Virtual Lans (VLANs)

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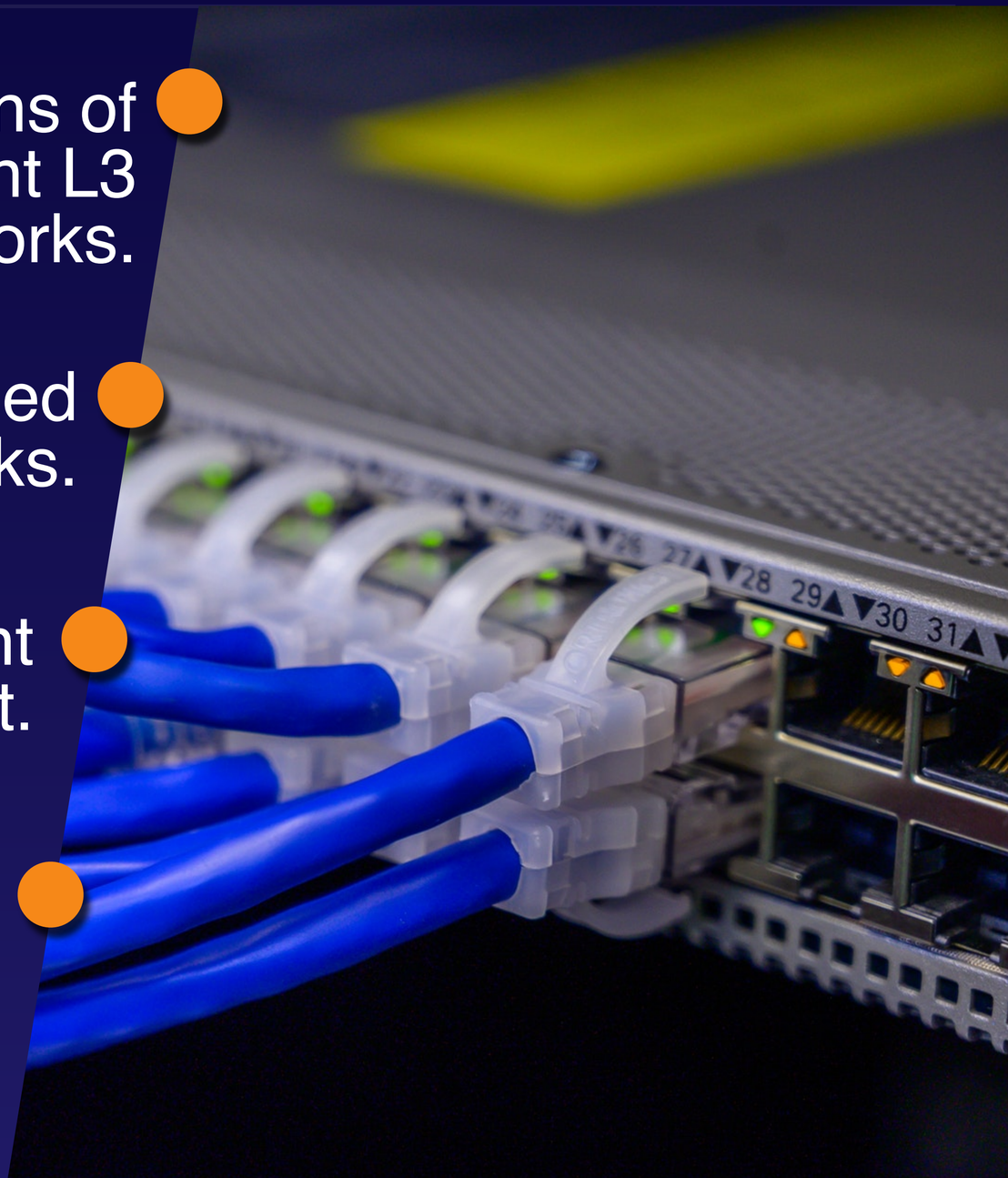
What Are Virtual LANs?

- 802.1Q VLANs are a L2-readable means of identifying traffic belonging to different L3 networks.
- Used to isolate traffic in switched networks.
- Each VLAN often represents a different IP subnet.
- Each VLAN must be assigned its own VLAN ID.



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VLAN IDs

- VLAN IDs are defined by the customer on each device.
- Must be unique per device.
- Should be consistently configured across all devices carrying VLAN traffic.
- Hardware at both the DX location and on-prem must be correctly configured to recognize desired VLANs.

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VLAN Ports

- Many switches begin with a default VLAN that all ports belong to.

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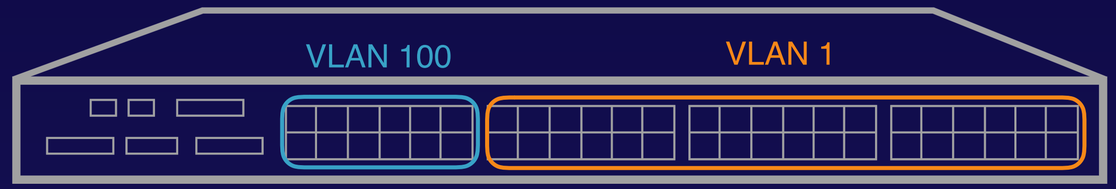
- Ports are added to one or more admin-defined VLANs.



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VLAN Ports

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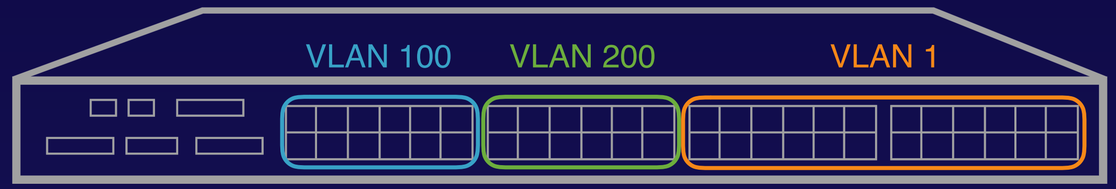
- Ports are added to one or more admin-defined VLANs.

- VLANs are assigned a numeric ID at creation.



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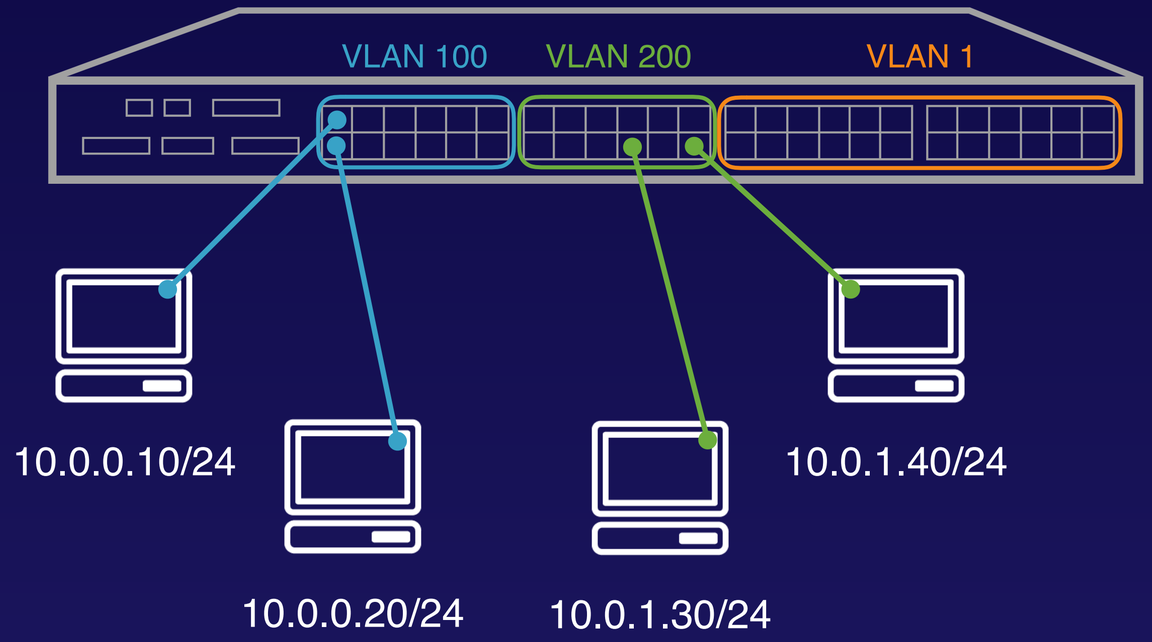
VLAN Ports

- Ports belonging to a single VLAN are referred to as untagged or access ports.

- Traffic entering an untagged port may only be sent to another port that is a member of the same VLAN.



