Vigitron IP Infrastructure Design Educational Series

20 YEARS
Transmission Leadership

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Designing Large Scale Systems with Vigitron Switches

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Question: *I have a large system requirement of over 500 cameras and need to centralize my operation.*

Answer: Using Vigitron's Virtual Stacking feature, up to 32 switches can be stacked and placed anywhere in the network avoiding the need to run cables back to a central location. This provides communication and the ability to control up to 832 ports with a single IP address.

Each switch has a throughput of up to 52Gbytes with a packet handling capacity of up to 9600bytes, providing a transfer rate of 1Gbtye between switches and an effective rate for video transfers up to 500Mbtyes after the packet overheads are taken into account.

Question: *What if I want to run cameras on different subnets, won't that require using a Layer 3 switch?*

Answer: Layer 3 switches are more expensive than Layer 2. More importantly, beause they usually include routing moving connected devices based on their IP addresses, they are more opened to the potential of hacking. Layer 2 switches move connected devices based on their MAC addresses, which are linked to their connected port. While it's true that combining difference subnets will usually require a Layer 3 switch, Vigitron's unique Virtual Stacking can achieve this combination by including switches with different subnets in the same stack while maintaining the security level of Layer 2 switching.

Question: *Wouldn't a core switch be a better solution?*

Answer: There are generally three reasons why a core switch would not be a better solution. The first reason is the cost. A core switch costs more than using a single or even multiple switches at the control site. The second reason is reliability. When you're using a core switch, it's like putting all of your eggs in one basket. You can always purchase a second core switch as backup, but then you have doubled your cost. By configuring multiple switches at the control site and connecting them together, a process known as concatenating, the cost of spares is reduced to a single switch and the potential for the network to go completely offline is eliminated. The most overlooked aspect is the ability of your recorder. Most VMS software running on servers and NVRs have a limitation of 1G, along with a limitation on the number of cameras they can record or view at any given time. By using multiple switches at the control site, each switch can provide an output to an individual recording device matching its channel limit and further increasing reliability.

Question: *What if I need to create VLANs across different switches?*

Answer: You can accomplish this by using Vigitron switches. The following is an example. In this example, port 5 is an uplink port between switch A and switch B. Port 5 should be included in each VLAN and set up as trunk in "Egress Rule".

VLAN Membership Configuration

Start from VLAN 1 with 20 entries per page.

Delete	VLAN ID	VLAN Name	1	2	3	4	5
☐	1	v1	✓	✓	☐	☐	✓
Delete	2	v2	☐	☐	✓	✓	✓

Port 1, Port 2, and Port 5 belong to VLAN 1.
Port 3, Port 4, and Port 5 belong to VLAN 2.

VLAN Port Configuration

Port	Port Type	Ingress Filtering	Frame Type	Egress Rule	PVID
*	C-port ▼	☐	<> ▼	<> ▼	
1	C-port ▼	☐	All ▼	Access ▼	1
2	C-port ▼	☐	All ▼	Access ▼	1
3	C-port ▼	☐	All ▼	Access ▼	2
4	C-port ▼	☐	All ▼	Access ▼	2
5	C-port ▼	☐	All ▼	Trunk ▼	1

VLAN1 members of Switch A can communicate with VLAN1 members of Switch B, while VLAN2 members of Switch A can communicate with VLAN2 members of Switch B.

Vigitron's unique network switch operating system can create large scale reliable and cost effective network solutions, providing the ability to communicate across different subnets while eliminating single failure points that bring down your total network, matching bandwidth, and channel requirements to the VMS servers and the NVRS.

These features are included in all of Vigitron's managed switch series,Vi3026, Vi3326, and Vi3010. Vigitron provides free and without obligation design center services, which can be accessed by form on our website at www.vigitron.com or requesting assistance on any subject at support@vigitron.com.

Suggested Vigitron Product(s):

Vi3010   Vi3026   Vi3326

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