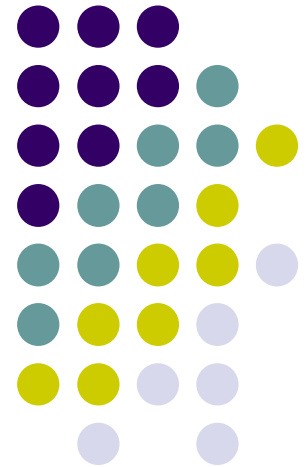
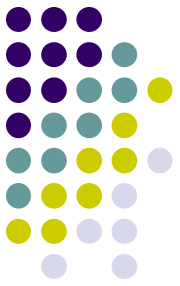


IPv6 Addressing Plan

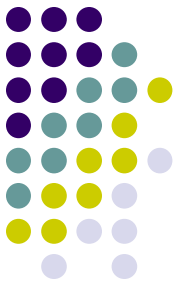


Acknowledgements



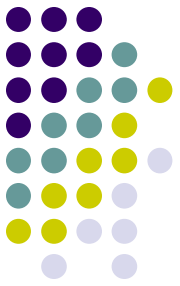
- This material is developed from different R&D, NRO & APNIC Workshop Slides & Slides developed by Dr. Philip Smith & Barry Greene
- This material is open & free to use as long as it is acknowledged and the notice remains in place
- This material is designed considering that the audience will be predominantly technical people

Addressing Criteria



- Infrastructure
- Region
- Service
- Routing Table Size
- Future Growth

Addressing Guideline



One /40 for Infrastructure

- One /48 for Loopback
- One /48 for P2P
- One /60 or /64 for Internal NOC LAN
- One /64 for external servers

One /40 for one region of Enterprise Customer

- One /48 for Customer WAN
- One /48 per Customer & one /48 kept for its Future Growth

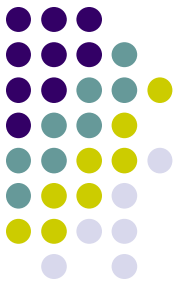
One /40 for one region of Broadband Customer

- One /48 for each BRAS to address DHCP-PD for CPE LAN

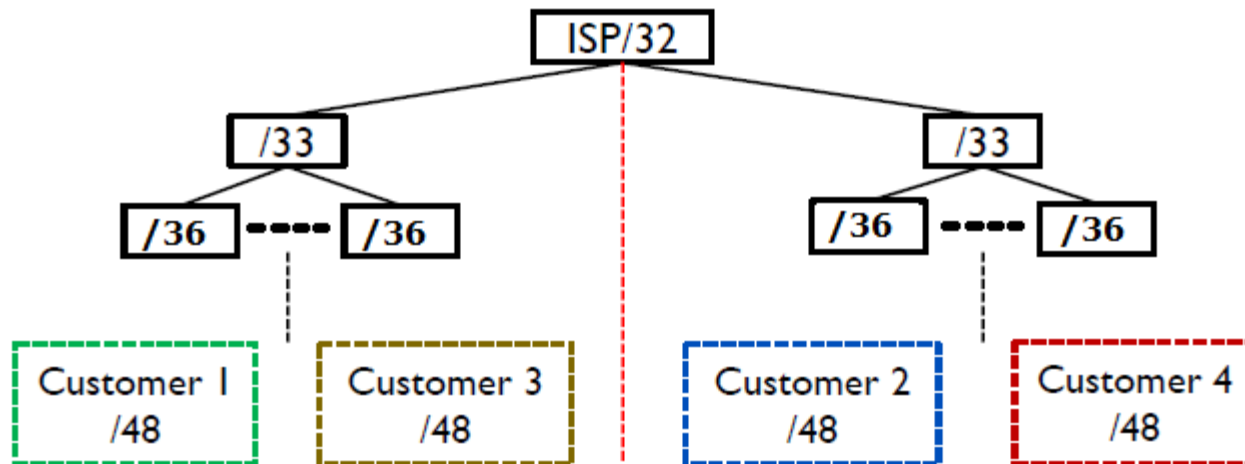
One /40 for DC hosted services

- P2P & Loopbacks from previous Infrastructure Block

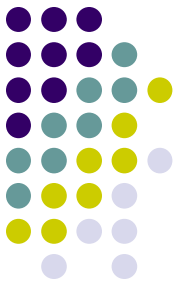
Traffic Shaping



For traffic shaping it is better to go for /33 sub-netting first to balance incoming traffic.



Addressing Scope



- Parent Block:
Prefix from RIR in /32
- Traffic Shaping:
First Level of Sub-netting in /33
- High Level Design:
Second Level of Sub-netting in /36
- Infrastructure, Enterprise Customer, Broadband Client, DC:
Third Level of Sub-netting in /40
- Low Level Design:
Fourth Level of Sub-netting in /48

Addressing Demo - HLD



- Since we are going for a demo, we are going to use **2001:db8::/32**.
- This Block is Documentation Block.
- Must not be routed in Internet.
- (<https://tools.ietf.org/html/rfc3849>)

SI No	Prefix	Assignment	Comment
1	2001:DB8::/32	Parent Block	
1	2001:DB8:0000::/36	Infra + Customer	First /33
2	2001:DB8:1000::/36	Customer	
3	2001:DB8:2000::/36		
4	2001:DB8:3000::/36		
5	2001:DB8:4000::/36		
6	2001:DB8:5000::/36		
7	2001:DB8:6000::/36		
8	2001:DB8:7000::/36		
9	2001:DB8:8000::/36		Customer
10	2001:DB8:9000::/36		
11	2001:DB8:a000::/36		
12	2001:DB8:b000::/36		
13	2001:DB8:c000::/36		
14	2001:DB8:d000::/36		
15	2001:DB8:e000::/36		
16	2001:DB8:f000::/36		