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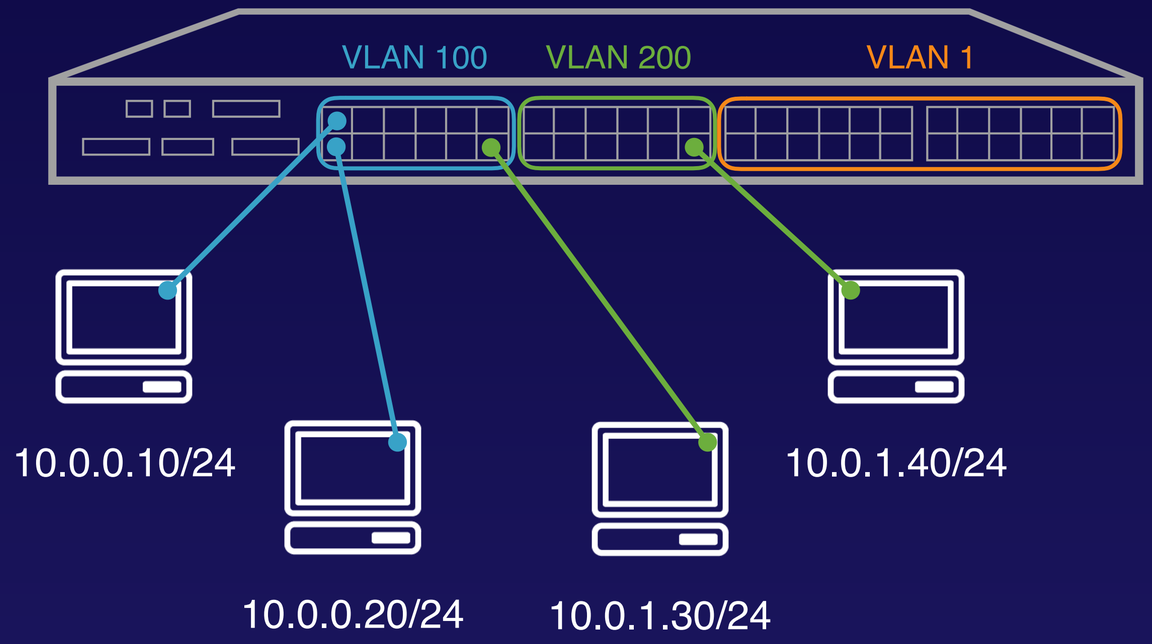
VLAN Ports

- Ports belonging to a single VLAN are referred to as untagged or access ports.
- Traffic entering an untagged port may only be sent to another port that is a member of the same VLAN.
- Misconfigured ports will prevent communication.



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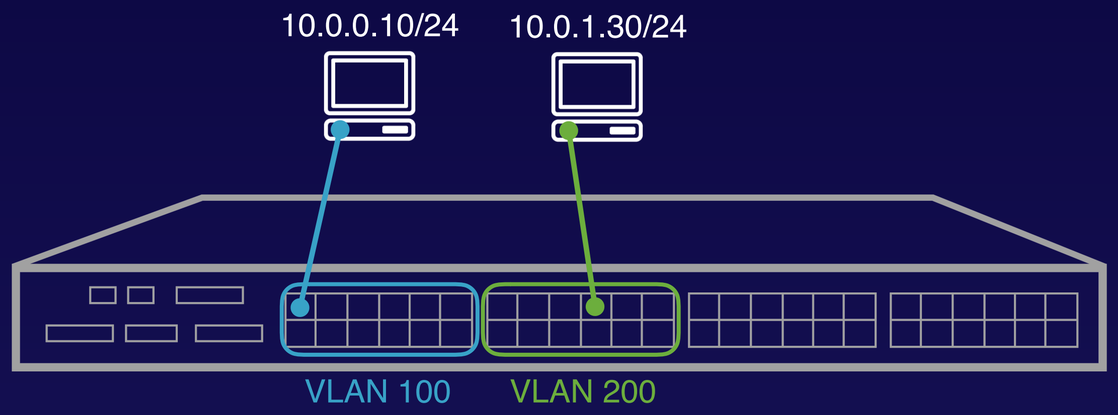
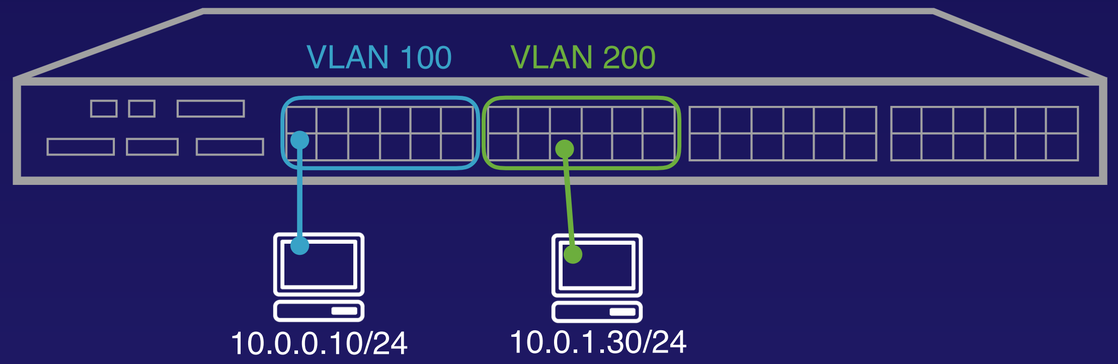
VLAN Ports



- In larger switched environments, VLANs may need to extend across multiple devices.



- VLAN IDs should remain consistent across all switches.

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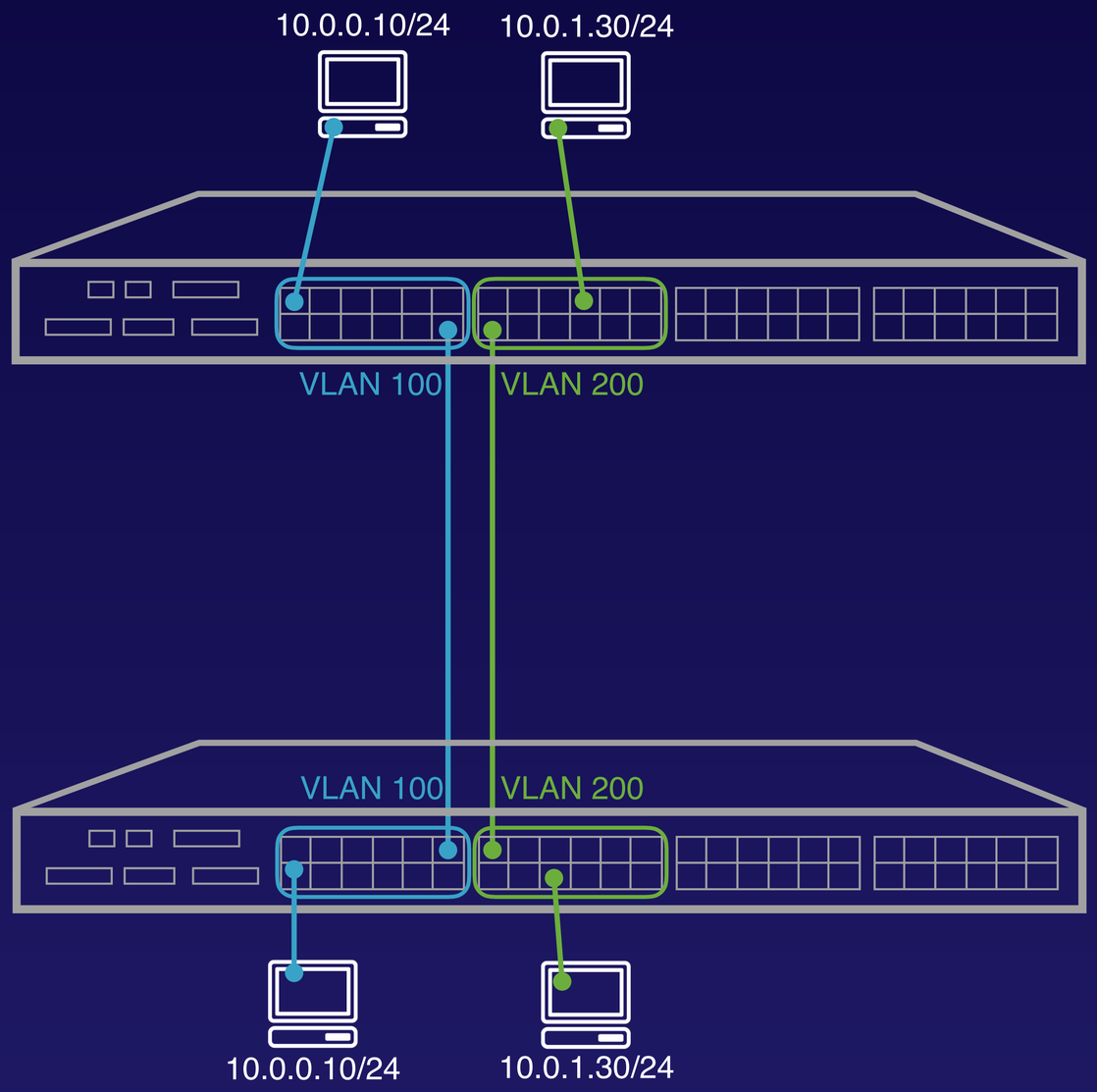
VLAN Ports



- While directly connecting untagged ports in each VLAN will allow communication…

