

Lab 6: LDP over RSVP

Or: Use LDP as glue across RSVP regions

What you will do:

1. Verify OSPF area 0 connectivity on all Core (R1-R4) and Edge (R5-R6) routers
2. Create multi-area (1-4) OSPF for pods 1-4, and verify
3. Configure RSVP throughout each of the individual areas
4. Configure a Targeted-LDP session to span each OSPF area
5. Create an inter-area LDP tunnel by enabling LDP-over-RSVP

Things that you will need to know or learn:

1. CLI commands for configuring static and default routes; and OSPF routing
2. CLI commands for configuring RSVP
3. CLI commands for configuring LDP
4. CLI commands to enable the formation of LDP-over-RSVP tunnels:
configure router ldp • targeted-session peer x.x.x.x • tunneling
configure router ospf • ldp-over-rsvp
5. CLI commands so that LDP-over-RSVP tunnels can be used by the IGP for regular traffic:
configure router ldp-shortcut

What you need to submit and when:

1. There is no pre-lab for Lab 6.
2. Complete the in-lab part of the exercise (see below), **before** the end of your lab period.
3. Complete the “Lab 6 Post-lab” exercise and submit to Blackboard, **before** your next lab period.

Required Equipment:

- USB memory stick to save results for post-lab questions
- Hard-cover lab notebook, for reference during SBA at the end of the course.
- PC with internet access, a compatible browser, and terminal program (Provided in T108)

In-Lab Marks:

2 marks: Demo of inter-area LDP tunnel, via LDP bindings table

1 mark: Clear explanation of lsp-trace results from Lab 5.3 step 16

The in-lab is worth 1/3 of the overall lab mark; the post-lab is worth 2/3 of the overall lab mark.

10% of your final mark is for labs done during the course of the semester.

References and Resources:

- MPLS lab guide; specifically 5.3 (pages 32-34)
- Command reference (beginning of Lab 5 section in the MPLS lab guide)
- MySRLab: remote-access lab facility hosted at the Nokia Kanata campus

Addressing & Login Table

	Edu Lab 1	Edu Lab 2
R1	192.168.206.164	192.168.206.196
R2	192.168.206.165	192.168.206.197
R3	192.168.206.166	192.168.206.198
R4	192.168.206.167	192.168.206.199
R5	192.168.206.168	192.168.206.200
R6	192.168.206.169	192.168.206.201
R7	192.168.206.170	192.168.206.202
R8	192.168.206.171	192.168.206.203
R9	192.168.206.172	192.168.206.204
R10	192.168.206.173	192.168.206.205
R11	192.168.206.174	192.168.206.206
R12	192.168.206.175	192.168.206.207

Edu Lab 1 Login	Passwd	Edu Lab 2 Login	Passwd
src-otti01u1		src-otti02u1	
src-otti01u2		src-otti02u2	
src-otti01u3		src-otti02u3	
src-otti01u4		src-otti02u4	
src-otti01u5		src-otti02u5	
src-otti01u6		src-otti02u6	
src-otti01u7		src-otti02u7	
src-otti01u8		src-otti02u8	

See Blackboard for a list of passwords; write **yours** in the space above.

Task 1: Verify full IGP (OSPF) connectivity between Core & Edge routers

Based on your previous lab, confirm and reconfigure as necessary, full OSPF connectivity between all 8 Core and Edge routers in your lab. Use existing subnet masks (either /24 or /27).

Task 2: Remove any other existing configuration

The ability to clearly see *what* is happening and *why* is very important for this lab. Shutdown (as necessary) and then remove all other pre-existing configuration on **all** routers: LDP, MPLS, RSVP

Task 3: Configure MPLS LSPs and Targeted-LDP sessions

Follow the instructions given in MPLS lab 5.3 Note the following points:

- Configure interfaces into OSPF exactly as instructed in step 1
- At no time during this lab are any interfaces configured in (link) LDP; remove any found!
- Targeted-LDP requires matching configuration at **both** ends for a session to form
- LSPs are uni-directional as always! If RSVP & TE are enabled throughout, then it's possible to get an LSP enabled regardless of what the other team is doing at their end!

CHECK POINT #1: Prove, with output on your screen, that LDP is forming tunnels over RSVP

Task 4: LSP trace operation

Complete the lsp-trace and make sure you understand the results. Compare the results you get using ping: the same or different? What tunnel mode is in use? Can you switch modes??

CHECK POINT #2: Explain the lsp-trace results to the lab Professor; explain the tunnel mode.

Task 5: (Challenge) Is CSPF strictly necessary in this exact scenario?

Determine which LSPs actually need CSPF enabled for this scenario. Be prepared with an answer of exactly which routers need it enabled.