

Lanka Education and Research Network

Ipv6 Adoption at LEARN

Joint Research Project on IPv6 Network
Management

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APAN 50 – Hong Kong

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IPv6 history of LEARN

Oct – 2008

LEARN obtained provider-independent Ipv6 address space 2401:DD00::/32 from APNIC and started peering with Sri Lanka Telecom (SLT).

April – 2010

Started Peering with TEIN3 Network.

09 – July – 2013

Held a two day workshop for institute members and Ipv6 addressing part of the workshop.

IPv6 history of LEARN

23 -Jan – 2014

A Workgroup was formed for Ipv6. Objective was to first deploy Ipv6 in institutes whose involved in Workgroup and then to support deployment in other institutes.

16 – June – 2014

10 day internship program was held for selected members and Ipv6 deployment was involved in the training.

IPv6 history of LEARN

09 – July – 2014

1st meeting of Ipv6 Workgroup was held. In the meeting,

- Reviewed Current status of deployment of IPv6
- Technical matters and knowledge requirements were discussed
- Decided to,
 - Configure the Ipv6 on Web servers
 - Configure the Ipv6 on Mails servers
 - Check the IPv6 capability of L3 device of their own institutes

IPv6 history of LEARN

06 – May – 2016

2nd meeting of Ipv6 Workgroup was held. In the meeting,

Current status of deployment of institutions were reviewed. University of Kelaniya was identified to be the first Institute that IPv6 has fully deployed.

Few institutes had partial deployment.

22 – May – 2017

A Complete two day workshop was conducted on Ipv6 for member institutes to help remaining institutes to deploy Ipv6.

International collaborations

- Project UPROUSEwithLEARN
- Granted under the Asi@Connect project
- 5 Day Ipv6 deployment workshop was held in Laos
 - Enhancing the Ipv6 knowledge of NREN engineers representing 9 Asian economies
 - Providing on-site support basically to Royal University of Bhutan and Laos R&E institutes

IPv6 Addressing Plan

Example 1:

University Reserved Subnet - 2401:DD00:50::/48

Subnet prefix length is 64

2401:DD00:50:XXYY::/64

XX - Faculty (max 256)

YY - Department (max 256)

IPv6 Addressing Plan

Faculty	Department	VLAN	IPv6 Subnet
Faculty 1	Dept 1	101	2401:DD00:50:0101::/64
	Dept 2	102	2401:DD00:50:0102::/64
	Dept 3	103	2401:DD00:50:0103::/64
	Dept 4	104	2401:DD00:50:0104::/64
Faculty 2	Dept 1	201	2401:DD00:50:0201::/64
	Dept 2	202	2401:DD00:50:0202::/64
	Dept 3	203	2401:DD00:50:0203::/64
	Dept 4	204	2401:DD00:50:0204::/64
Faculty 3	Dept 1	301	2401:DD00:50:0301::/64
	Dept 2	302	2401:DD00:50:0302::/64
	Dept 3	303	2401:DD00:50:0303::/64

IPv6 Addressing Plan

Example 2:

University Reserved Subnet - 2401:DD00:50::/48

Subnet prefix length is 64

2401:DD00:50:**XYYZ**::/64

X - Faculty (max 16)

YY - Department (max 256)

Z - Department Unit / Section / Lab (max 16)

IPv6 Addressing Plan

Faculty	Department/Unit	VLAN	IPv6 Subnet
Faculty 1	Dept 1	110	2401:DD00:50:1010::/64
	Dept 2	120	2401:DD00:50:1020::/64
	Dept 3	130	2401:DD00:50:1030::/64
	Dept 3 Unit 1	131	2401:DD00:50:1031::/64
Faculty 2	Dept 1	210	2401:DD00:50:2010::/64
	Dept 2	220	2401:DD00:50:2020::/64
	Dept 2 Unit 1	221	2401:DD00:50:2021::/64
	Dept 3	230	2401:DD00:50:2030::/64
Faculty 3	Dept 1	310	2401:DD00:50:3010::/64
	Dept 2	320	2401:DD00:50:3020::/64
	Dept 3	330	2401:DD00:50:3030::/64

IPv6 migration of LEARN member institutes

LEARN recommended steps ...

