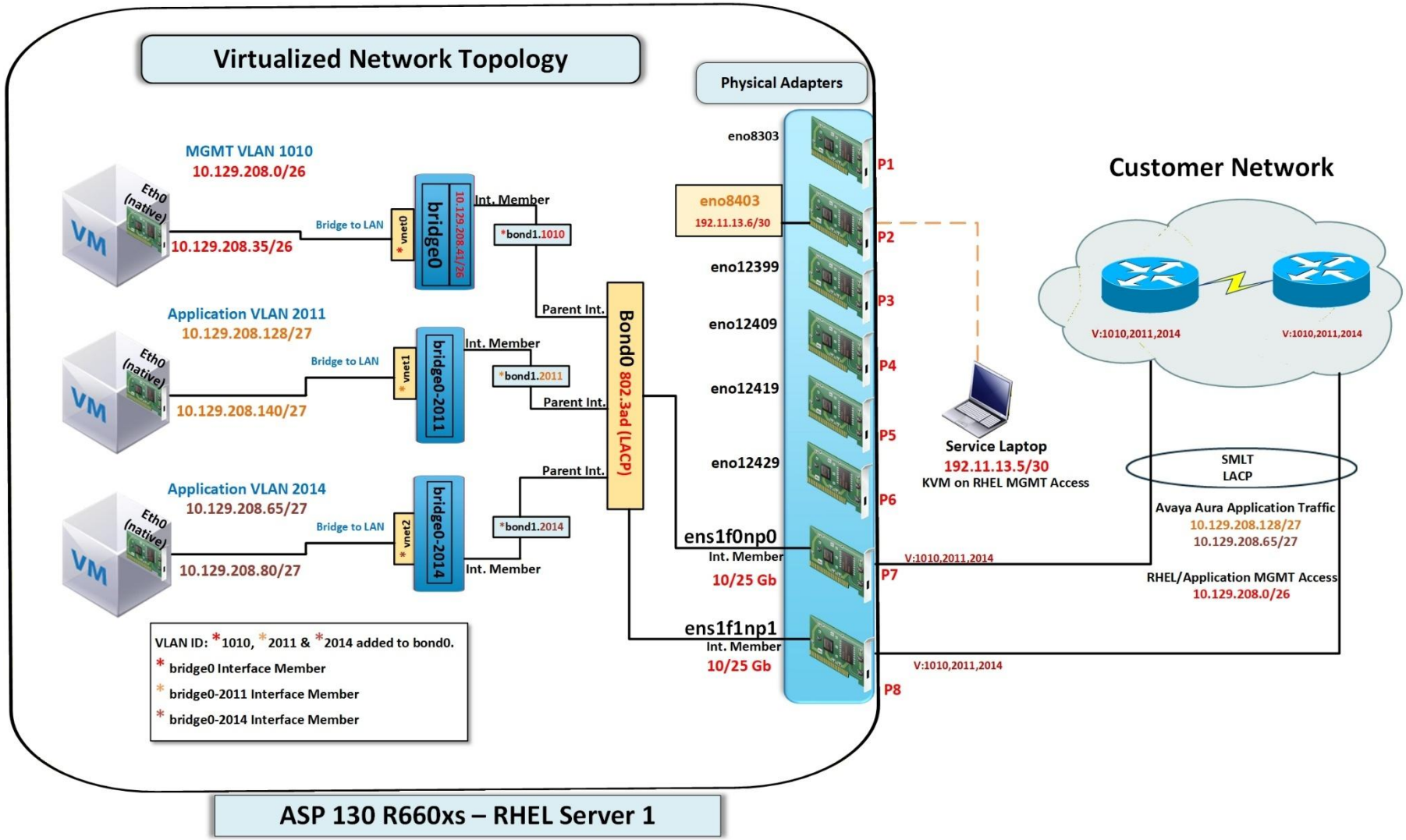


- ASP 130 KVM on RHEL Network Topology with single bridge selection (bridge0) and VLAN trunking configuration.
- Bonding is configured.
- OOBM is not configured.

Figure 6 – Single Bridge Selection with Bonding and VLAN Trunking Configuration

4.7. Single Bridge Selection with VLAN Trunking and LACP bonding in an ASP 130 R6.0 – Hypervisor Layer:

Note: This topology represents a 1 bridge configuration during script selections. 10/25 GbE Ports are only available in Dell R660xs A3/A31 profiles.



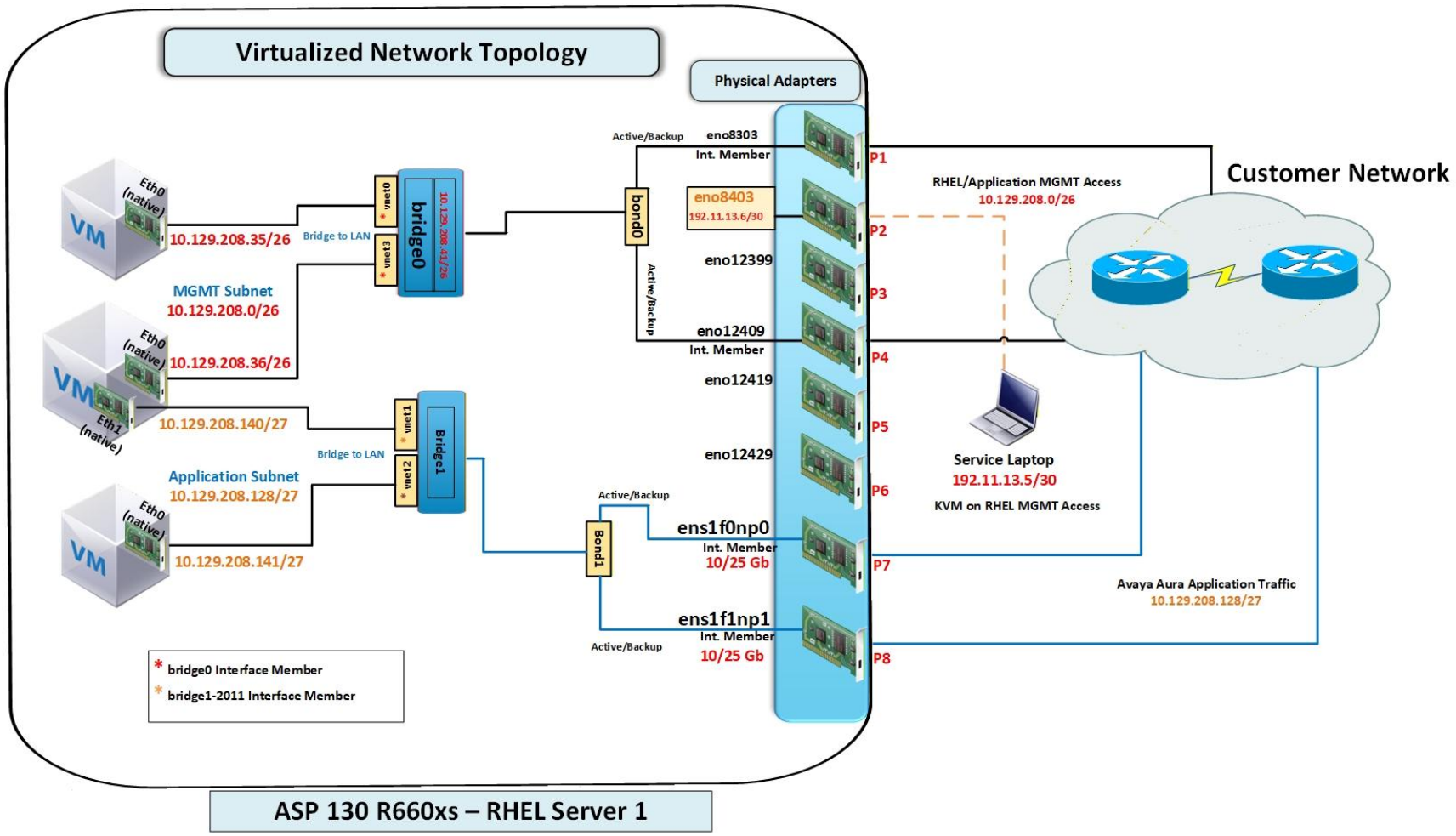
- ASP 130 KVM on RHEL Network Topology with multiple VLAN configuration.
- LACP Bonding is configured.
- OOBM is not configured.

Note: The customer network topology shown is for illustrative purposes only. Layer 2 link protocols such as SMLT, multi-chassis link aggregation, and other redundancy protocols are vendor-dependent and may vary across switch platforms and customer environments

Figure 6 – Single Bridge Selection with VLAN Trunking and LACP Bonding Configuration

4.8. Dual Bridge Selection with bonding configuration in an ASP 130 R6.0 – Hypervisor Layer:

Note: This topology can also be supported with VLANs.

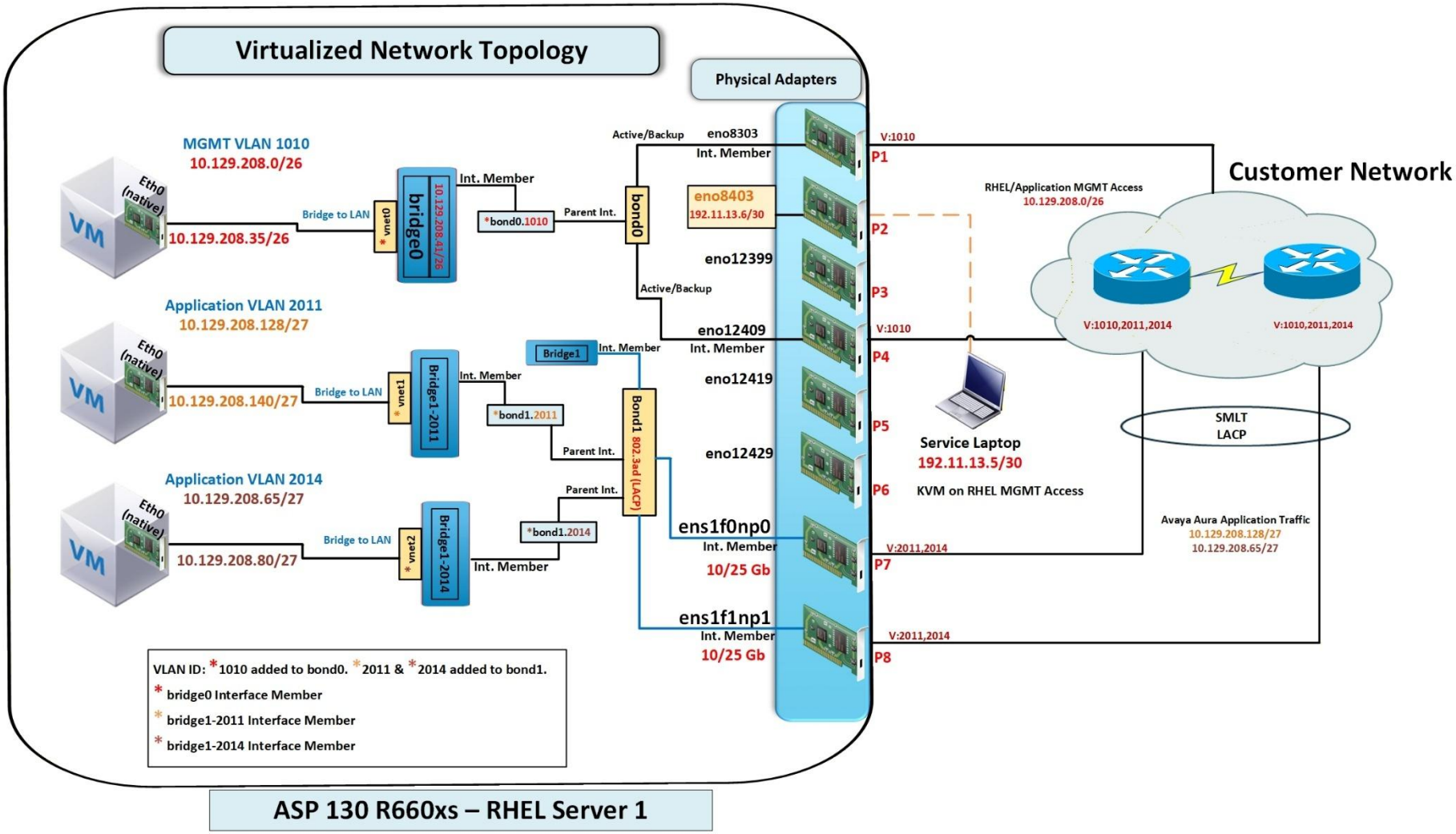


- ASP 130 KVM on RHEL Network Topology with dual bridge and bonding (Active/Backup) configuration.
- OOBM is not configured. VLAN is not configured.

