



AV Network Best Practices (Pakedge Configuration)

"The network is the foundation of a reliable system."

Best Practice's AV Network

Not All Managed Switches are Created Equal

"There are AV Centric Managed Switches Pre-configured out of the box and some Managed Switches Need to be Configured to Support Information Below"

All Pakedge Managed Switches are Layer 3, however will need to be Configured.

****These configurations are for Networks that will NOT be using SONOS.***

For Networks that will be using SONOS (5 or More Devices), please see the end of document.

Enable STP, Set to:

- MSTP (Multiple Spanning Tree Protocol) *“Because Android/Google TV Uses Ethernet [V]LAN or inter-VLAN”*

To access the *Spanning Tree Switch Configuration* menu:

1. Click the switch's **Advanced** tab, then click the **Spanning Tree** tile.

Spanning Tree
Manage, configure, and monitor Spanning Tree Protocol (STP) activity for MST, MST Ports, and CST Ports.

The *Spanning Tree Switch Configuration* screen opens.

Spanning Tree

Switch MST MST Port CST CST Port Statistics

Spanning Tree Switch Configuration

Spanning Tree Admin Mode

Needs to be Turned On

Force Protocol Version

IEEE802.1d IEEE802.1w IEEE802.1s

Configuration Name

E8-C7-4F-14-5B-5B

Root Bridge Priority:

- Default 32768 Should Be Fine when using (1) Managed Switch
- Max Age should be 20
- Forward Delay should be 15

CST Configuration

Use the *CST Configuration* page to configure the Common Spanning Tree (CST) settings. The settings and information on this page define the device within the spanning tree topology that connects all STP/RSTP bridges and MSTP regions.

1. In the *Spanning Tree* screen, click the **CST** tab.

Spanning Tree

Switch MST MST Port **CST** CST Port Statistics

The *Spanning Tree CST* screen opens.

Spanning Tree

Switch MST MST Port **CST** CST Port Statistics

Spanning Tree CST Configuration

Bridge Priority
32768

Bridge Max Age
20

Bridge Forward Delay
15

32768 is Good

Confirm 20 for Max Age

Confirm 15 for Forward Delay

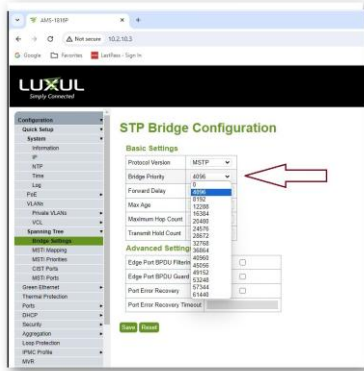
- When using more than (1) Managed Switch
 - o Main Managed Switch needs to be the LOWEST Number, making it the Priority.
 - Example: 32768
 - o Next Managed Switch needs to be a HIGHER Number, so all traffic gets Managed by the Priority Switch.
 - Example: 36864

****If you don't change these settings, the Managed Switch with the LOWEST MAC Address will assume Priority.***

Example of Root Bridge Priority in a Daisy Chain Configuration

Root Bridge Priority

*Daisy Chain



RACK
Location
 Default 32768
 MAC 00:50

RACK
Location
 Default 36864
 MAC 00:40

Guest House
 Default 40960
 MAC 00:30



Example of Root Bridge Priority in a Star Topology Configuration

- Main Managed Switch will be the LOWEST, while the Managed Switches off the Priority Switch can all be the same, just needs to be a HIGHER number.

Root Bridge Priority

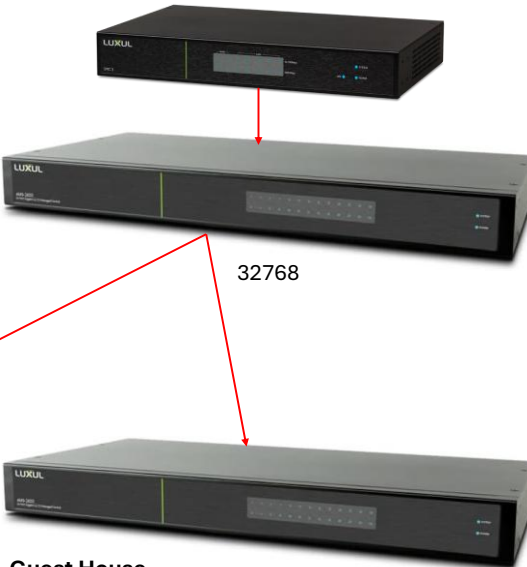
*Star Topology



RACK
Location
 Default 32768
 MAC 00:50



Pool House 36864
 Default 32768
 MAC 00:40



Guest House 36864
 Default 32768
 MAC 00:30

Port Settings:

- Set All to Priority 128

CST Port Configuration

Use the CST Port page to view and configure the Common Spanning Tree (CST) settings for each interface on the device.

1. In the *Spanning Tree* screen, click the **CST Port** tab.

Spanning Tree

Switch MST MST Port CST **CST Port** Statistics

The *Spanning Tree CST Port* screen opens.