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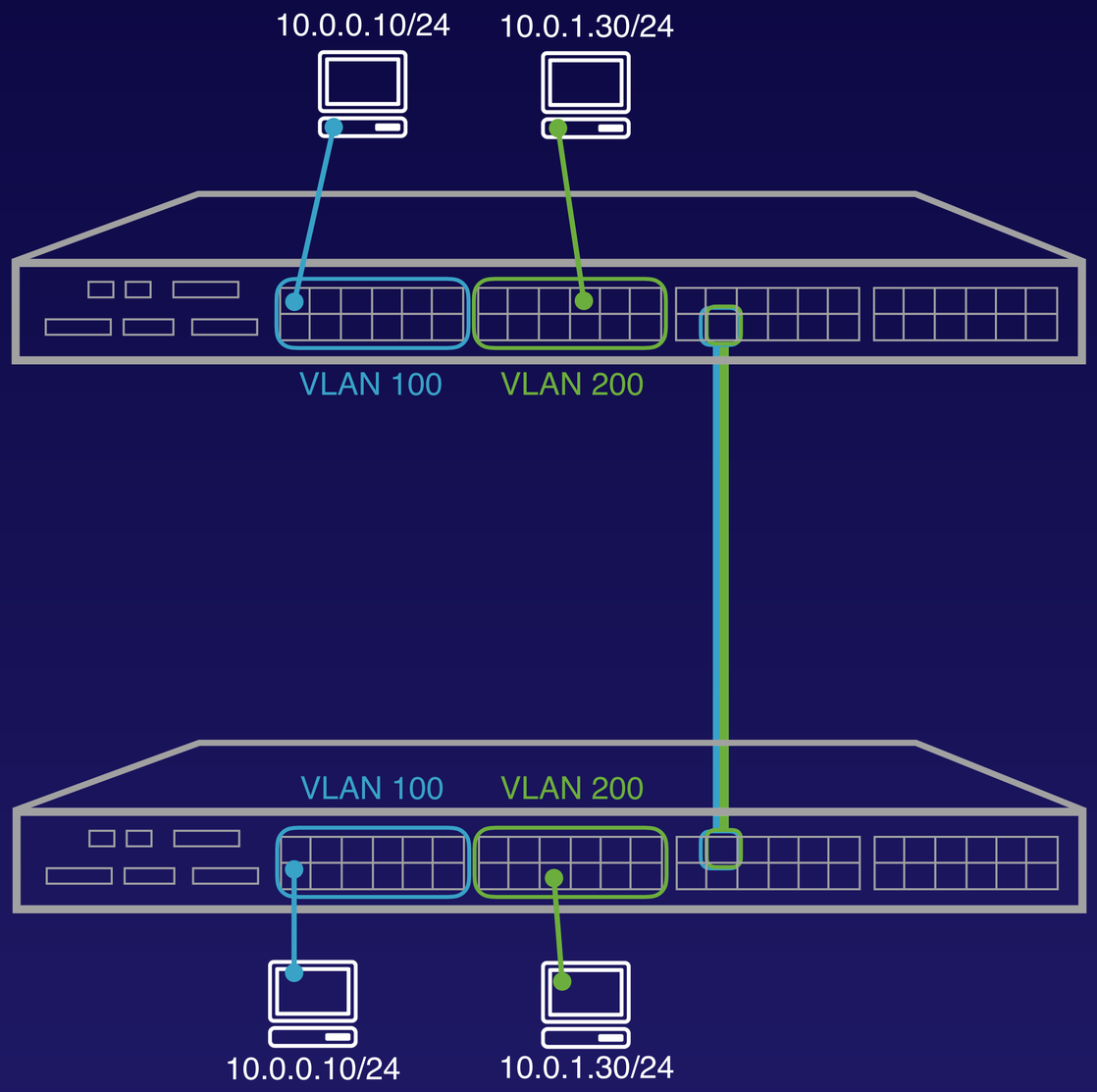
VLAN Ports



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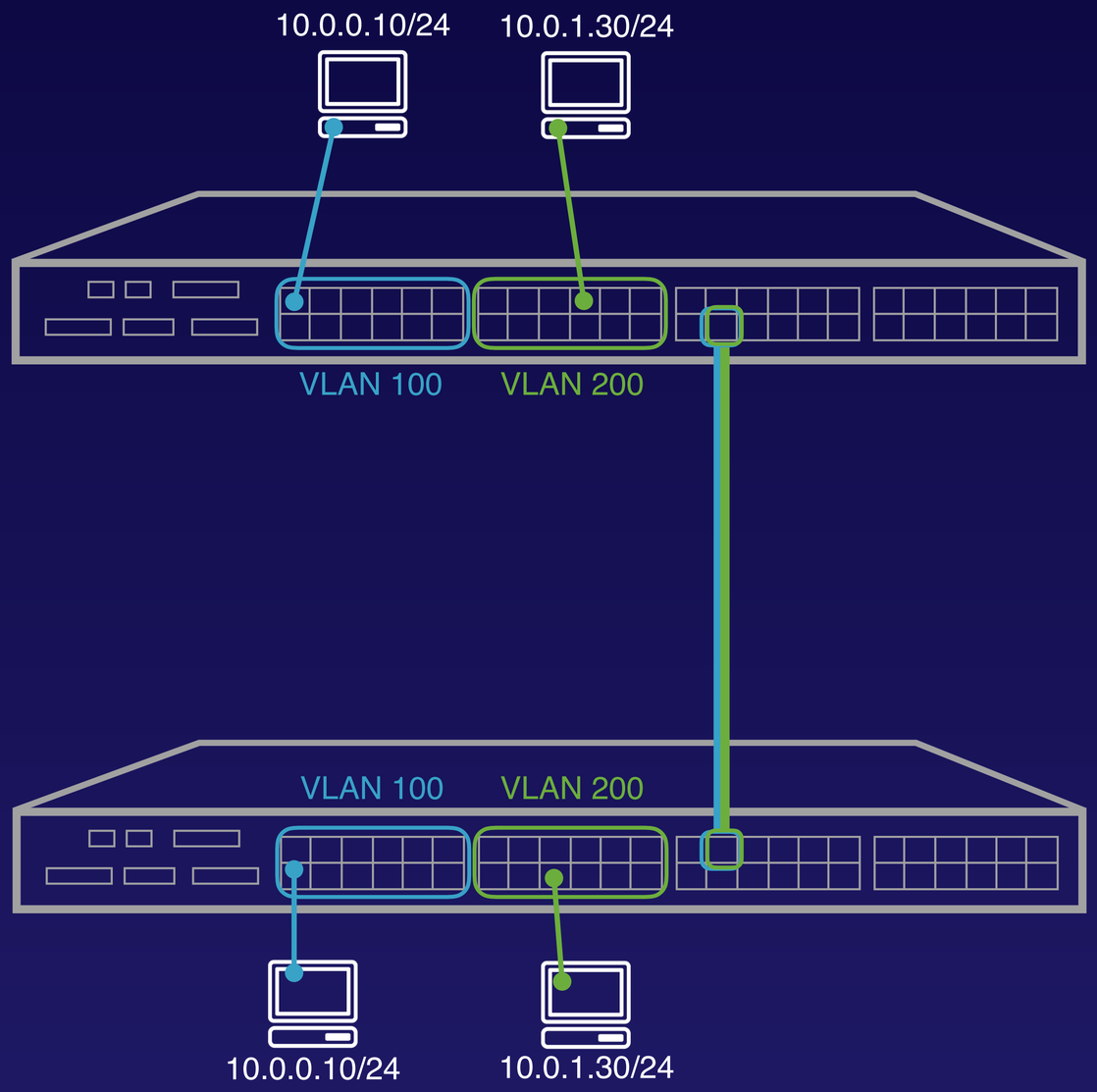
VLAN Ports



- While directly connecting untagged ports in each VLAN will allow communication, what is more commonly done is to make a single port a member of multiple VLANs.
- Ports belonging to more than one VLAN are referred to as tagged or trunk ports.

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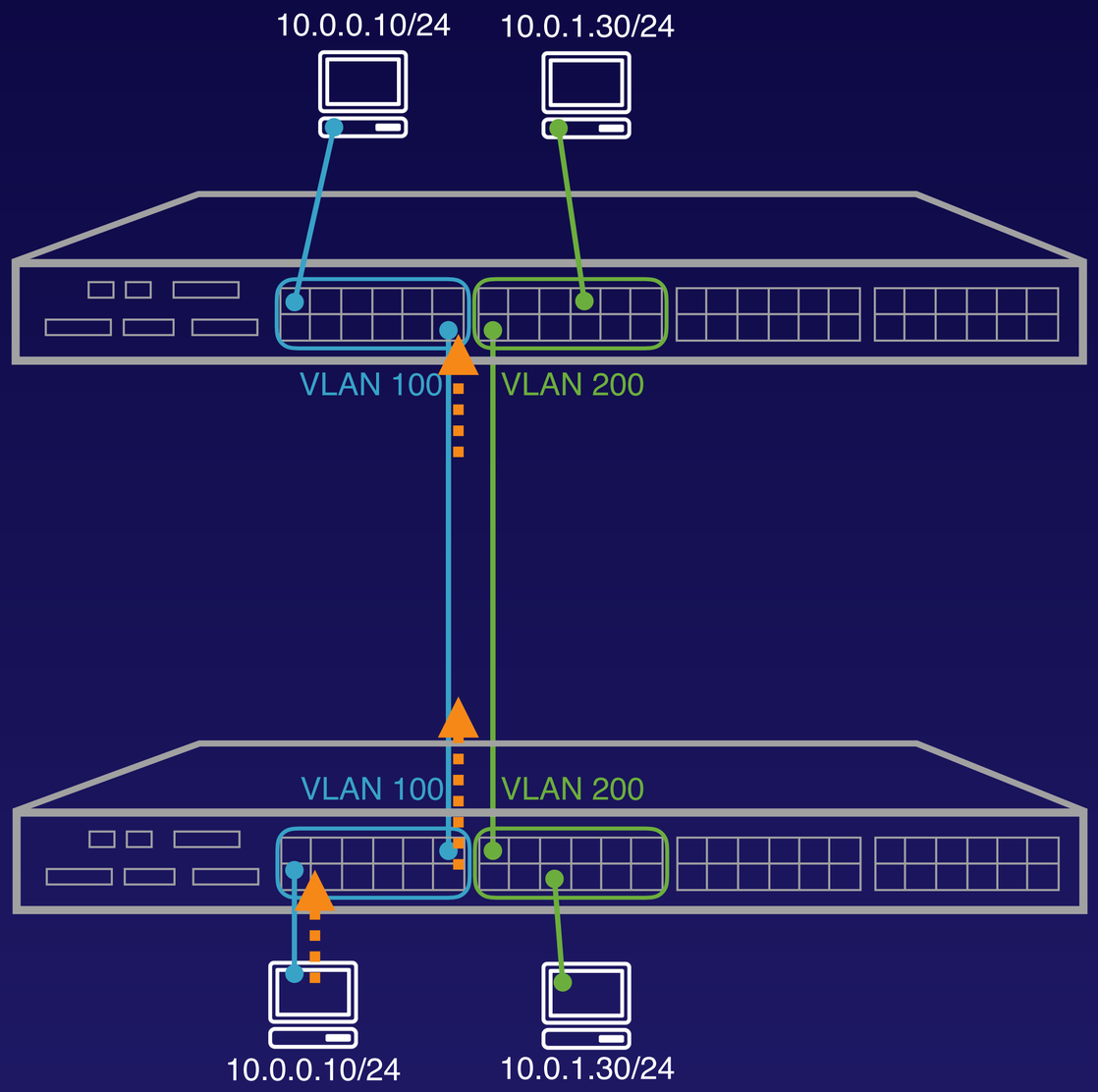
Tagged vs Untagged Ports and Traffic



- When traffic leaves an untagged port…
  - Standard Ethernet frame is used.
  - VLAN is known because of the ingress port configuration.