Figure 7 – Dual Bridge and Bonding (Active/Backup) Configuration with no VLAN

4.9. Dual Bridge Selection with Different Bonding configurations in an ASP 130 R6.0 – Hypervisor Layer:

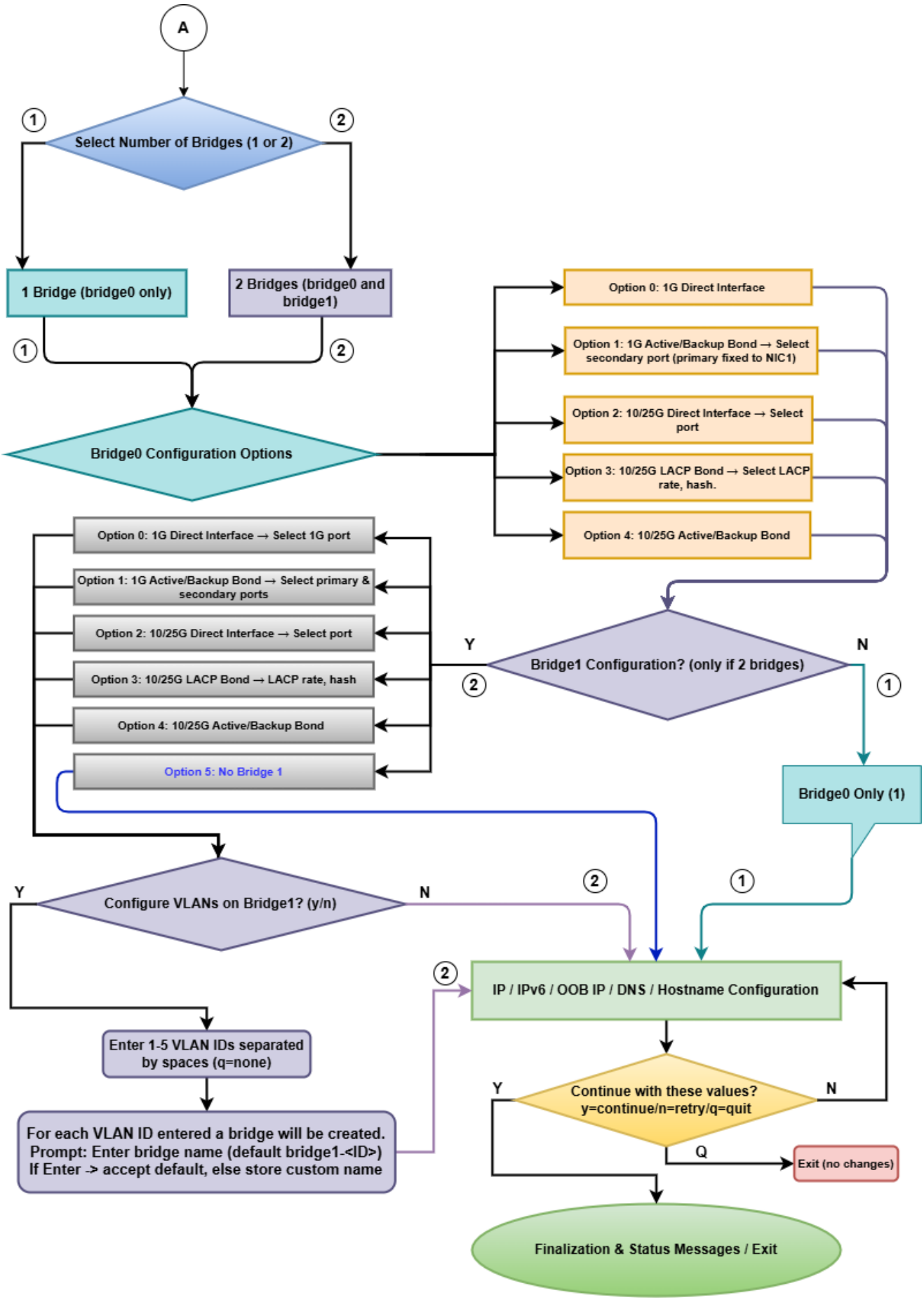
Note: This topology can also be supported without VLANs.



- ASP 130 KVM on RHEL Network Topology with multiple VLAN configuration.
- Multiple Bonding interfaces are configured. Active/Backup for MGMT and LACP for application traffic.
- OOBM is not configured.

Figure 8 – Dual Bridge with Different Bonding Configurations

5 Updated Network Script Flow-Chart



6 VLAN Deployment Procedures for ASP 130 R6.0 (Automated)

The new, updated network configuration script "`configNetwork`" available with ASP **R6.0.0.4.0** and onwards allows the configuration of VLAN tagging, VLAN Trunking, bonding in active/backup or LACP mode, including multiple bridges when separating VoIP and Management traffic.

In addition, updated network configuration script now also supports the 10/25 Gbe ports.

6.1 Single VLAN Deployment

Configure KVM on RHEL 8.10 Server Management Interface for VLAN Tagging

The KVM on RHEL 8.10 management interface can be configured to support VLAN tagging (IEEE 802.1Q). The following guidelines provide instructions for configuring the appropriate NICs on the server to enable this functionality.

In this configuration example, a single **VLAN** will be created and assigned to **bridge0**. However, the same process can be followed when configuring a VLAN ID to OOBM interface.

Prerequisites

- During the maintenance activity, the customer network administrator must configure the appropriate VLAN ID on the data switch port that connects the server to the management network and enable VLAN tagging (IEEE 802.1Q) on that port. Failure to do so will result in the server (hypervisor) being disconnected from the network after the VLAN configuration changes are applied.

Note: When making network configuration changes to the primary interface, it is necessary to connect to the server via the designated services port. As the script applies changes, network services will be restarted, which will terminate any existing connections over the primary interface. In the event of misconfiguration, the server will only be accessible through the services port or console.

Procedure

6.1.1 Connect to the KVM on RHEL server using the services port connection.

6.1.2 Log in to the KVM on RHEL host by using a Secure Shell (SSH) client e.g., PuTTY.

6.1.3 Authenticate using the existing `custadm` credentials or `sroot` if EASG enabled.

6.1.4 Execute the following CLI command: `configNetwork`

6.1.5 Follow the script prompts:

- `Do you want to continue (y/n):` Type **y** to continue if the connection is via services port.
- `Connect this server to an Out of Band Management Network (OOBM) y/n (n):` Type **n** to continue (OOBM configuration is not part of this procedure).

Consideration:

The network script automatically detects if ***OOBM*** has been previously configured on the management interface. If OOBM is found, the script will display a "**Y**" by default. To retain the current OOBM configuration, simply press Enter without making any changes to keep the existing OOBM configuration intact.

- `Create an OOBM bridge for VMs use? y/n (n):` Type **n** to continue.
- `Do you want to configure a Management/VM's VLAN? y/n (n):` Type **y**
- `Enter the Management/VM's VLAN ID ():` Enter a value `<1-4094>` for example **1010**.

Note: Some network switch vendors may support only a subset of the IEEE 802.1Q valid VLAN ID range (**1–4094**). Therefore, verify that the VLAN ID entered is supported by the customer's data switch before applying any changes.

- `Configure additional VLANs on the bridge0 (Management/VM's) ports? y/n (n)`**:** Type n to continue. In this example a single VLAN will be configured.
- `Do you want to configure 1 or 2 bridges? (1)`**:** Type 1. In this example only **bridge0** will be re-configured.

```
=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
```

- `Select configuration for bridge0: (0)`**:** Select desired configuration. In this example a direct interface connection will be created.

Consideration:

The network script automatically detects current configuration. If a bond has been previously configured on the management interface the script will display current configuration e.g. (1) for 1G active/backup bond. To retain the current bond configuration, simply press Enter without making any changes to keep the existing bonding configuration intact.

- Press **Enter** key (7 times) until prompt displays *`Continue with these values? y=continue/n=retry/q=quit (n).`* If satisfied with current selections, type **y.**

Note: Although multiple changes at the same time are supported by the network script, IP address changes are not part of this procedure.

Example Output with single bridge selection and single VLAN Configured – No Bonding.

```
[root@asp130-r660xs]# ./configNetwork
====================  Server Network Configuration  ====================
Note: you should run this command from the console or services port
      After making configuration changes running VMs should be restarted.

Do you want to continue (y/n) y

The configured or default value is displayed in parentheses ().
Press 'enter' to accept it, enter 'd' to delete it or type a new value.

Connect this server to an Out Of Band Management network (OOBM)? y/n (n) n
Create an OOBM bridge for VMs use? y/n (n) n
Do you want to configure a Management/VM's VLAN? y/n (n) y
Enter the Management/VM's VLAN ID (): 1010
Configure additional VLANs on the bridge0 (Management/VM's) ports? y/n (n) n

========== Network Bridge Configuration ==========
Configure network bridges for management and VMs.

Do you want to configure 1 or 2 bridges? (1) 1

=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond

Select configuration for bridge0: (0) 0
Selected: 1G direct interface for bridge0
Using management port: eno8303
Enter Server hostname (asp130-r660xs-20841.acp.avaya.com):
Enter Server IPv4 (10.129.208.41):
```

```
Enter Server netmask or /prefix (/26):
Enter the IPv4 default gateway (10.129.208.1):
Do you want to configure IPv6? y/n (n)
Enter comma separated DNS servers (198.152.8.8,198.152.8.11):
Enter comma separated IPv4 domain search (avaya.com):
Continue with these values? y=continue/n=retry/q=quit (n) y

Bridge bridge0: initialization successful
Bridge slave port eno8303.1010 on bridge0: initialization successful
Bridge bridge0: IP initialization successful.
```