- Create a suitable subnet plan which matches your existing topology
- First configure Core network at the institute with ipv6
- Verify the connectivity from outside
- Configure the internally hosted Servers (specially any DNS servers)
- Verify the services from outside
- Configure internal VLANs
- Confirm End User Connectivity

Challenges faced by Members

- Ipv6 Knowledge of the technical staff
- No feeling benefit to customer
- IPv6 capability of Devices
- Convincing management
- Reluctance to change
- Possible customer complaints

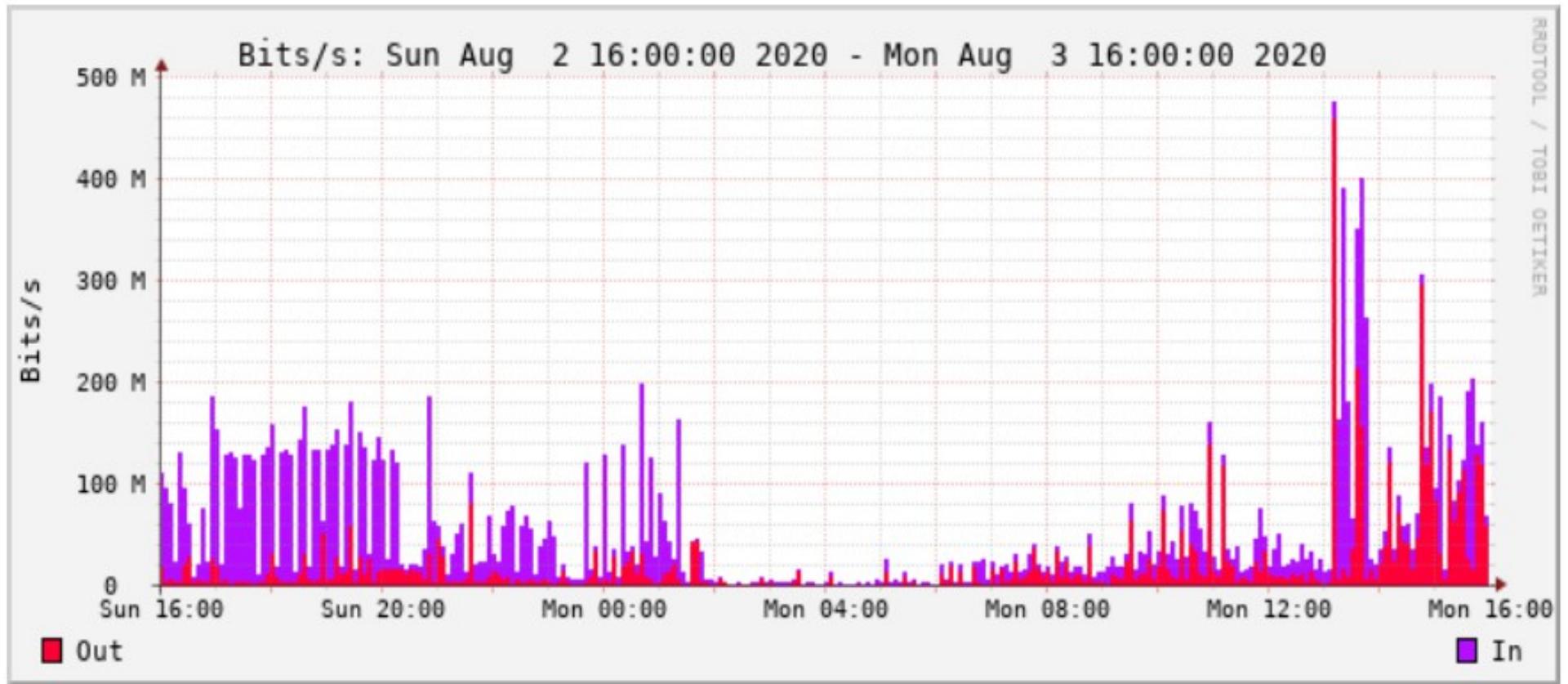
Current status of IPv6 deployment

- All LEARN Hosted Services are currently on Dual Stack.
- Member institutes are provided with /48 subnets.
- 110 of subnets have been given to institutes
- All institutional access routers are IPv6 enabled
- But not all of Institutes actively using IPv6s

Traffic monitoring at LEARN

- Uses several open source tools,
 - Cacti, LibreNMS, SmokePing, Nfsen with Netflow
- Currently network automation software from a local company is tested at POC level which supports,
 - Configuration management
 - Network status check (Interface, OSPF, BGP, NTP)

IPv6 traffic monitoring



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Thank You

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LEARN

National Research and Education Network of Sri Lanka