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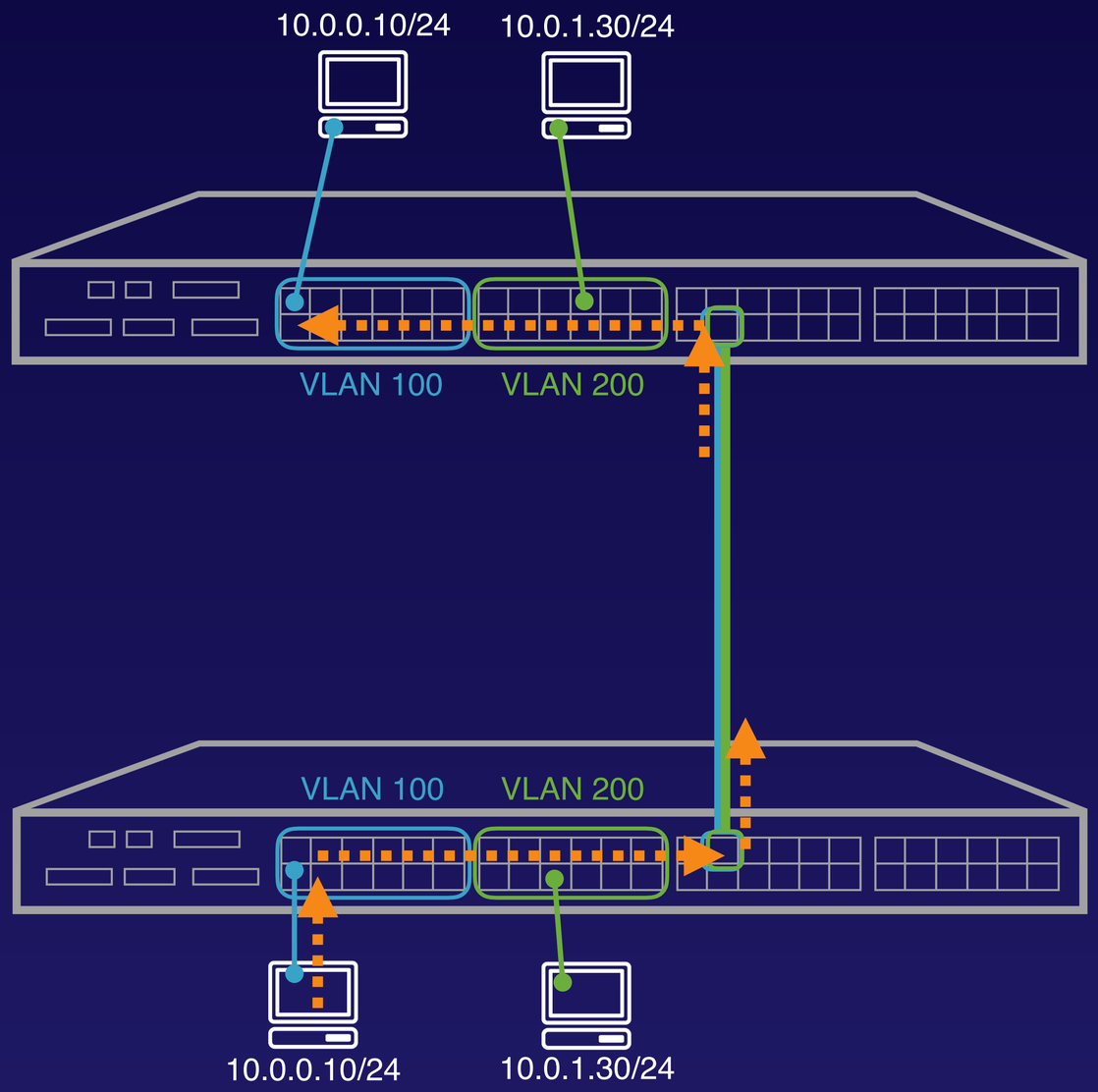
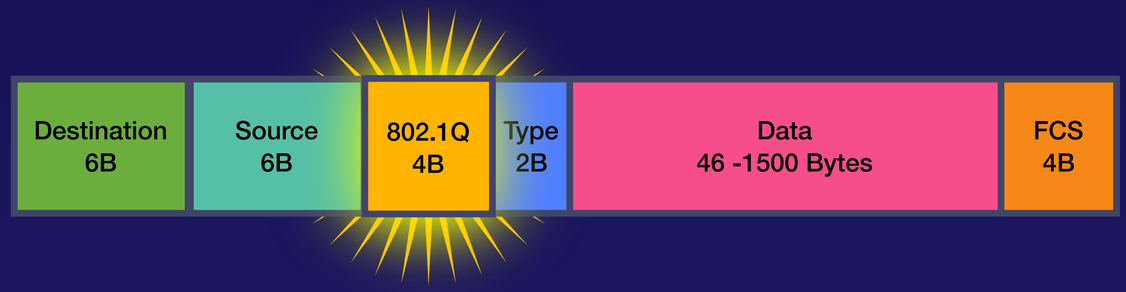
Tagged vs Untagged Ports and Traffic



- When traffic leaves a **tagged** port an 802.1Q Ethernet frame is used.
- VLAN ID is contained within the 802.1Q “tag”.



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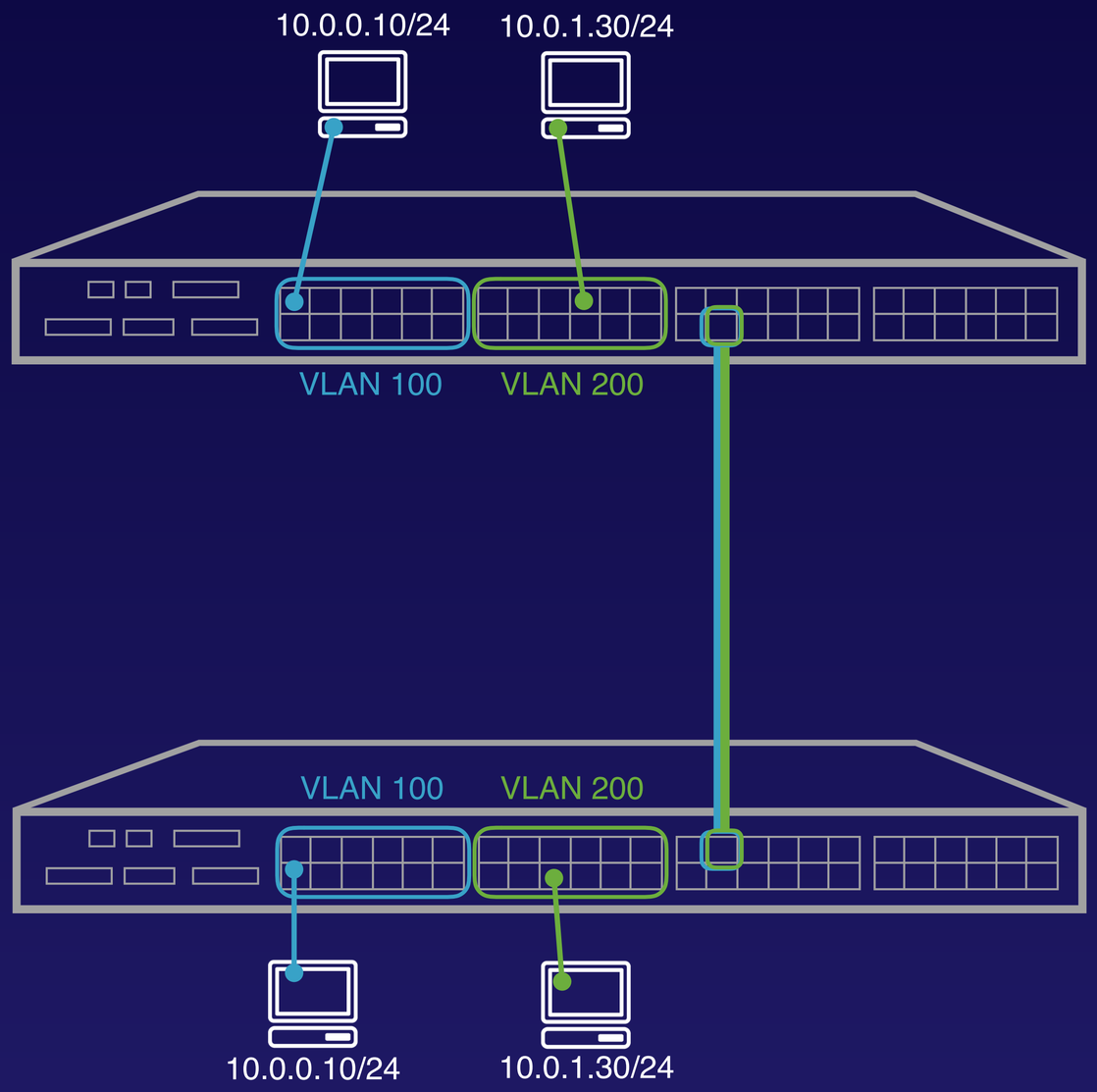

- Mismatched tagged traffic or untagged traffic received at a tagged port could either be dropped or sent to the switch's default VLAN.