Example Output with single bridge selection, single VLAN and bonding configuration

```
[root@asp130-r660xs]# ./configNetwork
==================  Server Network Configuration  ==================
Note: you should run this command from the console or services port
      After making configuration changes running VMs should be restarted.

Do you want to continue (y/n) y
The configured or default value is displayed in parentheses ().
Press 'enter' to accept it, enter 'd' to delete it or type a new value.
Connect this server to an Out Of Band Management network (OOBM)? y/n (n)
Create an OOBM bridge for VMs use? y/n (n)
Do you want to configure a Management/VM's VLAN? y/n (y)
Enter the Management/VM's VLAN ID (1010):
Configure additional VLANs on the bridge0 (Management/VM's) ports? y/n (n)
========== Network Bridge Configuration ==========
Configure network bridges for management and VMs.
Do you want to configure 1 or 2 bridges? (1)
=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
Select configuration for bridge0: (0) 1
Configuring 1G active/backup bond for bridge0
Using fixed management port for first bond interface: eno8303
Available 1G ports for second bond interface:
 0) eno8303 (first port)
 1) eno12409
 2) eno12419
 3) eno12429
 4) eno12399
Enter the second port # to use in the bond: 1
Note: bond ports must not be used as a direct attachment interface for any VM
Selected ports: eno8303, eno12409
Enter Server hostname (asp130-r660xs-20841.acp.avaya.com):
Enter Server IPv4 (10.129.208.41):
Enter Server netmask or /prefix (/26):
Enter the IPv4 default gateway (10.129.208.1):
Do you want to configure IPv6? y/n (n)
Enter comma separated DNS servers (198.152.8.8,198.152.8.11):
Enter comma separated IPv4 domain search (avaya.com):
Continue with these values? y=continue/n=retry/q=quit (n) y

Bridge bridge0: initialization successful
Bond: initialization successful
Bond VLAN 1010 on bridge0-port initialization successful
Bond port bond0-port1 eno8303 initialization successful
Bond port bond0-port2 eno12409 initialization successful
Bridge bridge0: IP initialization successful.
```

6.1.6 Execute the following CLI command for bond configuration validation: `nmcli con`

Example Output: VLAN configuration without NIC bonding.

```
[root@asp130-r660xs-20841 4ports]# nmcli connection
NAME             UUID                                  TYPE      DEVICE
Mgmt_VM_Network  40b17c7b-d673-40c3-8cea-64fc348a2d46  bridge    bridge0
Services         a0d62edd-3a52-454e-a940-9f9fd3ece754  ethernet  eno8403
bridge0-port     88c20be6-c6dd-41cd-bc59-8f1523faac0e  vlan      eno8303.1010
eno12399         39122b3e-cbff-4cfd-b83d-fd11bb639f65  ethernet  --
eno12409         f86b11ef-28f2-4e9f-af6b-d40e6b061cb6  ethernet  --
eno12419         832529a9-eec2-4c0a-adb4-a483383cc04c  ethernet  --
eno12429         7dec110f-4e7d-42a3-981f-f09e74f9ec3e  ethernet  --
eno8303          a9fa167e-21c1-4e7b-bc21-eec32e76e45b  ethernet  --
ens1f0np0        bdc79ceb-4752-478c-851b-54ab8305c189  ethernet  --
ens1f1np1        3dee0dd4-f455-4451-b4ec-5a928dc98f06  ethernet  --
```

Output example: VLAN configuration with NIC bonding.

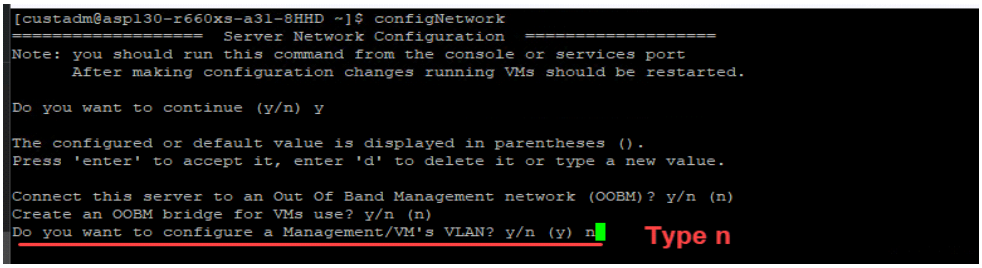
```
[root@asp130-r660xs-20841 4ports]# nmcli connection
NAME             UUID                                  TYPE      DEVICE
Mgmt_VM_Network  08c268f9-f49d-4704-830f-2a418c828b17  bridge    bridge0
Services         a0d62edd-3a52-454e-a940-9f9fd3ece754  ethernet  eno8403
bond0            73875fe3-e56d-4ac8-a58c-e9019b621fc2  bond      bond0
bond0-port1      e13813d5-2233-4d99-955c-525fc7df767d  ethernet  eno8303
bond0-port2      c1adcc01-1c77-48dc-b6b5-123710e13722  ethernet  eno12409
bridge0-port     33d925a8-0b09-4dcc-8c46-4646880ebc86  vlan      bond0.1010
eno12399         39122b3e-cbff-4cfd-b83d-fd11bb639f65  ethernet  --
eno12409         f86b11ef-28f2-4e9f-af6b-d40e6b061cb6  ethernet  --
eno12419         832529a9-eec2-4c0a-adb4-a483383cc04c  ethernet  --
eno12429         7dec110f-4e7d-42a3-981f-f09e74f9ec3e  ethernet  --
eno8303          a9fa167e-21c1-4e7b-bc21-eec32e76e45b  ethernet  --
ens1f0np0        bdc79ceb-4752-478c-851b-54ab8305c189  ethernet  --
ens1f1np1        3dee0dd4-f455-4451-b4ec-5a928dc98f06  ethernet  --
```

6.1.7 (Optional) if a VLAN ID ***needs to be changed*** re-run the `configNetwork` script and repeat all previous steps.

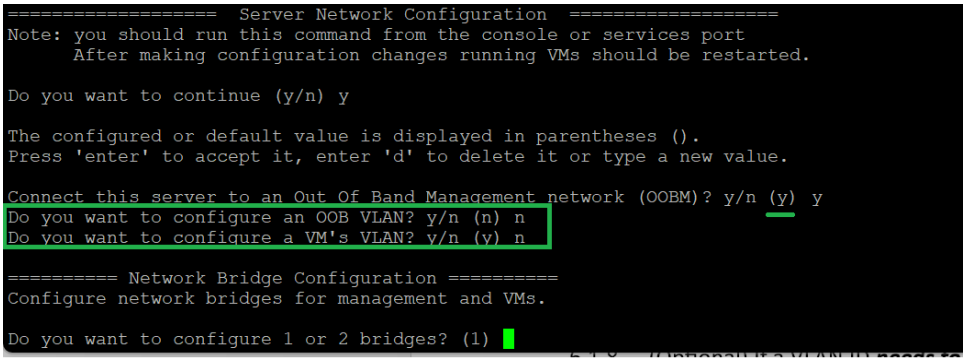
6.1.8 (Optional) If a VLAN ID ***needs to be removed,*** re-run the `configNetwork` script and answer **n** when the script asks for "`Do you want to configure a Management/VM's VLAN? y/n (y)`".

Warning Unless instructed by Avaya, Do **NOT** use Cockpit to make changes (change/remove) to either **bridge0**, bridge1 and **bridgeoob** if OOBM is configured on the server. Doing so will break the `configNetwork` script, and the server will require re-imaging.

Output example when OOBM has not been previously configured.



Output example when OOBM has been previously configured.



6.2 Configuring a VLAN ID on a new Bridge using Network Script

About this task

Putting VoIP and Data on separate networks is a recommended best practice and industry standard. Isolating VoIP traffic from Data/Management Traffic helps to enhance network security and enables customers to implement QoS adequately. It also helps by simplifying network traffic management and troubleshooting as each network can be monitored independently. By independently monitoring each network, a network administrator can quickly identify and address issues specific to either VoIP or data/management services, improving response times and minimizing downtime.

Note: Call signaling in VoIP communications, whether directed to Communication Manager (CM), Session Manager (SM), or media servers, is still classified as VoIP traffic, even if media (RTP packets) is not transmitted as part of the call signaling process.

Before you begin

- It is expected to have at least one extra physical interface apart from the one designated for the Hypervisor management interface (eno8303).
- Connect the designated server port (for example, eno12419) to the customer's data switch. For a network topology illustration of this configuration, refer to VLAN configuration on separate bridges in an ASP 130 R6.0 – Hypervisor Layer:.
- Customer data switch port connecting server must be already configured with the corresponding VLAN ID and VLAN tagging (IEEE 802.1Q) enabled.

Note: In the event of a misconfiguration with the primary interface (bridge0), the server will only be accessible through the services port.

Procedure

6.2.1 Connect to the KVM on RHEL server using the services port connection.

6.2.2 Log in to the KVM on RHEL host by using a Secure Shell (SSH) client e.g., PuTTY.

6.2.3 Authenticate using the existing `custadm` credentials or `sroot` if EASG enabled.

6.2.4 Execute the following CLI command: `configNetwork`

6.2.5 Follow the script prompts:

- `Do you want to continue (y/n):` Type **y** to continue if the connection is via services port.

- `Connect this server to an Out of Band Management Network (OOBM) y/n (n)`: Type **n** to continue (OOBM configuration is not part of this procedure).

Note: The network script automatically detects if ***OOBM*** has been previously configured on the management interface. If OOBM is found, the script will display a "**Y**" by default. To retain the current OOBM configuration, simply press Enter without making any changes to keep the existing OOBM configuration intact.

- `Create an OOBM bridge for VMs use? y/n (n)`: Type **n** to continue.
- `Do you want to configure a Management/VM's VLAN? y/n (n)`: Type **y**
- `Enter the Management/VM's VLAN ID ()`: Enter a value `<1-4094>` for example **1010**.

  Note: Some network switch vendors may support only a subset of the IEEE 802.1Q valid VLAN ID range (**1–4094**). Therefore, verify that the VLAN ID entered is supported by the customer's data switch before applying any changes.

- `Configure additional VLANs on the bridge0 (Management/VM's) ports? y/n (n)`: Type n to continue. In this example a single VLAN will be configured.
- `Do you want to configure 1 or 2 bridges? (1)`: Type 2. In this example a second bridge will be configured.

```
=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
```

- `Select configuration for bridge0: (0)`: In this example no changes will be made to bridge0, therefore 1G direct interface will be left configured.

```
Selected: 1G direct interface for bridge0
Using management port: eno8303
=== Configuring bridge1 (Secondary VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
 5) No second bridge
```

- `Select configuration for bridge1: (5)`: Type 0. In this example a direct 1GB interface will be configured on bridge1, however, a bond can also be configured if required.

Note: The network script automatically detects current configuration. If *bridge1* has been previously configured, current configuration will be displayed in parenthesis e.g (0) for 1GB direct interface. To retain the current configuration, simply press Enter without making any changes to keep the existing configuration intact.

```
Selected: 1G direct interface for bridge1
Available 1G ports:
 0) eno12409
 1) eno12419
 2) eno12429
 3) eno12399
```

- `Enter the port # to use for direct connection:` Type `0`. In this example, option 1 (eno12409) will be selected.
- `Configure VLANs on the bridge1 ports? y/n (n):` Type `y`.

Note: The network script automatically detects current configuration. If bridge1 has been previously configured with 1 or more VLANs, these will be displayed e.g. `Current VLANs: 2011`

- `Enter 1 to 5 VLAN IDs separated by spaces (q=none):` Enter a value `<1-4094>` for example **2011**.

Note: Some network switch vendors may support only a subset of the IEEE 802.1Q valid VLAN ID range (**1–4094**). Therefore, verify that the VLAN ID entered is supported by the customer's data switch before applying any changes.

Note:
In this example, a single VLAN will be configured on a second bridge, bridge1, however, multiple VLANs (VLAN trunking) can be configured as well.

- At this stage, the script will prompt the user to begin configuring a bridge for each VLAN ID entered in the previous step. In this example, one bridge will be created for VLAN ID 2011.