Addressing Demo – 1st /33

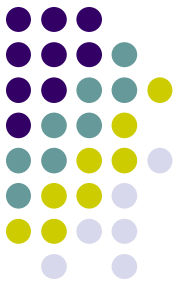


Table-2

SI No	Prefix	Assignment	Comment
1	2001:DB8::/32	Parent Block	
1	2001:DB8:0000::/36	Infra + Customer	First /33
1	2001:DB8:0000::/40	Backbone Infra (P2P, Loopback	
2	2001:DB8:0100::/40	Enterprise Customer Region 1	
3	2001:DB8:0200::/40	Broadband Region 1	
4	2001:DB8:0300::/40	Future Customer	
-			
-			
16	2001:DB8:0f00::/40		
2	2001:DB8:1000::/36	Customer	
3	2001:DB8:2000::/36		
4	2001:DB8:3000::/36		
5	2001:DB8:4000::/36		
6	2001:DB8:5000::/36		
7	2001:DB8:6000::/36		
8	2001:DB8:7000::/36		
9	2001:DB8:8000::/36		
10	2001:DB8:9000::/36		
11	2001:DB8:a000::/36		
12	2001:DB8:b000::/36		
13	2001:DB8:c000::/36		
14	2001:DB8:d000::/36		
15	2001:DB8:e000::/36		
16	2001:DB8:f000::/36		Second /33



Addressing Demo – 1st /33 - LLD

Table-2.1

SI No	Prefix	Assignment	Comment
1	2001:DB8::/32	Parent Block	
1	2001:DB8:0000::/36	Infra + Customer	
1	2001:DB8:0000::/40	Backbone Infra (P2P, Loopback	
1	2001:DB8:0000::/48	Loopback	
2	2001:DB8:0001::/48	Point to Point	
3	2001:DB8:0002::/48		
4	2001:DB8:0003::/48		
-			
-		Future Infrastructure	
256	2001:DB8:00ff::/48		
2	2001:DB8:0100::/40	Enterprise Customer Region 1	
1	2001:DB8:0100::/48	Customer WAN Links	
2	2001:DB8:0101::/48	Customer 1-1	
3	2001:DB8:0102::/48	Customer 1-2	
4	2001:DB8:0103::/48		
-			
-		Future Customer	
256	2001:DB8:01ff::/48		
3	2001:DB8:0200::/40	Broadband Region 1	First /33
1	2001:DB8:0200::/48	BRAS-1	
2	2001:DB8:0201::/48	BRAS-2	
3	2001:DB8:0202::/48	BRAS-3	
4	2001:DB8:0203::/48		
-			
-		Future BRAS	
256	2001:DB8:02ff::/48		
4	2001:DB8:0300::/40		
-			
-		Future Customer	
16	2001:DB8:0f00::/40		
2	2001:DB8:1000::/36		
3	2001:DB8:2000::/36		
4	2001:DB8:3000::/36		
5	2001:DB8:4000::/36		
6	2001:DB8:5000::/36		
7	2001:DB8:6000::/36		
8	2001:DB8:7000::/36	Customer	



Addressing Demo – 2nd /33

Table-3

SI No	Prefix	Assignment	Comment
1	2001:DB8::/32	Parent Block	
1	2001:DB8:0000::/36	Infra + Customer	First /33
1	2001:DB8:0000::/40	Backbone Infra (P2P, Loopback	
2	2001:DB8:0100::/40	Enterprise Customer Region 1	
3	2001:DB8:0200::/40	Broadband Region 1	
-		Future Customer	
-			
-			
16	2001:DB8:0f00::/40		
2	2001:DB8:1000::/36	Customer	
3	2001:DB8:2000::/36		
4	2001:DB8:3000::/36		
5	2001:DB8:4000::/36		
6	2001:DB8:5000::/36		
7	2001:DB8:6000::/36		
8	2001:DB8:7000::/36		
9	2001:DB8:8000::/36		
1	2001:DB8:8000::/40	Enterprise Customer Region 2	
2	2001:DB8:8100::/40	Broadband Region 2	
3	2001:DB8:8200::/40	Future Customer	
4	2001:DB8:8300::/40		
-			
-			
16	2001:DB8:8f00::/40	Customer	
10	2001:DB8:9000::/36		
11	2001:DB8:a000::/36		
12	2001:DB8:b000::/36		
13	2001:DB8:c000::/36		
14	2001:DB8:d000::/36		
15	2001:DB8:e000::/36		
16	2001:DB8:f000::/36		

Addressing Demo – 2nd /33 - LLD



Table-3.1

SI No	Prefix	Assignment	Comment
1	2001:DB8::/32	Parent Block	
9	2001:DB8:8000::/36	Customer	
1	2001:DB8:8000::/40	Enterprise Customer Region 2	
1	2001:DB8:8000::/48	Customer 1-1	
2	2001:DB8:8001::/48	Customer 1-2	
3	2001:DB8:8002::/48		
-			
-		Future Customer	
256	2001:DB8:80ff::/48		
2	2001:DB8:8100::/40	Broadband Region 2	
1	2001:DB8:8100::/48	BRAS-1	
2	2001:DB8:8101::/48	BRAS-2	
3	2001:DB8:8102::/48		
-			
-		Future BRAS	
256	2001:DB8:81ff::/48		
3	2001:DB8:8200::/40		
4	2001:DB8:8300::/40		
-			
-		Future Customer	
16	2001:DB8:8f00::/40		
10	2001:DB8:9000::/36		
11	2001:DB8:a000::/36		
12	2001:DB8:b000::/36		
13	2001:DB8:c000::/36		
14	2001:DB8:d000::/36		
15	2001:DB8:e000::/36		
16	2001:DB8:f000::/36	Customer	

Second /33