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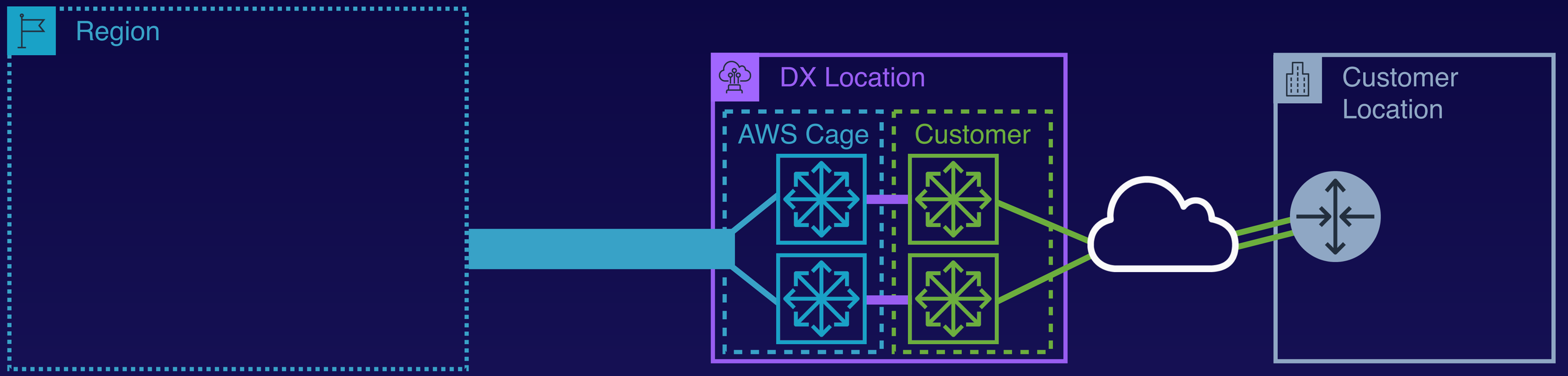
Only One VIF with a Hosted DX Connection?



How do you support multiple VLANs when using hosted DX connections?

- Establish multiple hosted DX connections.
- Use aggregated VLANs.

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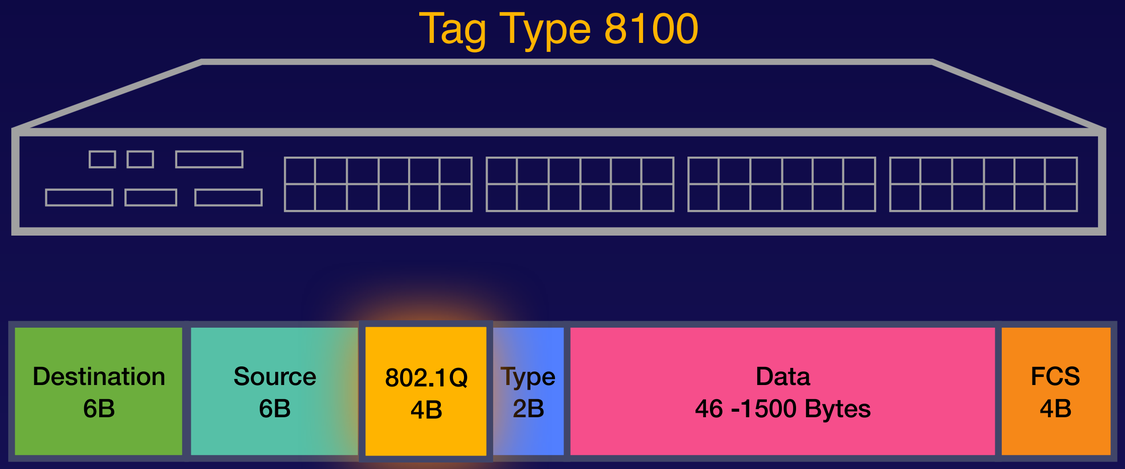
Aggregated/Nested/"Q-in-Q" VLANs

- On-prem and DX location devices are configured to recognize a specific "type" of VLAN tag.
- Tagged traffic with the configured tag type is handled normally.
- Tagged traffic of any other type is treated as **untagged** traffic.



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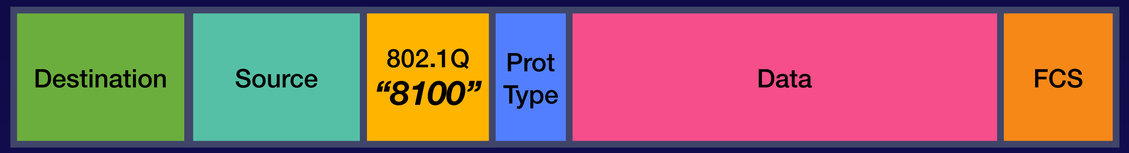

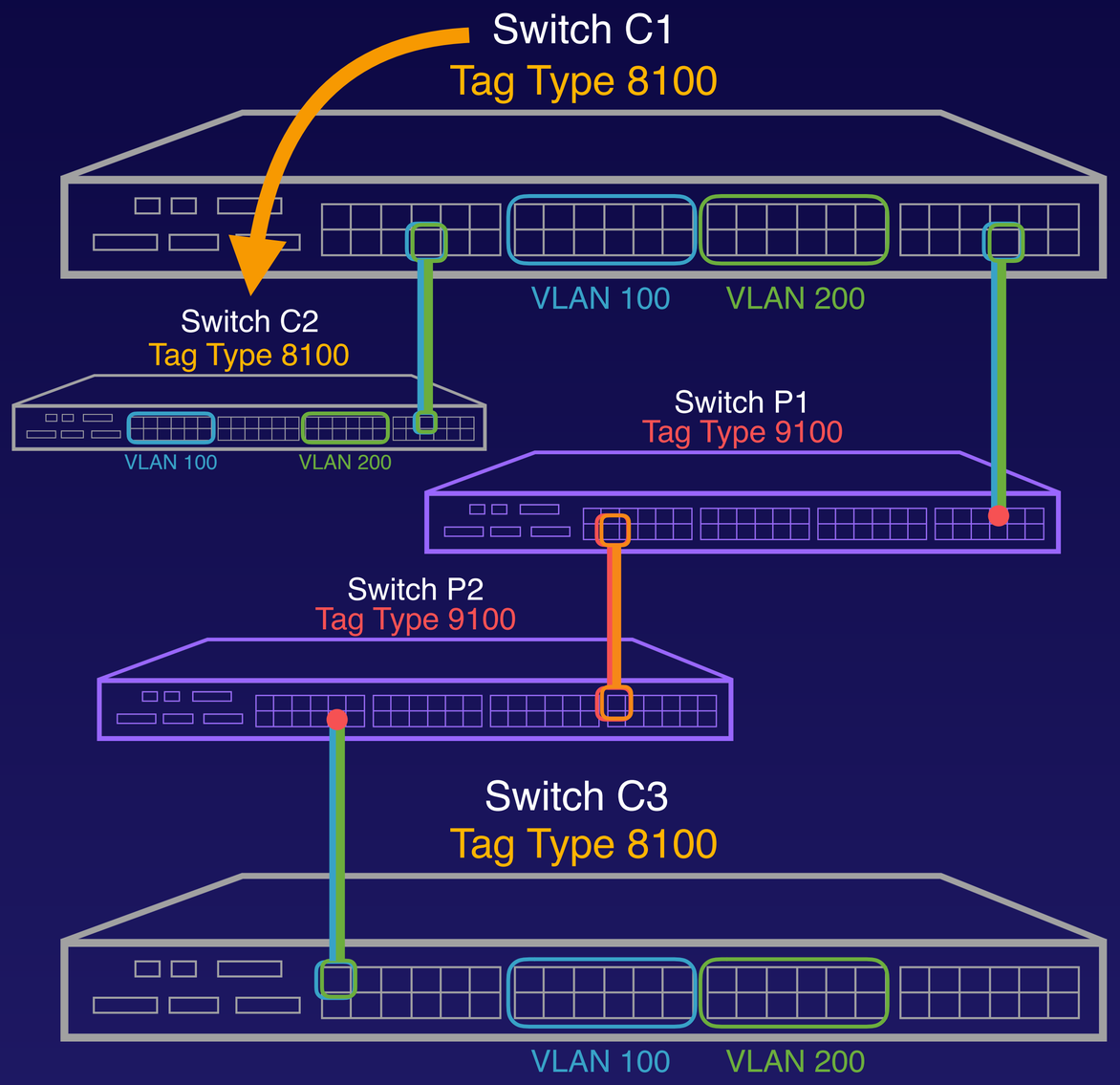

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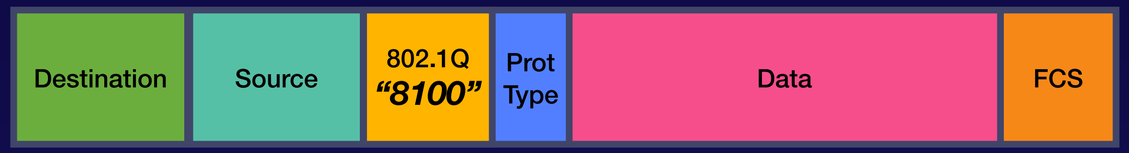