Spanning Tree

Switch MST MST Port CST **CST Port** Statistics

Spanning Tree CST Port Summary

Filter By:

Interface	Name	Port Role	Port Forwarding State	Port Priority	Port Path Cost	Description	Action
G1/1	Port 1	Disabled	Manual Forwarding	128	0		...
G1/2	Port 2	Disabled	Manual Forwarding	128	0		...
G1/3	Port 3	Disabled	Manual Forwarding	128	0		...

Set All to Priority 128

Admin Edge Port:

- Have this un-ticked on every port.

Edit CST Port Entry

CST Port Entry Selected: 1

Port Priority

128

Admin Edge Port

Port Path Cost

0

External Port Path Cost

0

Have Un-Ticked on Every Port

Loop Protection Configuration:


- Don't Turn on Loop Protection

To configure Loop Protection:

1. **Enable** Loop Protection globally for the switch.

Loop Protection Configuration

Loop Protection i



Don't Turn On Loop Protection

For Networks that will be using SONOS (5 or More Devices)

STP (Spanning Tree Protocol):

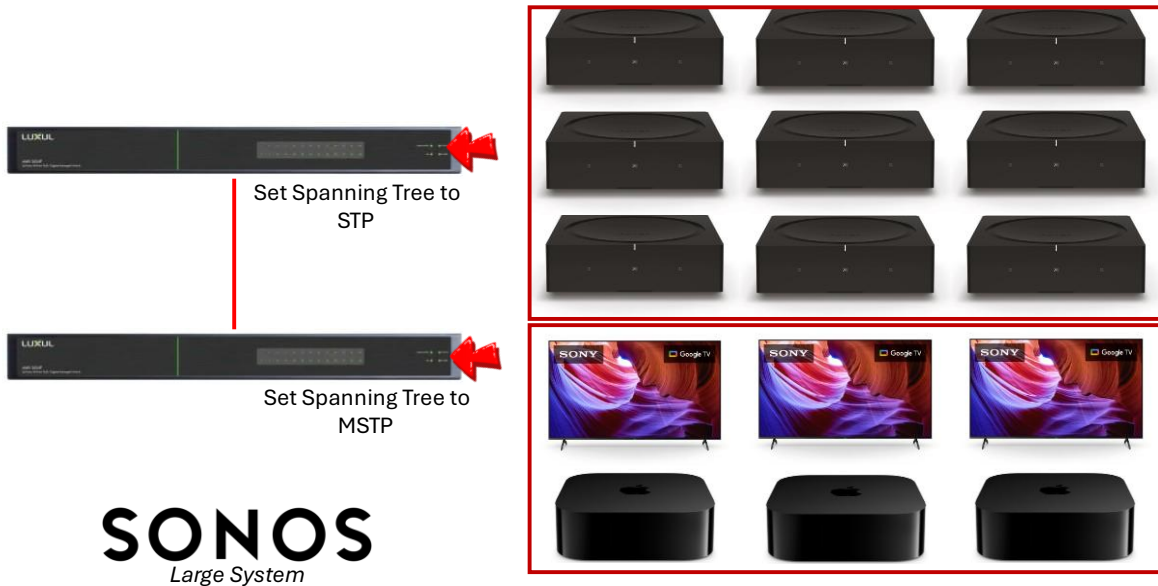
- Sonos (SonosNet)
 - o **Needs STP**
- Android/Google TV ("Zero-Configuration Networking" Protocols, including Multicast version of DNS Service Discovery ([m]DNS-SD) Ethernet [V]LAN or inter-VLAN), Nest (Weave), Ring (Z-Wave), Apple (Real Time Streaming Protocol (RTSP), Apples Bonjour ("Zero-Configuration Networking") etc..
 - o **All Needing MSTP**

Configure (2) Managed Switches

Program one Managed Switch that has ALL Sonos devices to:

- Spanning Tree Protocol to **STP**
- Set Path Cost to **Specific** and Path Cost to **10** for Each Port with a Sonos Device

Program the other Managed Switch to **MSTP** and Follow Above Instructions



SONOS
Large System

Configuration

Quick Setup

System

POE

VLANs

Private VLANs

VLAN

Spanning Tree

Bridge Settings

MSTI Mapping

MSTI Preset

CIST Ports

MSTI Ports

Green Ethernet

Thermal Protection

Ports

CIST Normal Port Configuration

Port	STP Enabled	Path Cost	Priority	Admin Edge	Auto Edge	Restricted Role	TCN	BFDU Guard	Point-to-point
1	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
2	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
3	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
4	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
5	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
6	<input checked="" type="checkbox"/>	Specific	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto
7	<input checked="" type="checkbox"/>	Auto	128	Non-Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Auto

enter the value 10

<input checked="" type="checkbox"/>	Specific	10	128
<input checked="" type="checkbox"/>	Auto		128

SONOS
Large System