

# VPN Service Configuration

## Essentials: Customer, Service, SAP, SDP

### Agenda

- Field trip: next **Wed Mar 4** 9am-11:30am; main entrance at 600 March Rd
  - pls arrive directly on site before 9am to sign in.
- Term Test #2: **Fri March 13** 10am, room T327
- Exam dates
  - SBA: **Wed April 15**; 2.5 hrs; **T108**, groups posted on BS by ~Mar 30
  - Theory exam: **Tue April 14 @ 2pm**; 3 hrs; (room TBC)
- New Material: VPN Services: SA Module 1; NRS-II Ch 17
  - Be conscious of distinguishing between "describing" and "activating"
- Coming next: Module 3 – VPLS, sections 1-2 (slides 1-34)

### Assignments and Lab work

- Read: SA Module 1 by Wed Mar 4  
Ref: NRS-II book: Chapter 17
- Lab 7: IPv6 over MPLS (NRS-II Lab 13.4)
- Lab 7 post-lab: due = 11:59pm Thu/Sat for Fri/Mon lab sections
- (Coming next) Lab 8: SA Lab 2: basic Epipe / VPWS service

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## SA Terminology

Module 1, section 3 (p. 42-66) introduces *lots* of new terminology. It is summarized here for convenient reference (... and possible testing in quizzes).

Term	Scope	Description
Customer or Subscriber	local; unique	Mandatory; numeric ID for purposes of management, billing, and reporting; ALL services under some ID
Service ID	local; unique	Unique numeric ID which identifies a specific service; either purely local (1 router) or distributed (>1 router); specified as: X-pipe, VPLS, VPRN, IES, mirror
Service Access Point ( <b>SAP</b> )	local; multiplex	The port where the customer connects, eg. 1/1/1 port mode <b>must</b> be "access" (default = "network")
Svc Distribution Point ( <b>SDP</b> )	local; multiplex	A numeric ID that corresponds to a uni-directional tunnel to carry 1+ services; end point is a system ID; configured to use LDP (shortest) or RSVP (longer); services use SDPs in spoke or mesh mode (TBA)
Virtual-Circuit (VD-ID)	GLOBAL	Numeric ID that <b>must</b> be globally identical; for human sake, make equal to service ID

Despite the fact that *only* the VC-ID is globally significant, you'll notice on slide 66 that the recommended best practice of also making Customer ID and Service ID globally unique!

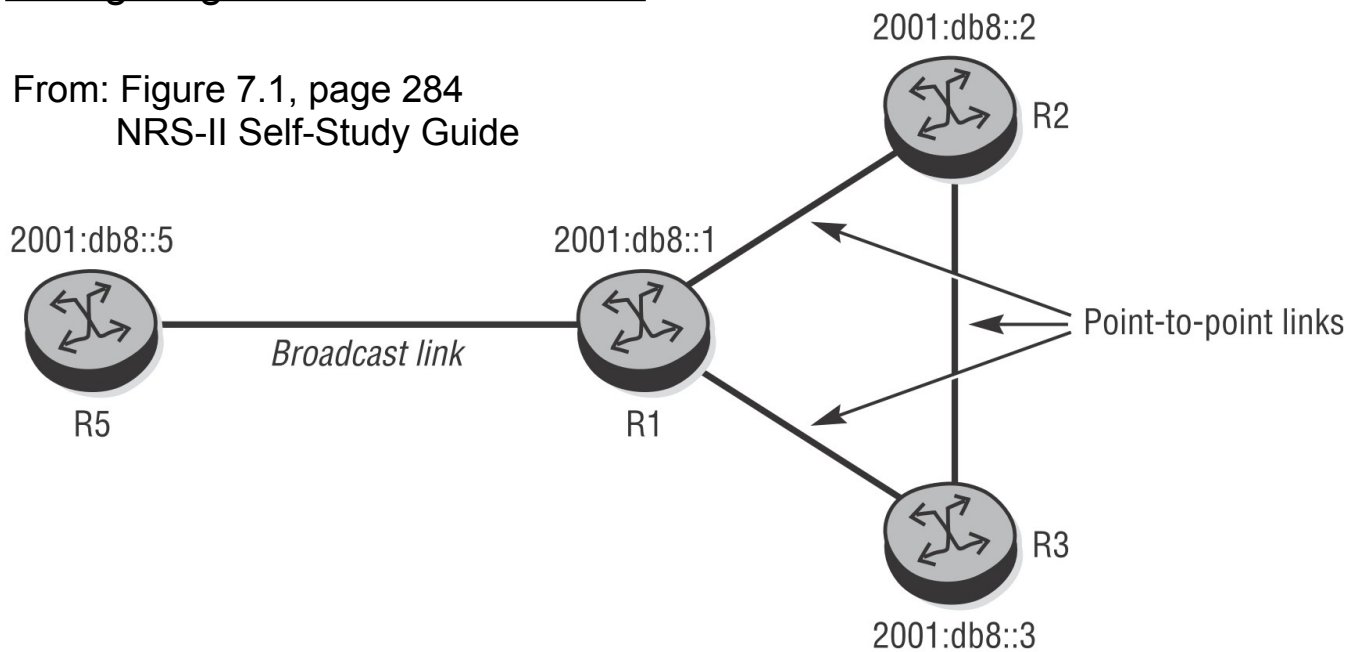
## MPLS VPN Service Configuration

Be sure to notice the characteristics:

- All VPN services have at least two (2) SAPs (somewhere); x-pipes always have exactly two; VPLS and VPRN often have more than 2.
- Ports must first be configured in access mode with an encapsulation type (possibly left at the default *null* encapsulation)
- SAP definition requires both a port number as well as a Qtag value (though the value is implicitly *null* for *null* encapsulation).
- Local services only exist (i.e. configured) on a single router; the service only connects to SAPs
- Distributed services exist (i.e. configured) on two or more routers; the service connects to at least one SAP and at least one SDP per router.

## Configuring IPv6 on Nokia SR OS

From: Figure 7.1, page 284  
NRS-II Self-Study Guide



### Listing 7.1 Configuring the IPv6 interfaces on R1

```
*A:R1# configure router
*A:R1>config>router# info
#-----
echo "IP Configuration"
#-----

    interface "system"
        ipv6
        address 2001:DB8::1/128
    exit
exit
interface "toR2"
    port 1/1/1
    ipv6
    exit
exit
interface "toR3"
    port 1/1/4
    ipv6
    exit
exit
interface "toR5"
    port 1/1/3
    ipv6
    exit
exit
```