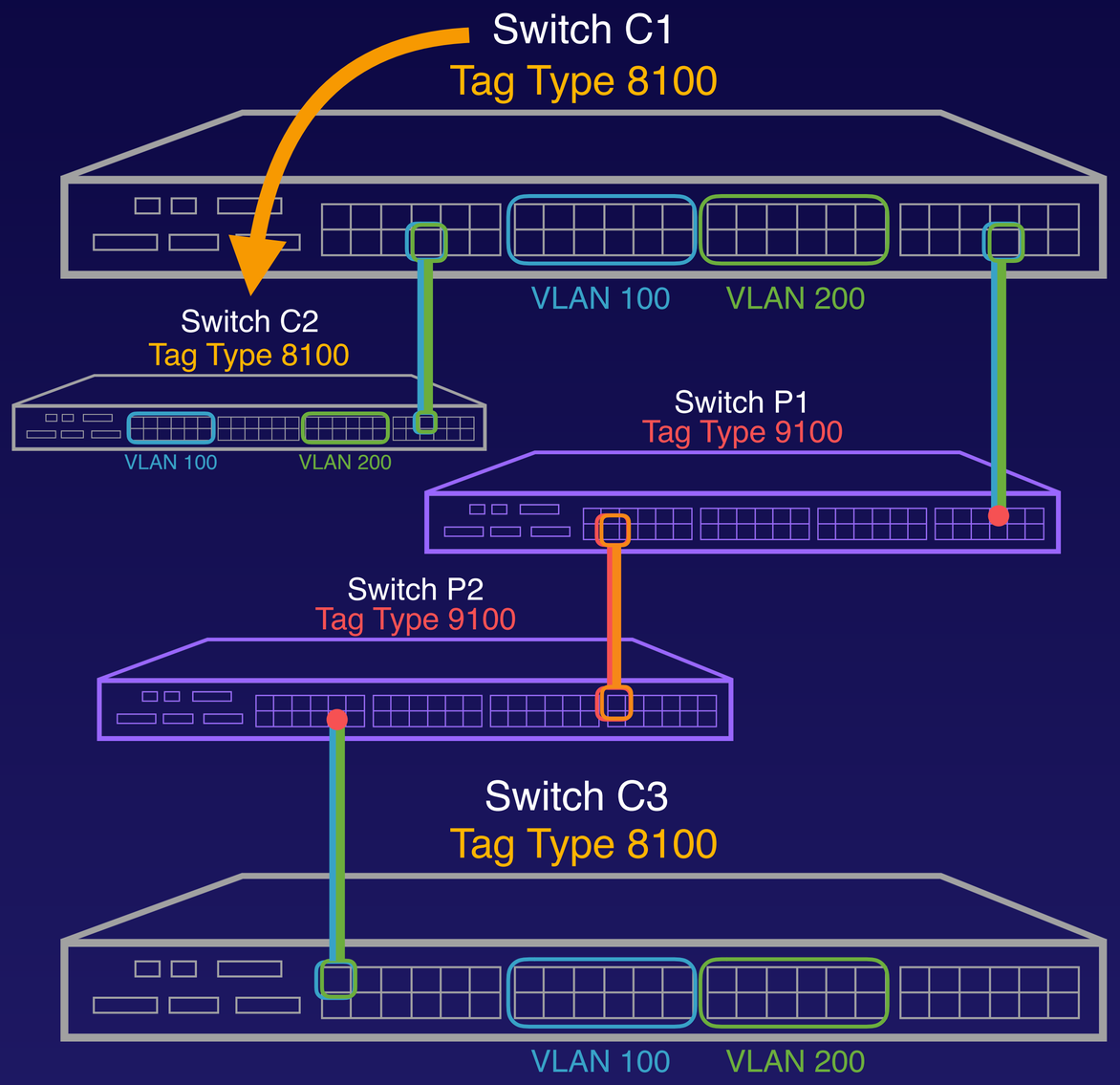

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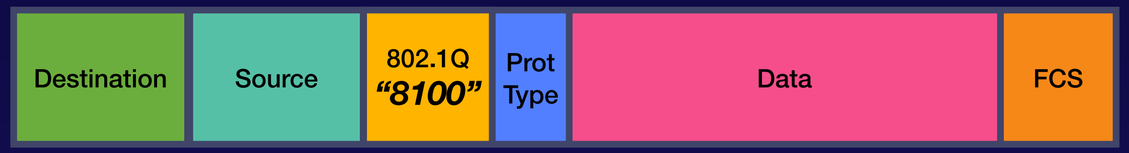

