

Label Distribution

Essentials: Label distribution modes & options

Agenda

- Pop-quiz: Module 1
- In The News: Are exams good or bad?
<http://ottawacitizen.com/news/local-news/ottawa-schools-grapple-with-the-exam-question-are-they-a-outdated-or-b-essential>
- Continue with MPLS Module 2:
 - Complete slides in Section 1
 - Continue with Section 2
- Tip: during this module, consider Frame Relay DLCI vs MPLS label control plane operation: static DLCI vs dynamic labels, or IP routing (static vs protocols)

Assignments and Lab work

- This week: read in NRS-II: Ch 11, pages 513-525
- Lab 1 post-lab: due by **Fri Jan 19 @ 8am.**
- Lab 2 pre-lab: due by **Fri Jan 19 @ 8am.**
- Lab 2 post-lab: due by **11:59pm the day before** your next lab session.
- Next Lab: LDP and ECMP based on Nokia Lab Guide, Labs 3.1-3.3

Lab Review

Relatively few commands are required for single-area OSPF configuration:

```
configure • router • router-id <32-bit-ID> # Let's use best practices!  
configure • router • ospf • area <area-id> • interface <int-name>  
(In some labs, we'll add the point-to-point attribute to the interface! Why?)  
show • router • ospf • area <area-id> [detail]  
show • router • ospf • status  
show • router • ospf • interface [detail]  
show • router • ospf • neighbor [detail]  
show • router • ospf • database [detail] # shows OSPF LSDB
```

Tip: Here's the generic pattern for **all** protocols on Nokia routers!! :-)

```
configure • router • ospf  
    area <area-id> # For OSPF; other protocols have a different specifier  
    interface X  
    interface Y  
    interface Z  
exit  
exit
```

Summary for Module 2, Section 1

- Label stack: inner label (service label) and outer label (transport label)
- format of MPLS header: 4 fields
- "address" of MPLS labels
- Behavior / operation of each of the 4 fields
- Handling of fields: pipe mode vs uniform mode for ToS & TTL
- Implementation / location of labels: frame-mode vs cell-mode

Section 2 covers (... lots more terminology!):

- Upstream vs Downstream
- Unsolicited vs On-Demand
- Ordered vs Independent
- Liberal vs Conservative
- LDP vs RSVP
- Spine vs Leaf
- Per-platform vs Per-Interface

For all the above options, know which is available & used on the SR OS, and for which protocol!

Label Distribution Modes (complete list)		
Distribution	Downstream unsolicited	Downstream on Demand
Control	Independent Control	Ordered Control
Retention	Liberal	Conservative

Ref: NRS-II, p. 517

Coming Next

- LDP: Label Distribution Protocol
Essentials: Characteristics & parameters of LDP
- Special labels & actions: Alert, implicit/explicit NULL, PHP
- Link vs Targeted (... LDP)
- LDP parameters
- Session establishment and "maintain-ance"
- OAM lsp-ping and lsp-trace