Note: The "configNetwork" script automatically assigns a default label to each new bridge including the VLAN ID. If changing the default label, it is strongly recommended to configure these labels in a way that is easy to identify, for example: VoIP-2011, Management-1010 etc.

Warning **Bridge name must be unique.** Do NOT assign the same name to multiple bridges.

- `Enter the name of the bridge to connect to VLAN 2011 (bridge1-2011):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.

Consideration: Bridge labels must be between **2 and 15** characters in length and must contain only alphanumeric characters, a dash **(-)**, or an underscore **(_)**.

- Press **Enter** key (7 times) until prompt displays *`Continue with these values? y=continue/n=retry/q=quit (n).`* If satisfied with current selections, type **y.**

Note: Although multiple changes at the same time are supported by the network script, IP address changes are not part of this procedure.

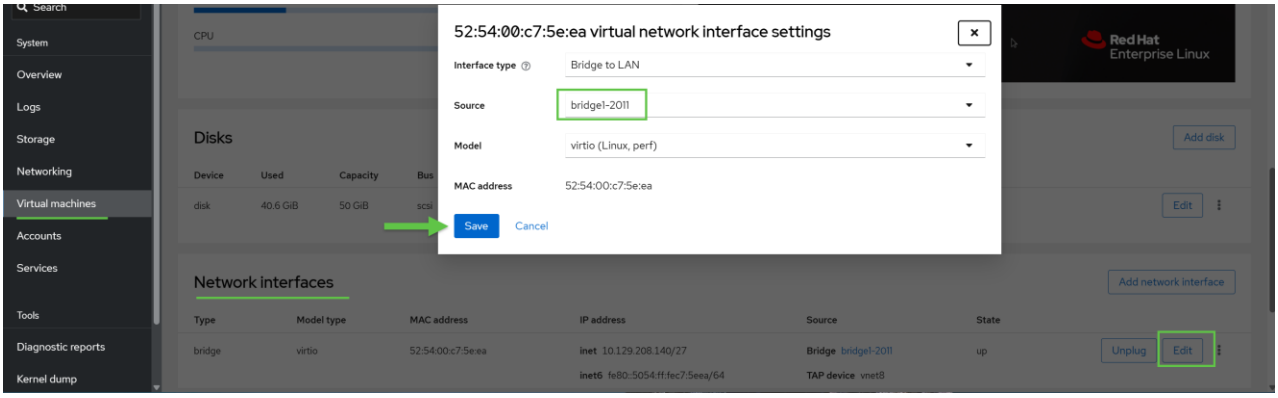
Output Example

```
[root@asp130-r660xs]# ./configNetwork
==================  Server Network Configuration  ==================
Note: you should run this command from the console or services port
      After making configuration changes running VMs should be restarted.

Do you want to continue (y/n) y

The configured or default value is displayed in parentheses ().
Press 'enter' to accept it, enter 'd' to delete it or type a new value.

Connect this server to an Out Of Band Management network (OOBM)? y/n (n) n
Create an OOBM bridge for VMs use? y/n (n) n
Do you want to configure a Management/VM's VLAN? y/n (n) y
Enter the Management/VM's VLAN ID (): 1010
Configure additional VLANs on the bridge0 (Management/VM's) ports? y/n (n) n

========== Network Bridge Configuration ==========
Configure network bridges for management and VMs.

Do you want to configure 1 or 2 bridges? (1) 2

=== Configuring bridge0 (Management Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond

Select configuration for bridge0: (0) 0
Selected: 1G direct interface for bridge0
Using management port: eno8303

=== Configuring bridge1 (Secondary VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
 5) No second bridge

Select configuration for bridge1: (5) 0
Selected: 1G direct interface for bridge1
Available 1G ports:
 0) eno12409
 1) eno12419
 2) eno12429
 3) eno12399
Enter the port # to use for direct connection: 1
Selected port: eno12419

Configure VLANs on the bridge1 ports? y/n (n) y
Enter 1 to 5 VLAN IDs separated by spaces (q=none): 2011
Enter the name of the bridge to connect to VLAN 2011 (bridge1-2011):
Enter Server hostname (asp130-r660xs-20841.acp.avaya.com):
Enter Server IPv4 (10.129.208.41):
Enter Server netmask or /prefix (/26):
Enter the IPv4 default gateway (10.129.208.1):
Do you want to configure IPv6? y/n (n)
Enter comma separated DNS servers (198.152.8.8,198.152.8.11):
Enter comma separated IPv4 domain search (avaya.com):
Continue with these values? y=continue/n=retry/q=quit (n) y

Bridge bridge0: initialization successful
Bridge slave port eno8303.1010 on bridge0: initialization successful
Bridge bridge1: initialization successful
Bridge slave port eno12419 on bridge1: initialization successful
Add bridge1-2011 on bridge1-2011-port VLAN=2011
Bridge bridge1-2011: initialization successful
Vlan 2011 on bridge1-2011-port initialization successful
Bridge bridge0: IP initialization successful.
```

6.2.6 Migrate the Avaya application virtual network interfaces to the appropriate newly created bridge.

Note: Virtual machines must be powered off before making any network changes.

Note: When segregating networks, a new network segment for VoIP will be provisioned. Coordinate with the customer's network administrators to ensure that Avaya Aura applications are re-IP'ed accordingly.



6.3 Configuring VLAN trunking on A Single Physical Adapter

About this task

VLAN trunking is a networking technique that enables the transmission of traffic from multiple Virtual Local Area Networks (VLANs) over a single physical network link. Using industry-standard protocols such as IEEE 802.1Q, VLAN trunking adds a unique VLAN identifier to each Ethernet frame, ensuring that traffic remains logically segmented across the shared link. This method improves network scalability and efficiency **by reducing the need for multiple physical interfaces** and simplifying cable management.

Putting VoIP and Data on separate networks is a recommended best practice and industry standard. Isolating VoIP traffic from Data/Management Traffic helps enhance network security and allows customers to implement QoS adequately. It also helps by simplifying network traffic management and troubleshooting as each network can be monitored independently. By independently monitoring each network, a network administrator can quickly identify and address issues specific to either VoIP or data/management services, improving response times and minimizing downtime.

Note: VoIP call signaling, including messages sent to Communication Manager (CM), Session Manager (SM), media servers, Session Border Controller or other SIP/Proxy servers, should always be classified and treated as VoIP traffic. This classification remains essential even when the call does not involve media (RTP) streams at that stage, as signaling is a critical component of the VoIP session setup and control.

Note: For ASP R6.0, VLAN tagging is configured exclusively at the hypervisor layer. VLAN configuration is not applied within the VM guest operating system or application layer.

Warning Server port assignment and configuration for Avaya Communication Manager duplication traffic are not part of this procedure. **DO NOT** make changes to the Avaya CM duplication interface or to the hypervisor when configuring VLAN trunking.

Note: Updated network script now supports assigning multiple VLAN IDs over the same physical adapter.

Prerequisites

- The customer's data switch port connected to the server must already be configured with the appropriate VLAN ID, and IEEE 802.1Q VLAN tagging must be enabled.

Note: In this example, additional VLAN IDs will be configured on the same physical adapter that provides in-band management access to the KVM on a RHEL 8.10 host (e.g., `eno8303`). For a network topology illustration of this configuration, refer to Single Bridge selection with VLAN Trunking and No Bonding in an ASP 130 R6.0 – Hypervisor Layer:

Note: In the event of a misconfiguration with the primary interface, the host Cockpit UI will only be accessible through the services port.

Procedure

6.3.1.1 Connect to the KVM on RHEL server using the services port connection.

6.3.1.2 Log in to the KVM on RHEL host by using a Secure Shell (SSH) client e.g., PuTTY.

6.3.1.3 Authenticate using the existing `custadm` credentials or `sroot` if EASG enabled.

6.3.1.4 Execute the following CLI command: `configNetwork`

6.3.1.5 Follow the script prompts:

- `Do you want to continue (y/n):` Type **y** to continue if the connection is via services port.
- `Connect this server to an Out of Band Management Network (OOBM) y/n (n):` Type **n** to continue (OOBM configuration is not part of this procedure).

Consideration:

The network script automatically detects if ***OOBM*** has been previously configured on the management interface. If OOBM is found, the script will display a "**Y**" by default. To retain the current OOBM configuration, simply press Enter without making any changes to keep the existing OOBM configuration intact.

- `Create an OOBM bridge for VMs use? y/n (n):` Type **n** to continue.
- `Do you want to configure a Management/VM's VLAN? y/n (n):` Type **y**

Note: The network script automatically detects if a VLAN has been previously configured on the management interface. If a VLAN is found, the script will display a "**Y**" by default. Press Enter to continue with next prompt.

- `Enter the Management/VM's VLAN ID ():` Enter a value `<1-4094>` for example **1010**.

Note: Some network switch vendors may support only a subset of the IEEE 802.1Q valid VLAN ID range (**1–4094**). Therefore, verify that the VLAN ID entered is supported by the customer's data switch before applying any changes.

Note: If a VLAN has already been configured, it will be displayed in parentheses — for example: *`Enter the Management/VM's VLAN ID (1010)`*. To keep the same VLAN for management, press **Enter** to continue to the next prompt. Otherwise, type the appropriate VLAN ID to update the configuration.

- `Configure additional VLANs on the Management/VM's ports? y/n (n):` Type **y**

- `Enter 1 to 4 VLAN IDs separated by spaces (q = none):` Enter values `<1-4094>` for example `2010 2011 2014`.

Note: Some network switch vendors may support only a subset of the IEEE 802.1Q valid VLAN ID range (**1–4094**). Therefore, verify that the VLAN ID entered is supported by the customer's data switch before applying any changes.

Consideration:
The network script automatically detects current configuration. If management interface has been previously configured with 1 or more VLANs, these will be displayed e.g. `Current VLANs: 2011 2010 2014`

- At this stage, the script will prompt the user to begin configuring a bridge for each VLAN ID entered in the previous step. In this example, one additional bridge will be created for VLAN IDs 2010, 2011, and 2014.

Note: The "configNetwork" script automatically assigns a default label to each new bridge including the VLAN ID. If changing the default label, it is strongly recommended to configure these labels in a way that is easy to identify, for example: VoIP-2011, Management-1010 etc.

Warning **Bridge name must be unique.** Do NOT assign the same name to multiple bridges.

Consideration: Bridge labels must be between **2 and 15** characters in length and must contain only alphanumeric characters, a dash **(-)**, or an underscore **(_)**.