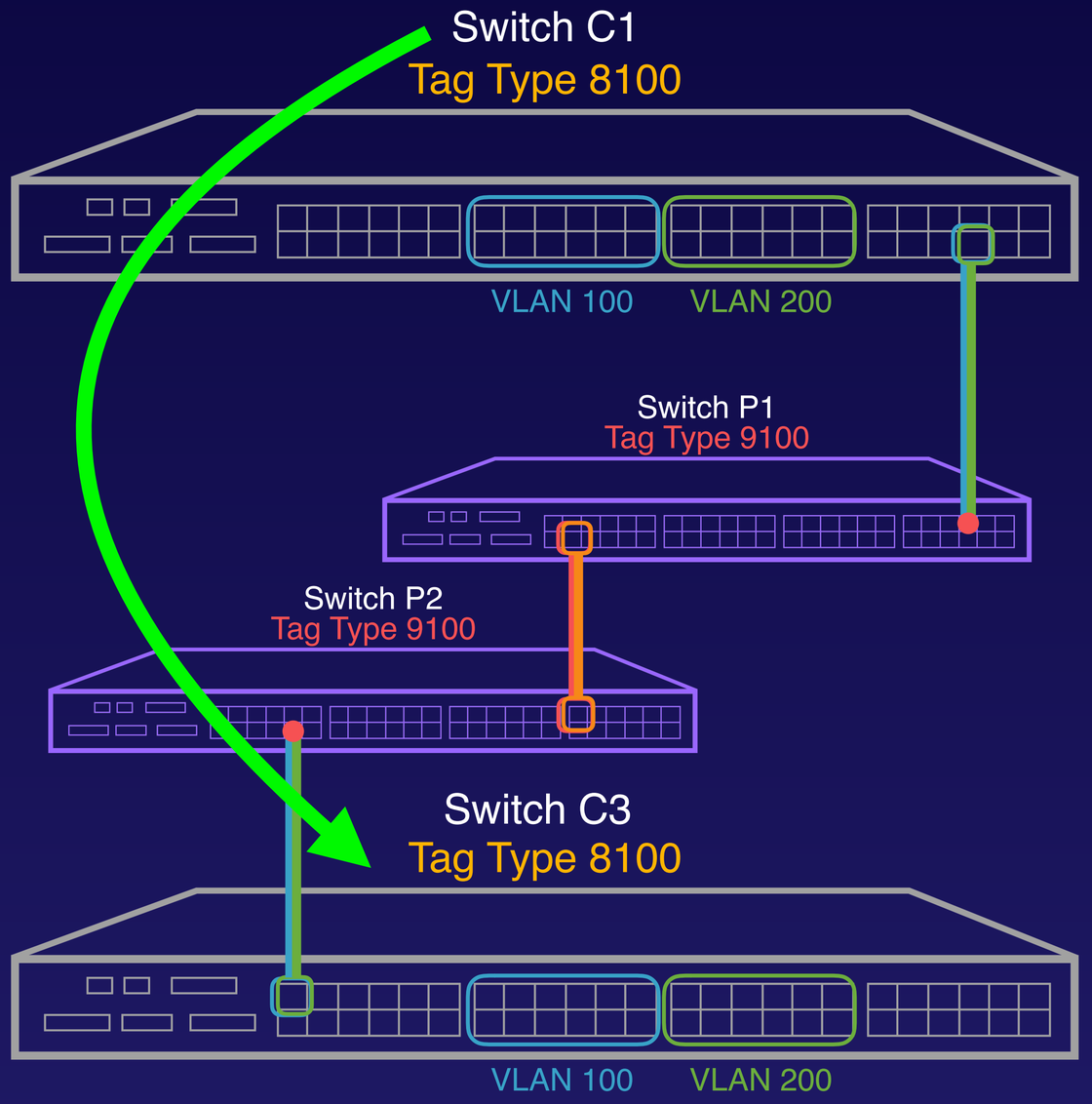

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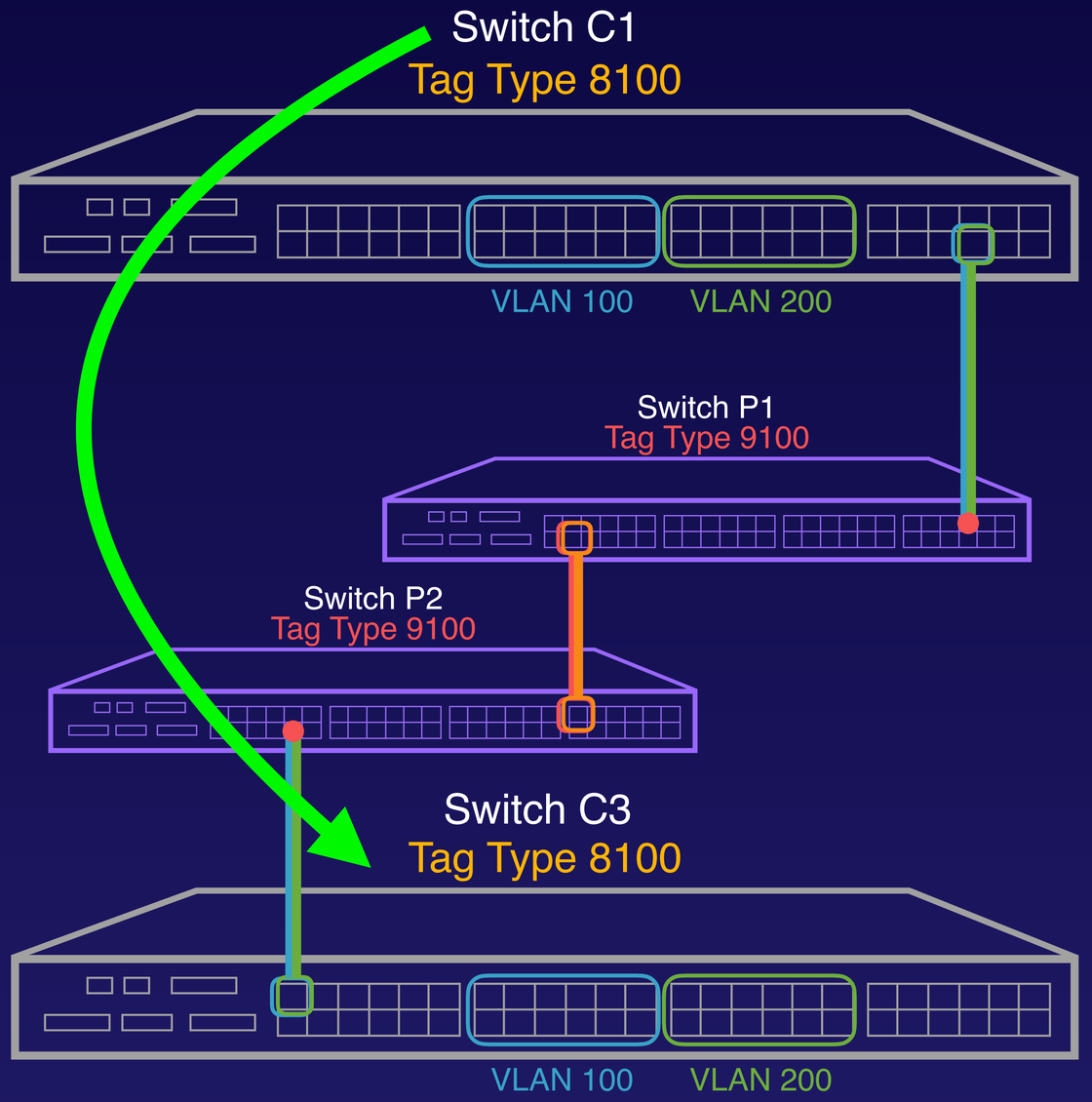

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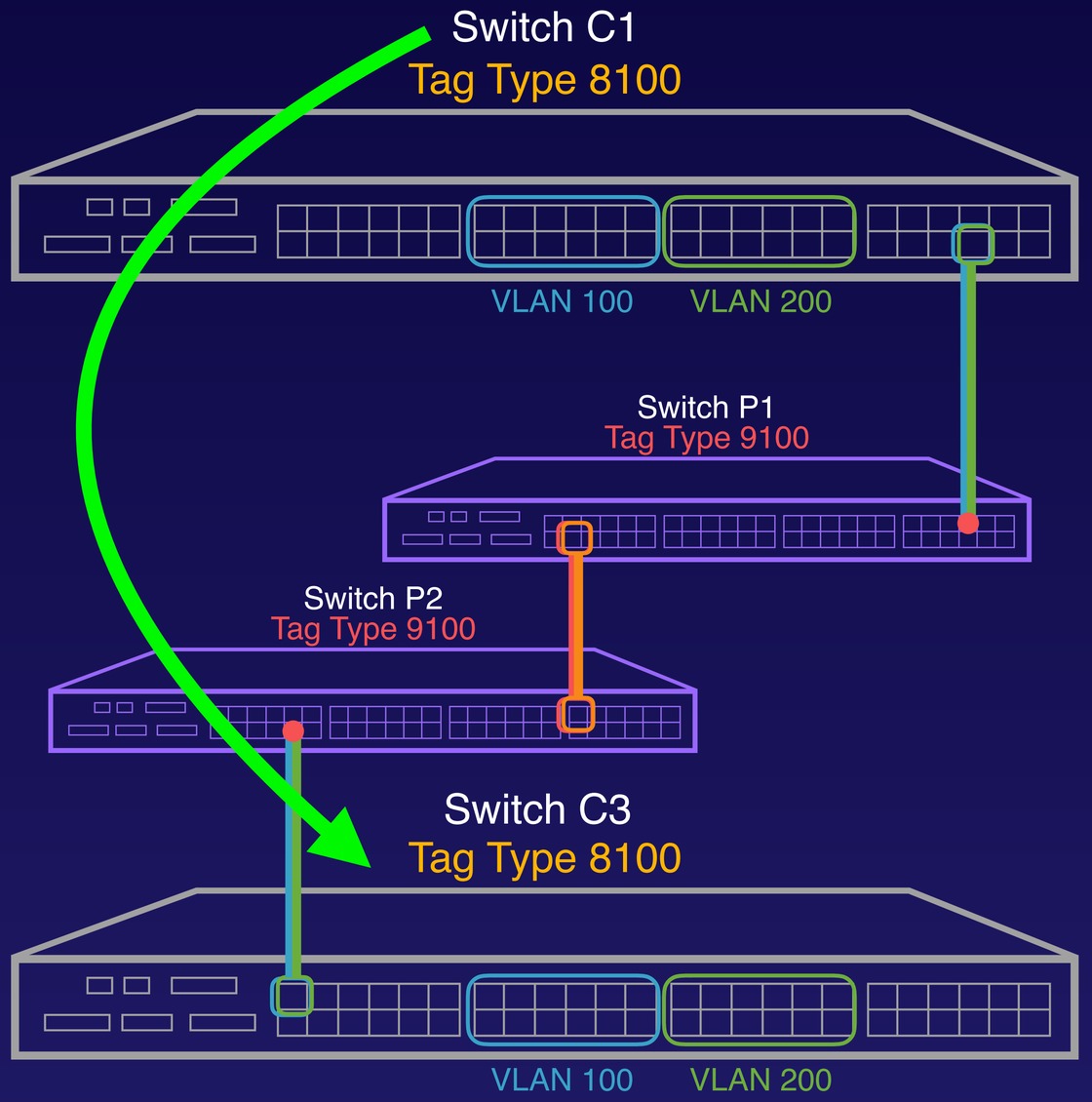

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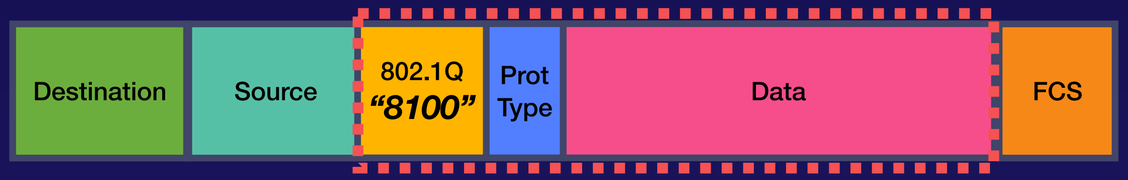

