

Scaling VLANs: Inter-VLAN Routing

Essentials: Simple routing, Router-on-a-Stick, SVIs on a L3 Switch

Agenda

- Confirmation of marks breakdown:
 - Midterm test: 25%
 - Quizzes & exercises: 5%
 - Final theory exam: 35%
 - Weekly lab work: 10%
 - Lab exam: 25%
- Midterm: during regular class time on Wed Oct 30 in **T102**
- Review last lecture:
 - bandwidth, VLANs, DTP, VTP;
 - how DTP + 3-layer hierarchical architecture simplifies trunking configuration
 - DTP isn't used / understood by routers
 - VTP solves 1/2 the problem, but it doesn't solve the issue of assigning access ports to the correct VLAN;
 - ... so dynamic nature of protocols means config not necessarily the same as operating status!
- New material (from Cisco slide deck; posted on BrightSpace):
 - § 2.2: Multi-VLAN issues: config, IP addressing, dynamic L2 protocols
 - § 2.3: L3 Switching: SVIs, configuration, troubleshooting

Assignments and Lab work

- **Readings:** Ch 2 by next Mon
- **Chapter Quiz:** NetAcad online Chapter 1 "exam"; due by **Fri @ 11:59pm**
- **Lab work:** Cisco Labs 2.1 & 2.2 (pdf on BrightSpace in Assignments/Labs ...)
- Lab 2 **post-lab:** due before **10am next Mon** (Sep 16)
- Lab 3 **pre-lab:** due before your lab period next week

Study Tip

- Always (re-)read the lecture summary notes and the **textbook** !
- When multiple slide decks are available for a chapter, you don't necessarily need to study all the different slide decks (... and maybe you shouldn't!)
It's probably better to pick one and study it thoroughly.

Saving COMPLETE Config of a Switch

In 1st year, you could get the config with just one command, now you need **four!**

1. **show run**(ning)-config # old, from 1st year
2. **show vlan brief** # New! Stored in flash:vlan.dat for server/client mode
3. **show vtp status** # New! Stored in flash:vlan.dat for server/client mode
4. **show vtp password** # New! Stored in flash:vlan.dat for server/client mode

... **Only** transparent mode stores the VLANs (2), VTP version (3), VTP domain (3), VTP mode (3), and VTP password (4) in the config (both running & startup)!

Chapter 2 Objectives (... according to Cisco)

- Compare VTP versions 1 and 2.
- Configure VTP versions 1 and 2.
- Configure extended VLANs.
- Configure Dynamic Trunking Protocol (DTP).
- Troubleshoot common inter-VLAN configuration issues.
- Troubleshoot common IP addressing issues in inter-VLAN routed environments.
- Troubleshoot common VTP and DTP issues in inter-VLAN routed environments.
- Configure inter-VLAN routing using Layer 3 switching.
- Troubleshoot inter-VLAN routing in a Layer 3 switched environment.

Logical Interfaces

What is a loopback? Why create one? What are advantages? Any disadvantages?
... Strictly speaking, only routers have loopback interfaces.

Now, what is a SVI? Why create one? What are advantages? Any disadvantages?
... Only switches have SVIs

Key Commands for Verifying & Troubleshooting Configs

show vlan brief – complete list of all known VLANs (but no indication of origin!)

show interface trunk – list of all trunks, including how/why of current setting

show interfaces **Xn/nn switchport** – details of how/why modes were chosen

show vtp status – *partial* info on VTP config

show vtp password – extra info **not** displayed by "show vtp status"

show ip interface brief – full list of L3 interfaces, including loopbacks & SVIs

show ip route – very useful for inter-VLAN connectivity