- `Enter the name of the bridge to connect to VLAN 2010 (bridge0-2010):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Enter the name of the bridge to connect to VLAN 2011 (bridge0-2011):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Enter the name of the bridge to connect to VLAN 2014 (bridge0-2014):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Do you want to configure 1 or 2 bridges? (1):` Type 1. In this example a single bridge will be configured.

```
=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
```

- `Select configuration for bridge0: (0):` In this example no changes will be made to bridge0, therefore 1G direct interface will be left configured.

```
Selected: 1G direct interface for bridge0
Using management port: eno8303
```

- Press **Enter** key (7 times) until prompt displays *`Continue with these values? y=continue/n=retry/q=quit (n).`* If satisfied with current selections, type **y**

Output Example

```
[root@asp130-r660xs]# ./configNetwork
==================  Server Network Configuration  ==================
Note: you should run this command from the console or services port
      After making configuration changes running VMs should be restarted.

Do you want to continue (y/n) y

The configured or default value is displayed in parentheses ().
Press 'enter' to accept it, enter 'd' to delete it or type a new value.

Connect this server to an Out Of Band Management network (OOBM)? y/n (n)
Create an OOBM bridge for VMs use? y/n (n)
Do you want to configure a Management/VM's VLAN? y/n (n) y
Enter the Management/VM's VLAN ID (): 1010
Configure additional VLANs on the bridge0 (Management/VM's) ports? y/n (n) y
Enter 1 to 4 VLAN IDs separated by spaces (q=none): 2010 2011 2014
Enter the name of the bridge to connect to VLAN 2010 (bridge0-2010):
Enter the name of the bridge to connect to VLAN 2011 (bridge0-2011):
Enter the name of the bridge to connect to VLAN 2014 (bridge0-2014):

========== Network Bridge Configuration ==========
Configure network bridges for management and VMs.

Do you want to configure 1 or 2 bridges? (1) 1

=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond

Select configuration for bridge0: (0) 0
Selected: 1G direct interface for bridge0
Using management port: eno8303
Enter Server hostname (asp130-r660xs-20841.acp.avaya.com):
Enter Server IPv4 (10.129.208.41):
Enter Server netmask or /prefix (/26):
Enter the IPv4 default gateway (10.129.208.1):
Do you want to configure IPv6? y/n (n)
Enter comma separated DNS servers (198.152.8.8,198.152.8.11):
Enter comma separated IPv4 domain search (avaya.com):
Continue with these values? y=continue/n=retry/q=quit (n) y

Bridge bridge0: initialization successful
Bridge slave port eno8303.1010 on bridge0: initialization successful
Add bridge0-2011 on bridge0-2011-port VLAN=2011
Bridge bridge0-2011: initialization successful
Vlan 2011 on bridge0-2011-port initialization successful
Add bridge0-2010 on bridge0-2010-port VLAN=2010
Bridge bridge0-2010: initialization successful
Vlan 2010 on bridge0-2010-port initialization successful
Add bridge0-2014 on bridge0-2014-port VLAN=2014
Bridge bridge0-2014: initialization successful
Vlan 2014 on bridge0-2014-port initialization successful
Bridge bridge0: IP initialization successful.
```

6.4 Configuring VLAN trunking with bonded interfaces

About this task

VLAN trunking is a networking technique that enables the transmission of traffic from multiple Virtual Local Area Networks (VLANs) over a single physical network link. Using industry-standard protocols such as IEEE 802.1Q, VLAN trunking adds a unique VLAN identifier to each Ethernet frame, ensuring that traffic remains logically segmented across the shared link. This method improves network scalability and efficiency **by reducing the need for multiple physical interfaces** and simplifying cable management.

Putting VoIP and Data on separate networks is a recommended best practice and industry standard. Isolating VoIP traffic from Data/Management Traffic helps enhance network security and allows customers to implement QoS adequately. It also helps by simplifying network traffic management and troubleshooting as each network can be monitored independently. By independently monitoring each network, a network administrator can quickly identify and address issues specific to either VoIP or data/management services, improving response times and minimizing downtime.

Note: VoIP call signaling, including messages sent to Communication Manager (CM), Session Manager (SM), media servers, Session Border Controller or other SIP/Proxy servers, should always be classified and treated as VoIP traffic. This classification remains essential even when the call does not involve media (RTP) streams at that stage, as signaling is a critical component of the VoIP session setup and control.

Note: Updated network script now supports assigning multiple VLAN IDs over a bonded interface. Script can also support configuring more than one bond when configuring VLAN trunking.

Consideration

- Beginning with the release of this document, when VLAN trunking is used in conjunction with bonded interfaces, the VLAN tag is applied to a bonded interface rather than to an individual physical interface. This represents a change from the original single VLAN configuration method.
- As part of this procedure, the existing VLAN/bond configuration, if any, will be removed and re-configured automatically by the new network script.

Prerequisites

- The customer's data switch ports connected to the ASP server must already be configured with the appropriate VLAN IDs, and IEEE 802.1Q VLAN tagging must be enabled.

Note: In the event of a misconfiguration with the primary interface, the host Cockpit UI will only be accessible through the services port.

Warning Server port assignment and configuration for Avaya Communication Manager duplication traffic are not part of this procedure. **DO NOT** make changes to the Avaya CM duplication interface or to the hypervisor when configuring VLAN trunking.

6.4.1 Configuring VLAN Trunking on an Active/Backup Bonded Interface

About this Task

This section outlines the implementation of the following topology: Single Bridge Selection with VLAN trunking and bonding in an ASP 130 R6.0 – Hypervisor Layer:.

Host management interface will be re-configured to support VLAN trunking on **bond0** for in-band host management access and application traffic.

Note: VLAN trunking can also be configured on bond1 for bridge1 when selecting a 2-bridge configuration.

Procedure

6.4.1.1 Connect to the KVM on RHEL server using the services port connection.

6.4.1.2 Log in to the KVM on RHEL host by using a Secure Shell (SSH) client e.g., PuTTY.

6.4.1.3 Authenticate using the existing `custadm` credentials or `sroot` if EASG enabled.

6.4.1.4 Execute the following CLI command: `configNetwork`

6.4.1.5 Follow the script prompts:

- `Do you want to continue (y/n):` Type **y** to continue if the connection is via services port.
- `Connect this server to an Out of Band Management Network (OOBM) y/n (n):` Type **n** to continue (OOBM configuration is not part of this procedure).

Consideration:

The network script automatically detects if ***OOBM*** has been previously configured on the management interface. If OOBM is found, the script will display a "**Y**" by default. To retain the current OOBM configuration, simply press Enter without making any changes to keep the existing OOBM configuration intact.

- `Create an OOBM bridge for VMs use? y/n (n):` Type **n** to continue.
- `Do you want to configure a Management/VM's VLAN? y/n (n):` Type **y**

Note: The network script automatically detects if a VLAN has been previously configured on the management interface. If a VLAN is found, the script will display a "**Y**" by default. Press Enter to continue with next prompt.

- `Enter the Management/VM's VLAN ID ():` Enter a value `<1-4094>` for example **1010**.

Note: Some network switch vendors may support only a subset of the IEEE 802.1Q valid VLAN ID range (**1–4094**). Therefore, verify that the VLAN ID entered is supported by the customer's data switch before applying any changes.

Note: If a VLAN has already been configured, it will be displayed in parentheses — for example: *`Enter the Management/VM's VLAN ID (1010)`*. To keep the same VLAN for management, press **Enter** to continue to the next prompt. Otherwise, type the appropriate VLAN ID to update the configuration.

- `Configure additional VLANs on the Management/VM's ports? y/n (n):` Type **y**
- `Enter 1 to 4 VLAN IDs separated by spaces (q = none):` Enter values `<1-4094>`, for example: `2010 2011 2014`

Consideration:

The network script automatically detects current configuration. If bridge1 has been previously configured with 1 or more VLANs, these will be displayed e.g. `Current VLANs: 2011 2010 2014`

- At this stage, the script will prompt the user to begin configuring a bridge for each VLAN ID entered in the previous step. In this example, bridges will be created for VLAN IDs 2010, 2011, and 2014.

Note: The "configNetwork" script automatically assigns a default label to each new bridge including the VLAN ID. If changing the default label, it is strongly recommended to configure these labels in a way that is easy to identify, for example: VoIP-2011, Management-1010 etc.

Warning **Bridge name must be unique.** Do NOT assign the same name to multiple bridges.

- `Enter the name of the bridge to connect to VLAN 2010 (bridge0-2010):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Enter the name of the bridge to connect to VLAN 2011 (bridge0-2011):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Enter the name of the bridge to connect to VLAN 2014 (bridge0-2014):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Do you want to configure 1 or 2 bridges? (1):` Type 1. In this example a single bridge will be configured.

```
=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
```

- `Select configuration for bridge0:(1):` Type 1. In this example an Active/Backup bond will be configured.

```
Configuring 1G active/backup bond for bridge0
Using fixed management port for first bond interface: eno8303
Available 1G ports for second bond interface:
 0) eno8303 (first port)
 1) eno12409
 2) eno12419
 3) eno12429
 4) eno12399
```

- **`Enter the second port # to use in the bond:`** Type selection accordingly and Press Enter to continue. In this example option 1 will be selected.

```
Note: bond ports must not be used as a direct attachment
interface for any VM
Selected ports: eno8303, eno12409
```

- Press **Enter** key (7 times) until prompt displays *`Continue with these values? y=continue/n=retry/q=quit (n).`* If satisfied with current selections, type **y**

Output Example

```
[root@asp130-r660xs]# ./configNetwork
==================  Server Network Configuration  ==================
Note: you should run this command from the console or services port
      After making configuration changes running VMs should be restarted.

Do you want to continue (y/n) y

The configured or default value is displayed in parentheses ().
Press 'enter' to accept it, enter 'd' to delete it or type a new value.

Connect this server to an Out Of Band Management network (OOBM)? y/n (n)
Create an OOBM bridge for VMs use? y/n (n)
Do you want to configure a Management/VM's VLAN? y/n (n) y
Enter the Management/VM's VLAN ID (): 1010
Configure additional VLANs on the bridge0 (Management/VM's) ports? y/n (n) y
Enter 1 to 4 VLAN IDs separated by spaces (q=none): 2010 2011 2014
Enter the name of the bridge to connect to VLAN 2010 (bridge0-2010):
Enter the name of the bridge to connect to VLAN 2011 (bridge0-2011):
Enter the name of the bridge to connect to VLAN 2014 (bridge0-2014):

========== Network Bridge Configuration ==========
Configure network bridges for management and VMs.

Do you want to configure 1 or 2 bridges? (1) 1

=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond

Select configuration for bridge0: (0) 1
Configuring 1G active/backup bond for bridge0
Using fixed management port for first bond interface: eno8303
Available 1G ports for second bond interface:
 0) eno8303 (first port)
 1) eno12409
 2) eno12419
 3) eno12429
 4) eno12399
Enter the second port # to use in the bond: 1
Note: bond ports must not be used as a direct attachment interface for any VM
Selected ports: eno8303, eno12409
Enter Server hostname (asp130-r660xs-20841.acp.avaya.com):
Enter Server IPv4 (10.129.208.41):
Enter Server netmask or /prefix (/26):
Enter the IPv4 default gateway (10.129.208.1):
Do you want to configure IPv6? y/n (n)
Enter comma separated DNS servers (198.152.8.8,198.152.8.11):
Enter comma separated IPv4 domain search (avaya.com):
Continue with these values? y=continue/n=retry/q=quit (n) y

Bridge bridge0: initialization successful
Bond: initialization successful
Bond VLAN 1010 on bridge0-port initialization successful
Bond port bond0-port1 eno8303 initialization successful
Bond port bond0-port2 eno12409 initialization successful
Add bridge0-2011 on bridge0-2011-port VLAN=2011
Bridge bridge0-2011: initialization successful
Vlan 2011 on bridge0-2011-port initialization successful
Add bridge0-2010 on bridge0-2010-port VLAN=2010
Bridge bridge0-2010: initialization successful
Vlan 2010 on bridge0-2010-port initialization successful
Add bridge0-2014 on bridge0-2014-port VLAN=2014
Bridge bridge0-2014: initialization successful
Vlan 2014 on bridge0-2014-port initialization successful
Bridge bridge0: IP initialization successful.
```

Output Example – 2 Bridge configuration with VLAN trunking on a second Active/Backup bond (bond1)

Host Networking Construct

- Host in-band management access will be configured with a single VLAN using bond0➔bridge0, however, VLAN trunking can be configured on bond0 as well.
- For Application traffic, bond1➔bridge1 will be configured with multiple VLANs 2011 2010 2014.