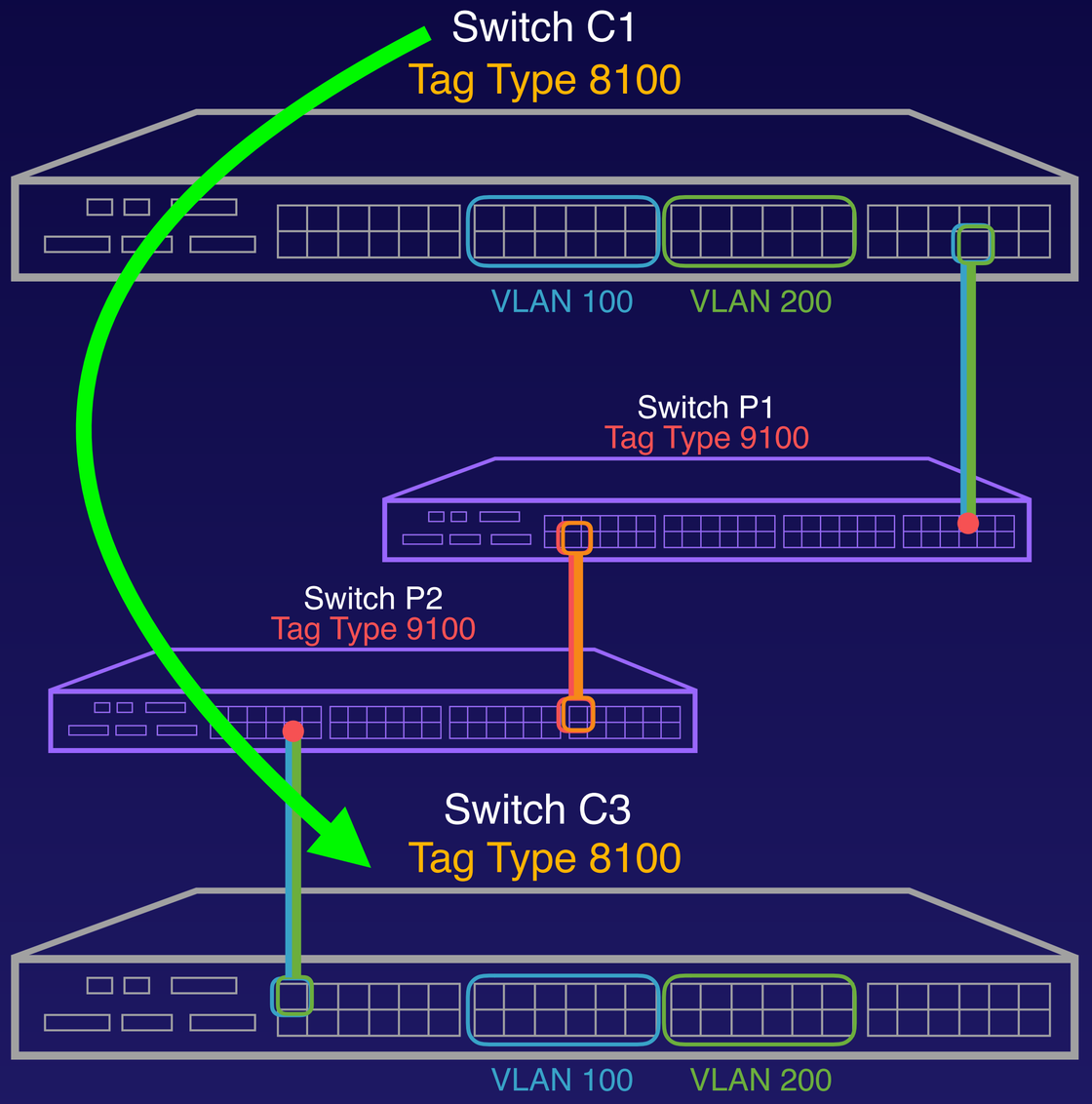

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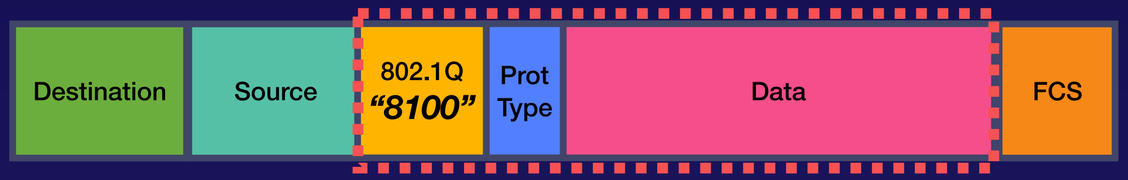

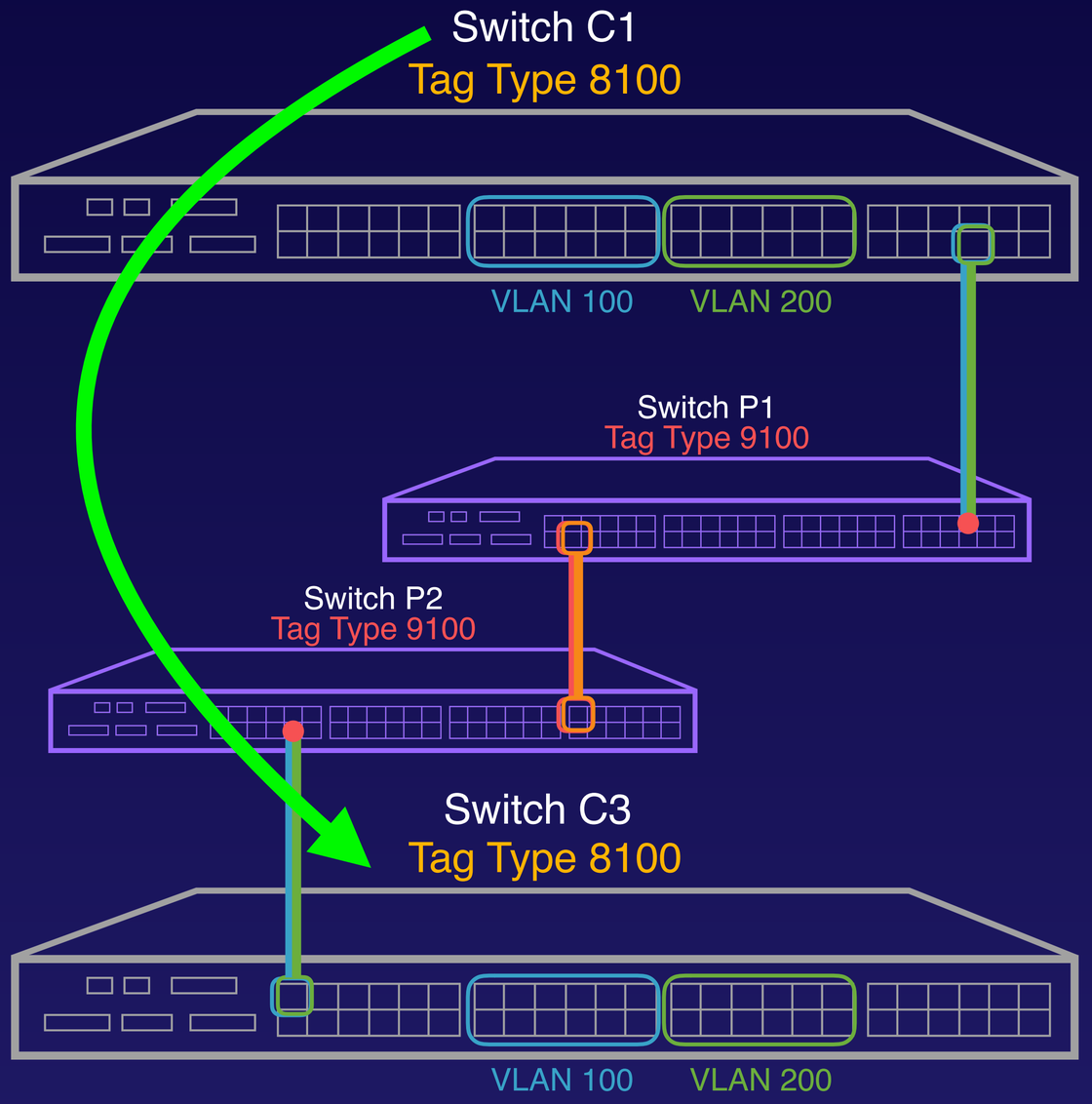

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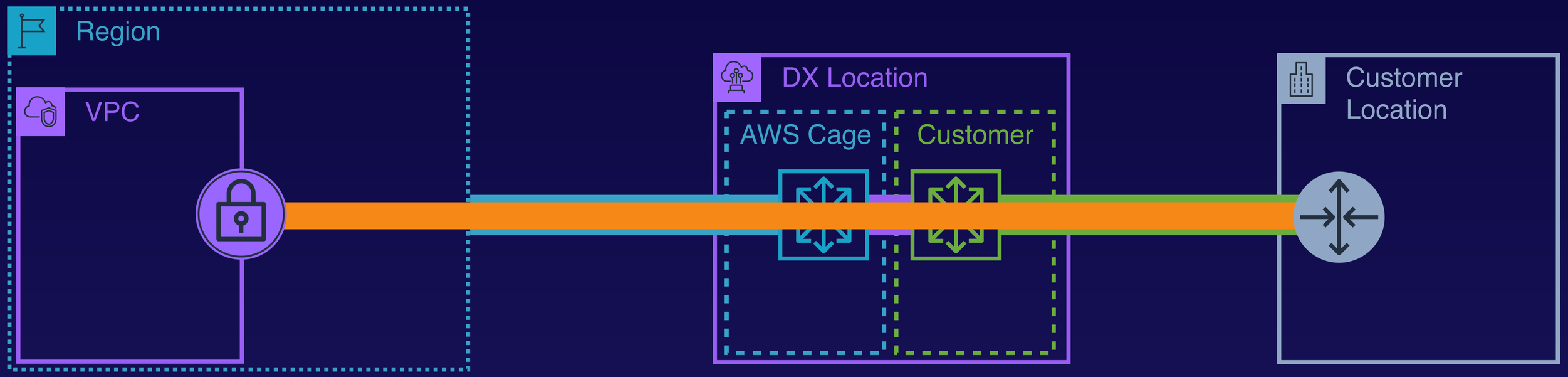

- Have the DX location coordinate with AWS to remove the provider tag from your traffic.
- VLAN traffic may only be sent to the gateway your single VIF is attached to.

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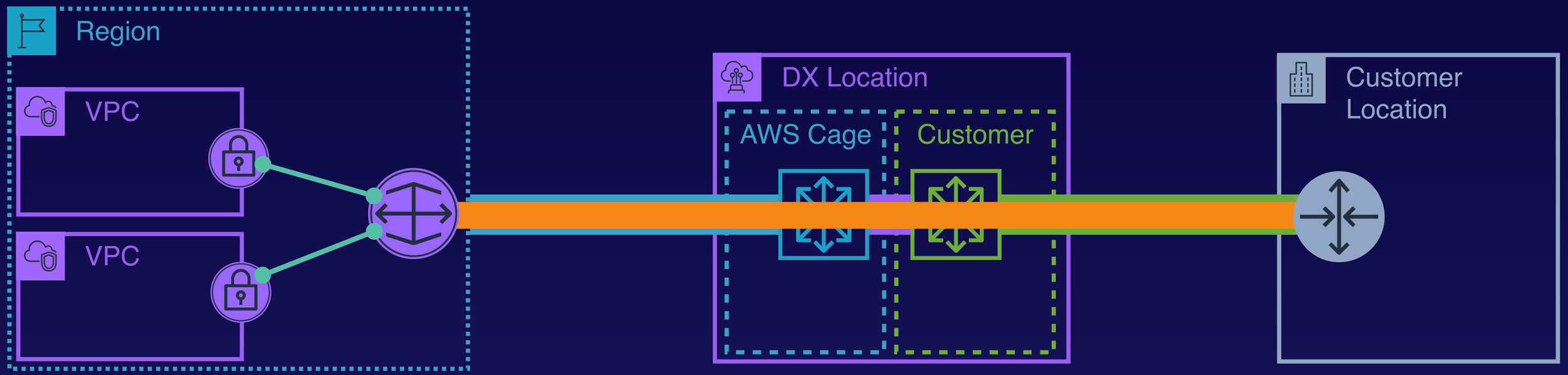

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Fast Takeaways

VIFs require Virtual LANs to be supported and correctly configured on all devices.

Tagged ports can be members of multiple VLANs and “tag” outbound traffic with their respective VLAN IDs.

Nested VLANs can allow you to better utilize the single VIF supported by DX hosted connections.

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