Note: Port selection for every bonded interface in this example is for reference only.

```
[root@asp130-r660xs]# ./configNetwork
==================  Server Network Configuration  ==================
Note: you should run this command from the console or services port
      After making configuration changes running VMs should be restarted.

Do you want to continue (y/n) y

The configured or default value is displayed in parentheses ().
Press 'enter' to accept it, enter 'd' to delete it or type a new value.

Connect this server to an Out Of Band Management network (OOBM)? y/n (n)
Create an OOBM bridge for VMs use? y/n (n)
Do you want to configure a Management/VM's VLAN? y/n (n) y
Enter the Management/VM's VLAN ID (): 1010
Configure additional VLANs on the bridge0 (Management/VM's) ports? y/n (n) n

========== Network Bridge Configuration ==========
Configure network bridges for management and VMs.

Do you want to configure 1 or 2 bridges? (1) 2

=== Configuring bridge0 (Management Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond

Select configuration for bridge0: (0) 1
Configuring 1G active/backup bond for bridge0
Using fixed management port for first bond interface: eno8303
Available 1G ports for second bond interface:
 0) eno8303 (first port)
 1) eno12409
 2) eno12419
 3) eno12429
 4) eno12399
Enter the second port # to use in the bond: 1
Note: bond ports must not be used as a direct attachment interface for any VM
Selected ports: eno8303, eno12409

=== Configuring bridge1 (Secondary VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
 5) No second bridge

Select configuration for bridge1: (5) 1
Configuring 1G active/backup bond for bridge1
Available 1G ports:
 0) eno12419
```

```
 1) eno12429
 2) eno12399
Enter the first port # to use in the bond: 0
Available 1G ports for second bond interface:
 0) eno12419 (first port)
 1) eno12429
 2) eno12399
Enter the second port # to use in the bond: 1
Note: bond ports must not be used as a direct attachment interface for any VM
Selected ports: eno12419, eno12429

Configure VLANs on the bridge1 ports? y/n (n) y
Enter 1 to 5 VLAN IDs separated by spaces (q=none): 2010 2011 2014
Enter the name of the bridge to connect to VLAN 2010 (bridge1-2010):
Enter the name of the bridge to connect to VLAN 2011 (bridge1-2011):
Enter the name of the bridge to connect to VLAN 2014 (bridge1-2014):
Enter Server hostname (asp130-r660xs-20841.acp.avaya.com):
Enter Server IPv4 (10.129.208.41):
Enter Server netmask or /prefix (/26):
Enter the IPv4 default gateway (10.129.208.1):
Do you want to configure IPv6? y/n (n)
Enter comma separated DNS servers (198.152.8.8,198.152.8.11):
Enter comma separated IPv4 domain search (avaya.com):
Continue with these values? y=continue/n=retry/q=quit (n) y

Bridge bridge0: initialization successful
Bond: initialization successful
Bond VLAN 1010 on bridge0-port initialization successful
Bond port bond0-port1 eno8303 initialization successful
Bond port bond0-port2 eno12409 initialization successful
Bridge bridge1: initialization successful
Bond: initialization successful
Bond port bond1-port1 eno12419 initialization successful
Bond port bond1-port2 eno12429 initialization successful
Add bridge1-2011 on bridge1-2011-port VLAN=2011
Bridge bridge1-2011: initialization successful
Vlan 2011 on bridge1-2011-port initialization successful
Add bridge1-2010 on bridge1-2010-port VLAN=2010
Bridge bridge1-2010: initialization successful
Vlan 2010 on bridge1-2010-port initialization successful
Add bridge1-2014 on bridge1-2014-port VLAN=2014
Bridge bridge1-2014: initialization successful
Vlan 2014 on bridge1-2014-port initialization successful
Bridge bridge0: IP initialization successful.
```

6.4.2 Single Bridge Configuration with VLAN Trunking on a LACP Bonded Interface

About this Task

This section outlines the implementation of the following topology: Single Bridge Selection with VLAN Trunking and LACP bonding in an ASP 130 R6.0 – Hypervisor Layer:

Considerations

The updated network script now supports configuring VLAN trunking on bonded interfaces for both KVM in-band management access and application traffic. If an existing ***bond0*** configuration is present, **it will be replaced** when LACP is enabled using the 10/25 GbE interfaces. To avoid extensive service disruption, ensure proper planning and prerequisites are in place before performing the maintenance activity, as the host may lose all network connectivity once the changes are applied.

Prerequisites

- Both 10/25 GbE interfaces (*ens1f0np0* and *ens1f1np1*) must be physically connected to the customer data switches.
- IEEE 802.3ad, also known as Link Aggregation Control Protocol (LACP) must be properly configured on each data switch port connected to the ASP 130 server interfaces `ens1f0np0` and `ens1f1np1`.
- The customer data switch ports assigned to the LACP group for *ens1f0np0* and *ens1f1np1* must be configured with the appropriate VLAN IDs and have IEEE 802.1Q VLAN tagging enabled.
- **Port Speed Consistency Requirement:**
  Mixing port speeds is not supported. All server NIC ports must be connected exclusively to switch ports operating at the same speed (10 GbE or 25 GbE). Configurations that connect one NIC port to a 10 GbE switch port and another to a 25 GbE switch port are not supported.
- **Cabling and Transceiver Requirements:**
  Proper cabling (fiber optic or Direct Attach Copper [DAC]) and compatible transceivers are required to operate the 10/25 GbE interfaces. These interfaces use the industry-standard Small Form-Factor Pluggable 28 (SFP28) form factor. Customers must select cables and transceivers that are supported and qualified by their respective network switch vendor. Refer to the switch vendor's documentation for the approved SFP28 cables and transceivers to ensure compatibility and correct operation.
- Dell R660xs A3/A31 Server must be running at a minimum firmware V2 when using 10/25GbE ports and LACP bonding. Failure to comply could result in LACP bonding malfunction.

⚠ **Warning:** Failure to comply with prerequisites will result in the host losing network connectivity once changes are applied. In the event of misconfiguration, the server will only be accessible through the services port or console.

Procedure

6.4.2.1 Connect to the KVM on RHEL server using the services port connection.
6.4.2.2 Log in to the KVM on RHEL host by using a Secure Shell (SSH) client e.g., PuTTY.
6.4.2.3 Authenticate using the existing `custadm` credentials or `sroot` if EASG enabled.
6.4.2.4 Execute the following CLI command: `configNetwork`
6.4.2.5 Follow the script prompts:

- `Do you want to continue (y/n)` **:** Type **y** to continue if the connection is via services port.
- `Connect this server to an Out of Band Management Network (OOBM) y/n (n)` **:** Type **n** to continue (OOBM configuration is not part of this procedure).

  Note: The network script automatically detects if ***OOBM*** has been previously configured on the management interface. If OOBM is found, the script will display a "**Y**" by default. To retain the current OOBM configuration, simply press Enter without making any changes to keep the existing OOBM configuration intact.

- `Create an OOBM bridge for VMs use? y/n (n)` **:** Type **n** to continue.
- `Do you want to configure a Management/VM's VLAN? y/n (n)` **:** Type **y**

Note: The network script automatically detects if a VLAN has been previously configured on the management interface. If a VLAN is found, the script will display a "**Y**" by default. Press Enter to continue with next prompt.

- `Enter the Management/VM's VLAN ID ():` Enter a value `<1-4094>` for example **1010**.

Note: Some network switch vendors may support only a subset of the IEEE 802.1Q valid VLAN ID range (**1–4094**). Therefore, verify that the VLAN ID entered is supported by the customer's data switch before applying any changes.

Note: If a VLAN has already been configured, it will be displayed in parentheses — for example: *`Enter the Management/VM's VLAN ID (1010)`*. To keep the same VLAN for management, press **Enter** to continue to the next prompt. Otherwise, type the appropriate VLAN ID to update the configuration.

- `Configure additional VLANs on the Management/VM's ports? y/n ():` Type **Y**
- `Enter 1 to 4 VLAN IDs separated by spaces (q = none):` Enter values `<1-4094>` for example: `2010 2011 2014`.

Note: Some network switch vendors may support only a subset of the IEEE 802.1Q valid VLAN ID range (**1–4094**). Therefore, verify that the VLAN ID entered is supported by the customer's data switch before applying any changes.

- At this stage, the script will prompt the user to begin configuring a bridge for each VLAN ID entered in the previous step. In this example, bridges will be created for VLAN IDs 2010, 2011, and 2014.

  Note: The "configNetwork" script automatically assigns a default label to each new bridge including the VLAN ID. If changing the default label, it is strongly recommended to configure these labels in a way that is easy to identify, for example: VoIP-2011, Management-1010 etc.

Warning **Bridge name must be unique.** Do NOT assign the same name to multiple bridges.

Consideration: Bridge labels must be between **2 and 15** characters in length and must contain only alphanumeric characters, a dash **(-)**, or an underscore **(_)**.

- `Enter the name of the bridge to connect to VLAN 2010 (bridge-2010):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Enter the name of the bridge to connect to VLAN 2011 (bridge-2011):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Enter the name of the bridge to connect to VLAN 2014 (bridge-2014):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Do you want to configure 1 or 2 bridges? (1):` Type 1. In this example a single bridge will be configured.

```
=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
```

- Select configuration for bridge0: (1): Type 3. In this example LACP bond with 10/25G interfaces will be configured.

```
Configuring 10/25G LACP bond for bridge0
0) fast
1) slow
```

- Select the LACP Data Units exchange rate (): Type selection e.g. 0 for fast.

Note: To ensure a reliable network connection, the LACP mode on the customer switch must match the server configuration. Fast mode detects link failures more quickly but can generate additional overhead, while Slow mode is the recommended default, providing stable operation with fewer false alarms, though with slower failure detection.

```
0) layer2
1) layer3+4
```

- Select the LACP load balance HASH policy (): Type selection e.g. 1 for layer3+4.

Note: hash policy used on the server must align with what the customer switch supports, otherwise traffic distribution can become inconsistent or ineffective.

```
Using available 10/25G ports for bond: ens1f0np0, ens1f1np1
```

- Press **Enter** key (7 times) until prompt displays *Continue with these values? y=continue/n=retry/q=quit (n)*. If satisfied with current selections, type **y**

Output Example

```
[root@asp130-r660xsSSD]# ./configNetwork
==================  Server Network Configuration  ==================
Note: you should run this command from the console or services port
      After making configuration changes running VMs should be restarted.

Do you want to continue (y/n) y

The configured or default value is displayed in parentheses ().
Press 'enter' to accept it, enter 'd' to delete it or type a new value.

Connect this server to an Out Of Band Management network (OOBM)? y/n (n)
Create an OOBM bridge for VMs use? y/n (n)
Do you want to configure a Management/VM's VLAN? y/n (y) y
Enter the Management/VM's VLAN ID ():1010
Configure additional VLANs on the bridge0 (Management/VM's) ports? y/n (n) y
Enter 1 to 4 VLAN IDs separated by spaces (q=none): 2010 2011 2014
Enter the name of the bridge to connect to VLAN 2010 (bridge0-2010):
Enter the name of the bridge to connect to VLAN 2011 (bridge0-2011):
Enter the name of the bridge to connect to VLAN 2014 (bridge0-2014):

========== Network Bridge Configuration ==========
Configure network bridges for management and VMs.

Do you want to configure 1 or 2 bridges? (1) 1

=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
```

```
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond

Select configuration for bridge0: (1) 3
Configuring 10/25G LACP bond for bridge0
 0) fast
 1) slow
Select the LACP Data Units exchange rate (): 0
 0) layer2
 1) layer3+4
Select the LACP load balance HASH policy (): 1
Using available 10/25G ports for bond: ens1f0np0, ens1f1np1Enter Server hostname
(asp130-R660xs-A31.acp.avaya.com):
Enter Server IPv4 (10.129.208.41):
Enter Server netmask or /prefix (/26):
Enter the IPv4 default gateway (10.129.208.1):
Do you want to configure IPv6? y/n (n)
Enter comma separated DNS servers (198.152.8.8,198.152.8.11):
Enter comma separated IPv4 domain search ():
Continue with these values? y=continue/n=retry/q=quit (n) y

Bridge bridge0: initialization successful
Bond: initialization successful
Bond VLAN 1010 on bridge0-port initialization successful
Bond port bond0-port1 ens1f0np0 initialization successful
Bond port bond0-port2 ens1f1np1 initialization successful
Add bridge-2011 on bridge-2011-port VLAN=2011
Bridge bridge-2011: initialization successful
Vlan 2011 on bridge-2011-port initialization successful
Add bridge-2010 on bridge-2010-port VLAN=2010
Bridge bridge-2010: initialization successful
Vlan 2010 on bridge-2010-port initialization successful
Add bridge-2014 on bridge-2014-port VLAN=2014
Bridge bridge-2014: initialization successful
Vlan 2014 on bridge-2014-port initialization successful
Bridge bridge0: IP initialization successful.
```

6.4.2.6 **(Optional)** Execute the following command to validate the configuration and operational status of the newly created LACP bond:

- su – root
  Enter password for root account.
  Note: Some information will not be displayed including aggregator info if command is not executed as `root`.

- `cat /proc/net/bonding/bond0`

To Consider:

In a properly functioning LACP bond configuration, the host must successfully learn **both** the Partner MAC Address and the Partner Key from the connected switch ports. When validating the bonding status, if the output shows Partner Key: **1** and Partner Mac Address: **00:00:00:00:00:00**, this indicates that **LACP negotiation** has not been successfully completed between the host and the connected switch ports.

This condition reflects an LACP misconfiguration, which may exist on the host, the switch, or both. The LACP mode, hashing policy, port membership, and aggregation settings must be configured consistently on both the host and the customer switch. Until the configurations are aligned and proper LACP negotiation occurs, the LACP bond will not operate as expected.

Output Example – LACP bond0

Note: LACP Partner key on Data Switches has been configured to 131**.**

```
[root@asp130-r660xs]# cat /proc/net/bonding/bond0
Ethernet Channel Bonding Driver: v3.7.1 (April 27, 2011)

Bonding Mode: IEEE 802.3ad Dynamic link aggregation
Transmit Hash Policy: layer3+4 (1)
MII Status: up
MII Polling Interval (ms): 100
Up Delay (ms): 0
Down Delay (ms): 0
Peer Notification Delay (ms): 0

802.3ad info
LACP active: on
LACP rate: fast
Min links: 0
Aggregator selection policy (ad_select): stable
System priority: 65535
System MAC address: 8c:84:74:34:f8:90
Active Aggregator Info:
        Aggregator ID: 2
        Number of ports: 2
        Actor Key: 21
        Partner Key: 131
        Partner Mac Address: 20:9e:f7:a4:84:00

Slave Interface: ens1f0np0
MII Status: up
Speed: 25000 Mbps
Duplex: full
Link Failure Count: 0
Permanent HW addr: 8c:84:74:34:f8:90
Slave queue ID: 0
Aggregator ID: 2
Actor Churn State: monitoring
Partner Churn State: monitoring
Actor Churned Count: 0
Partner Churned Count: 0
details actor lacp pdu:
    system priority: 65535
    system mac address: 8c:84:74:34:f8:90
    port key: 21
    port priority: 255
    port number: 1
    port state: 63
details partner lacp pdu:
    system priority: 32768
    system mac address: 20:9e:f7:a4:84:00
    oper key: 131
    port priority: 32768
    port number: 197
    port state: 63

Slave Interface: ens1f1np1
MII Status: up
Speed: 25000 Mbps
Duplex: full
Link Failure Count: 0
Permanent HW addr: 8c:84:74:34:f8:91
Slave queue ID: 0
Aggregator ID: 2
Actor Churn State: monitoring
Partner Churn State: monitoring
Actor Churned Count: 0
Partner Churned Count: 0
details actor lacp pdu:
    system priority: 65535
    system mac address: 8c:84:74:34:f8:90
    port key: 21
    port priority: 255
    port number: 2
    port state: 63
details partner lacp pdu:
```

```
    system priority: 32768
    system mac address: 20:9e:f7:a4:84:00
    oper key: 131
    port priority: 32768
    port number: 199
    port state: 63
```

6.4.2.7 Gracefully shut down all virtual machines (VMs) and update each VM's network configuration to assign the appropriate bridge (for example, **bridge0, bridge1-2010**, **bridge1-2011, bridge1-2014**) to each virtual network interface. This ensures proper VLAN connectivity. Power on the VMs after completing the configuration changes.

6.4.3 Dual Bridge Selection with VLAN Trunking and LACP bonded interface About this Task

This section outlines the implementation of the following topology: Dual Bridge Selection with Different Bonding configurations in an ASP 130 R6.0 – Hypervisor Layer:

Considerations

The updated network script now supports configuring VLAN trunking on bonded interfaces for both KVM in-band management access and application traffic. If an existing ***bond*** configuration is present, **it will be replaced** when LACP is enabled using 10/25 GbE interfaces. To avoid extensive service disruption, ensure proper planning and prerequisites are in place before performing the maintenance activity, as the host may lose all network connectivity once the changes are applied.

Prerequisites

- Both 10/25 GbE interfaces (*ens1f0np0* and *ens1f1np1*) must be physically connected to the customer data switches.
- IEEE 802.3ad, also known as Link Aggregation Control Protocol (LACP) must be properly configured on each data switch port connected to the ASP 130 server interfaces *ens1f0np0* and *ens1f1np1*.
- The customer data switch ports assigned to the LACP group for *ens1f0np0* and *ens1f1np1* must be configured with the appropriate VLAN IDs and have IEEE 802.1Q VLAN tagging enabled.
- **Port Speed Consistency Requirement:**
  Mixing port speeds is not supported. All server NIC ports must be connected exclusively to switch ports operating at the same speed (10 GbE or 25 GbE). Configurations that connect one NIC port to a 10 GbE switch port and another to a 25 GbE switch port are not supported.
- **Cabling and Transceiver Requirements:**
  Proper cabling (fiber optic or Direct Attach Copper [DAC]) and compatible transceivers are required to operate the 10/25 GbE interfaces. These interfaces use the industry-standard Small Form-Factor Pluggable 28 (SFP28) form factor. Customers must select cables and transceivers that are supported and qualified by their respective network switch vendor. Refer to the switch vendor's documentation for the approved SFP28 cables and transceivers to ensure compatibility and correct operation.
- Dell R660xs A3/A31 Server must be running at a minimum firmware V2 when using 10/25GbE ports and LACP bonding. Failure to comply could result in LACP bonding malfunction.

⚠ **Warning:** Failure to comply with prerequisites will result in the host losing network connectivity once changes are applied. In the event of misconfiguration, the server will only be accessible through the services port or console.

Procedure

6.4.3.1 Connect to the KVM on RHEL server using the services port connection.
6.4.3.2 Log in to the KVM on RHEL host by using a Secure Shell (SSH) client e.g., PuTTY.
6.4.3.3 Authenticate using the existing `custadm` credentials or `sroot` if EASG enabled.
6.4.3.4 Execute the following CLI command: `configNetwork`
6.4.3.5 Follow the script prompts:

- `Do you want to continue (y/n)` **:** Type **y** to continue if the connection is via services port.
- `Connect this server to an Out of Band Management Network (OOBM) y/n (n)` **:** Type **n** to continue (OOBM configuration is not part of this procedure).

Consideration:
The network script automatically detects if ***OOBM*** has been previously configured on the management interface. If OOBM is found, the script will display a "**Y**" by default. To retain the current OOBM configuration, simply press Enter without making any changes to keep the existing OOBM configuration intact.

- `Create an OOBM bridge for VMs use? y/n (n)` **:** Type **n** to continue.
- `Do you want to configure a Management/VM's VLAN? y/n (n)` **:** Type **y**

Note: The network script automatically detects if a VLAN has been previously configured on the management interface. If a VLAN is found, the script will display a "**Y**" by default. Press Enter to continue with next prompt.

- `Enter the Management/VM's VLAN ID ()` **:** Enter a value `<1-4094>` for example **1010**.

Note: Some network switch vendors may support only a subset of the IEEE 802.1Q valid VLAN ID range (**1–4094**). Therefore, verify that the VLAN ID entered is supported by the customer's data switch before applying any changes.

Note: If a VLAN has already been configured, it will be displayed in parentheses — for example: *`Enter the Management/VM's VLAN ID (1010)`*. To keep the same VLAN for management, press **Enter** to continue to the next prompt. Otherwise, type the appropriate VLAN ID to update the configuration.

- `Configure additional VLANs on the Management/VM's ports? y/n ()` **:** Type **n.** In this example a single VLAN will be configured on the management interface (bond0➔bridge0).
- `Do you want to configure 1 or 2 bridges? (1)` **:** Type 2. In this example dual bridge selection will be configured.

```
=== Configuring bridge0 (Management/VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
```

```
4) 10/25G active/backup bond
```

- Select configuration for **bridge0:(1):** Type 1. In this example an Active/Backup bond will be configured for bond0.

```
Configuring 1G active/backup bond for bridge0
Using fixed management port for first bond interface: eno8303
Available 1G ports for second bond interface:
 0) eno8303 (first port)
 1) eno12409
 2) eno12419
 3) eno12429
 4) eno12399
```

Enter the second port # to use in the bond: Type selection accordingly and Press Enter. **Note:** In this example option 1 will be selected. Port selection in this example is for reference only.

```
Note: bond ports must not be used as a direct attachment interface
for any VM
Selected ports: eno8303, eno12409
=== Configuring bridge1 (Secondary VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
 5) No second bridge
```

- Select configuration for bridge1:(5): Type 3. In this example LACP bond with 10/25G interfaces will be configured.

Note: The 10 GbE or 25 GbE port selection for either an LACP bond or an A/B bond is available only if these ports have not already been selected or previously configured as members of **bridge0**.

```
Configuring 10/25G LACP bond for bridge1
0) fast
1) slow
```

- Select the LACP Data Units exchange rate (): Type selection e.g. 0 for fast.

Note: To ensure a reliable network connection, the LACP mode on the customer switch must match the server configuration. Fast mode detects link failures more quickly but can generate additional overhead, while Slow mode is the recommended default, providing stable operation with fewer false alarms, though with slower failure detection.

```
0) layer2
1) layer3+4
```

- Select the LACP load balance HASH policy (): Type selection e.g. 1 for layer3+4.

Note: hash policy used on the server must align with what the customer switch supports, otherwise traffic distribution can become inconsistent or ineffective.

Using available 10/25G ports for bond: ens1f0np0, ens1f1np1

- Configure VLANs on the bridge1 ports? y/n (n): Type y.

Note: The network script automatically detects current configuration. If bridge1 has been previously configured with 1 or more VLANs, these will be displayed e.g. `Current VLANs: 2011`

- `Enter` **`1 to 5 VLAN IDs separated by spaces`** `(q=none):` Enter values `<1-4094>` for example `2010 2011 2014`.

Note: Some network switch vendors may support only a subset of the IEEE 802.1Q valid VLAN ID range (**1–4094**). Therefore, verify that the VLAN ID entered is supported by the customer's data switch before applying any changes.

- At this stage, the script will prompt the user to begin configuring a bridge for each VLAN ID entered in the previous step. In this example, one bridge will be created for VLAN ID 2010, 2011 and 2014.

Note: The "configNetwork" script automatically assigns a default label to each new bridge including the VLAN ID. If changing the default label, it is strongly recommended to configure these labels in a way that is easy to identify, for example: VoIP-2011, Management-1010 etc.

Warning **Bridge name must be unique.** Do NOT assign the same name to multiple bridges.

Consideration: Bridge labels must be between **2 and 15** characters in length and must contain only alphanumeric characters, a dash **(-)**, or an underscore **(_)**.

- `Enter the name of the bridge to connect to VLAN 2010 (bridge1-2010):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Enter the name of the bridge to connect to VLAN 2011 (bridge1-2011):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- `Enter the name of the bridge to connect to VLAN 2014 (bridge1-2014):` if default value is acceptable type Enter to continue, otherwise enter corresponding label.
- Press **Enter** key (7 times) until prompt displays *`Continue with these values? y=continue/n=retry/q=quit (n).`* If satisfied with current selections, type **y.**

Note: Although multiple changes at the same time are supported by the network script, IP address changes are not part of this procedure.

- Press **Enter** key (7 times) until prompt displays *`Continue with these values? y=continue/n=retry/q=quit (n).`* If satisfied with current selections, type **y**

6.4.3.6 Gracefully shut down all virtual machines (VMs) and update each VM's network configuration to assign the appropriate bridge (for example, **bridge0, bridge1-2010**, **bridge1-2011, bridge1-2014**) to each virtual network interface. This ensures proper VLAN connectivity. Power on the VMs after completing the configuration changes.

Output Example

```
[root@asp130-r660xs-20841 4ports]# ./configNetwork
==================  Server Network Configuration  ==================
Note: you should run this command from the console or services port
      After making configuration changes running VMs should be restarted.

Do you want to continue (y/n) y

The configured or default value is displayed in parentheses ().
Press 'enter' to accept it, enter 'd' to delete it or type a new value.

Connect this server to an Out Of Band Management network (OOBM)? y/n (n) n
Create an OOBM bridge for VMs use? y/n (n) n
Do you want to configure a Management/VM's VLAN? y/n (n) y
Enter the Management/VM's VLAN ID (): 1010
Configure additional VLANs on the bridge0 (Management/VM's) ports? y/n (n) n

========== Network Bridge Configuration ==========
Configure network bridges for management and VMs.

Do you want to configure 1 or 2 bridges? (1) 2

=== Configuring bridge0 (Management Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond

Select configuration for bridge0: (0) 1
Configuring 1G active/backup bond for bridge0
Using fixed management port for first bond interface: eno8303
Available 1G ports for second bond interface:
 0) eno8303 (first port)
 1) eno12409
 2) eno12419
 3) eno12429
 4) eno12399
Enter the second port # to use in the bond: 1
Note: bond ports must not be used as a direct attachment interface for any VM
Selected ports: eno8303, eno12409

=== Configuring bridge1 (Secondary VM Bridge) ===
 0) 1G direct interface
 1) 1G active/backup bond
 2) 10/25G direct interface
 3) 10/25G LACP bond
 4) 10/25G active/backup bond
 5) No second bridge

Select configuration for bridge1: (5) 3
Configuring 10/25G LACP bond for bridge1
 0) fast
 1) slow
Select the LACP Data Units exchange rate (): 0
 0) layer2
 1) layer3+4
Select the LACP load balance HASH policy (): 1
Using available 10/25G ports for bond: ens1f0np0, ens1f1np1Enter Server
Configure VLANs on the bridge1 ports? y/n (n) y
Enter 1 to 5 VLAN IDs separated by spaces (q=none): 2010 2011 2014
Enter the name of the bridge to connect to VLAN 2010 (bridge1-2010):
Enter the name of the bridge to connect to VLAN 2011 (bridge1-2011):
Enter the name of the bridge to connect to VLAN 2014 (bridge1-2014):
Enter Server hostname (asp130-r660xs-20841.acp.avaya.com):
Enter Server IPv4 (10.129.208.41):
Enter Server netmask or /prefix (/26):
Enter the IPv4 default gateway (10.129.208.1):
Do you want to configure IPv6? y/n (n)
Enter comma separated DNS servers (198.152.8.8,198.152.8.11):
Enter comma separated IPv4 domain search (avaya.com):
Continue with these values? y=continue/n=retry/q=quit (n) y

Bridge bridge0: initialization successful
Bond: initialization successful
```

```
Bond VLAN 1010 on bridge0-port initialization successful
Bond port bond0-port1 eno8303 initialization successful
Bond port bond0-port2 eno12409 initialization successful
Bridge bridge1: initialization successful
Bond: initialization successful
Bond port bond1-port1 ens1f0np0 initialization successful
Bond port bond1-port2 ens1f1np1 initialization successful
Add bridge1-2011 on bridge1-2011-port VLAN=2011
Bridge bridge1-2011: initialization successful
Vlan 2011 on bridge1-2011-port initialization successful
Add bridge1-2010 on bridge1-2010-port VLAN=2010
Bridge bridge1-2010: initialization successful
Vlan 2010 on bridge1-2010-port initialization successful
Add bridge1-2014 on bridge1-2014-port VLAN=2014
Bridge bridge1-2014: initialization successful
Vlan 2014 on bridge1-2014-port initialization successful
Bridge bridge0: IP initialization successful.
```

6.4.3.7 (Optional) Execute the following command to validate the configuration and operational status of the newly created LACP bond:

- `su - root`

  Enter password for root account.

Note: Some information will not be displayed including aggregator info if command is not executed as `root`.

- cat /proc/net/bonding/bond***x***

Note: Replace ***x*** with bond number e.g. `bond0` or `bond1`.

To Consider:

In a properly functioning LACP bond configuration, the host must successfully learn **both** the Partner MAC Address and the Partner Key from the connected switch ports. When validating the bonding status, if the output shows Partner Key: **1** and Partner Mac Address: **00:00:00:00:00:00**, this indicates that **LACP negotiation** has not been successfully completed between the host and the connected switch ports.

This condition reflects an LACP misconfiguration, which may exist on the host, the switch, or both. The LACP mode, hashing policy, port membership, and aggregation settings must be configured consistently on both the host and the customer switch. Until the configurations are aligned and proper LACP negotiation occurs, the LACP bond will not operate as expected.

Output Example – LACP bond1

Note: LACP Partner key on Data Switches has been configured to 131**.**

```
[root@asp130-r660xs-20841 4ports]# cat /proc/net/bonding/bond1
Ethernet Channel Bonding Driver: v3.7.1 (April 27, 2011)

Bonding Mode: IEEE 802.3ad Dynamic link aggregation
Transmit Hash Policy: layer3+4 (1)
MII Status: up
MII Polling Interval (ms): 100
Up Delay (ms): 0
Down Delay (ms): 0
Peer Notification Delay (ms): 0

802.3ad info
LACP active: on
LACP rate: fast
Min links: 0
Aggregator selection policy (ad_select): stable
System priority: 65535
System MAC address: 00:62:0b:7e:b2:f0
Active Aggregator Info:
        Aggregator ID: 2
        Number of ports: 2
        Actor Key: 21
        Partner Key: 131
        Partner Mac Address: 20:9e:f7:a4:84:00
Slave Interface: ens1f0np0
MII Status: up
Speed: 25000 Mbps
```

```
Duplex: full
Link Failure Count: 0
Permanent HW addr: 8c:84:74:34:f8:90
Slave queue ID: 0
Aggregator ID: 2
Actor Churn State: monitoring
Partner Churn State: monitoring
Actor Churned Count: 0
Partner Churned Count: 0
details actor lacp pdu:
    system priority: 65535
    system mac address: 8c:84:74:34:f8:90
    port key: 21
    port priority: 255
    port number: 1
    port state: 63
details partner lacp pdu:
    system priority: 32768
    system mac address: 20:9e:f7:a4:84:00
    oper key: 131
    port priority: 32768
    port number: 197
    port state: 63

Slave Interface: ens1f1np1
MII Status: up
Speed: 25000 Mbps
Duplex: full
Link Failure Count: 0
Permanent HW addr: 8c:84:74:34:f8:91
Slave queue ID: 0
Aggregator ID: 2
Actor Churn State: monitoring
Partner Churn State: monitoring
Actor Churned Count: 0
Partner Churned Count: 0
details actor lacp pdu:
    system priority: 65535
    system mac address: 8c:84:74:34:f8:90
    port key: 21
    port priority: 255
    port number: 2
    port state: 63
details partner lacp pdu:
    system priority: 32768
    system mac address: 20:9e:f7:a4:84:00
    oper key: 131
    port priority: 32768
    port number: 199
    port state: 63
```

Finding documents on the Avaya Support website

Procedure

1. Go to https://support.avaya.com.
2. At the top of the screen, type your username and password and click **Login**.
3. Click **Support by Product > Documents**.
4. In **Enter your Product Here**, type the product name and then select the product from the list.
5. In **Choose Release**, select the appropriate release number.
   The **Choose Release** field is not available if there is only one release for the product.
6. In the **Content Type** filter, click a document type, or click **Select All** to see a list of all available documents.
   For example, for user guides, click **User Guides** in the **Content Type** filter. The list only displays the documents for the selected category.
7. Click **Enter**.

Avaya Documentation Center Navigation

For some programs, the latest customer documentation is now available on the Avaya Documentation Center website at https://documentation.avaya.com.

IMPORTANT: For documents that are not available on Avaya Documentation Center, click **More Sites > Support** on the top menu to open https://support.avaya.com.

Using the Avaya Documentation Center, you can:

- Search for keywords.
  To filter by product, click **Filters** and select a product.

- Search for documents.
  From **Products & Solutions**, select a solution category and product, and then select the appropriate document from the list.

- Sort documents on the search results page.
- Click **Languages** to change the display language and view localized documents.
- Publish a PDF of the current section in a document, the section and its subsections, or the entire document.
- Add content to your collection using **My Docs** (☆).
  Navigate to the **Manage Content > My Docs** menu, and do any of the following:
  - Create, rename, and delete a collection.
  - Add topics from various documents to a collection.
  - Save a PDF of the selected content in a collection and download it to your computer.
  - Share content in a collection with others through email.
  - Receive collection that others have shared with you.
- Add yourself as a watcher using the **Watch** icon (👁).
  Navigate to the **Manage Content > Watchlist** menu, and do the following:
  - Enable **Include in email notification** to receive email alerts.
  - Unwatched selected content, all content in a document, or all content on the **Watch list** page.

  As a watcher, you are notified when content is updated or deleted from a document, or the document is removed from the website.

- Share a section on social media platforms, such as Facebook, LinkedIn, and Twitter.
- Send feedback on a section and rate the content.

NOTE: Some functionality is only available when you log in to the website. The available functionality depends on your role.

Support

Go to the Avaya Support website at http://support.avaya.com for the most up-to-date documentation, product notices, and knowledge articles. You can also search for release notes, downloads, and resolutions to issues. Use the online service request system to create a service request. Chat with live agents to get answers to questions or request an agent to connect you to a support team if an issue requires additional expertise.