LEARN Updates

12th December 2018
at

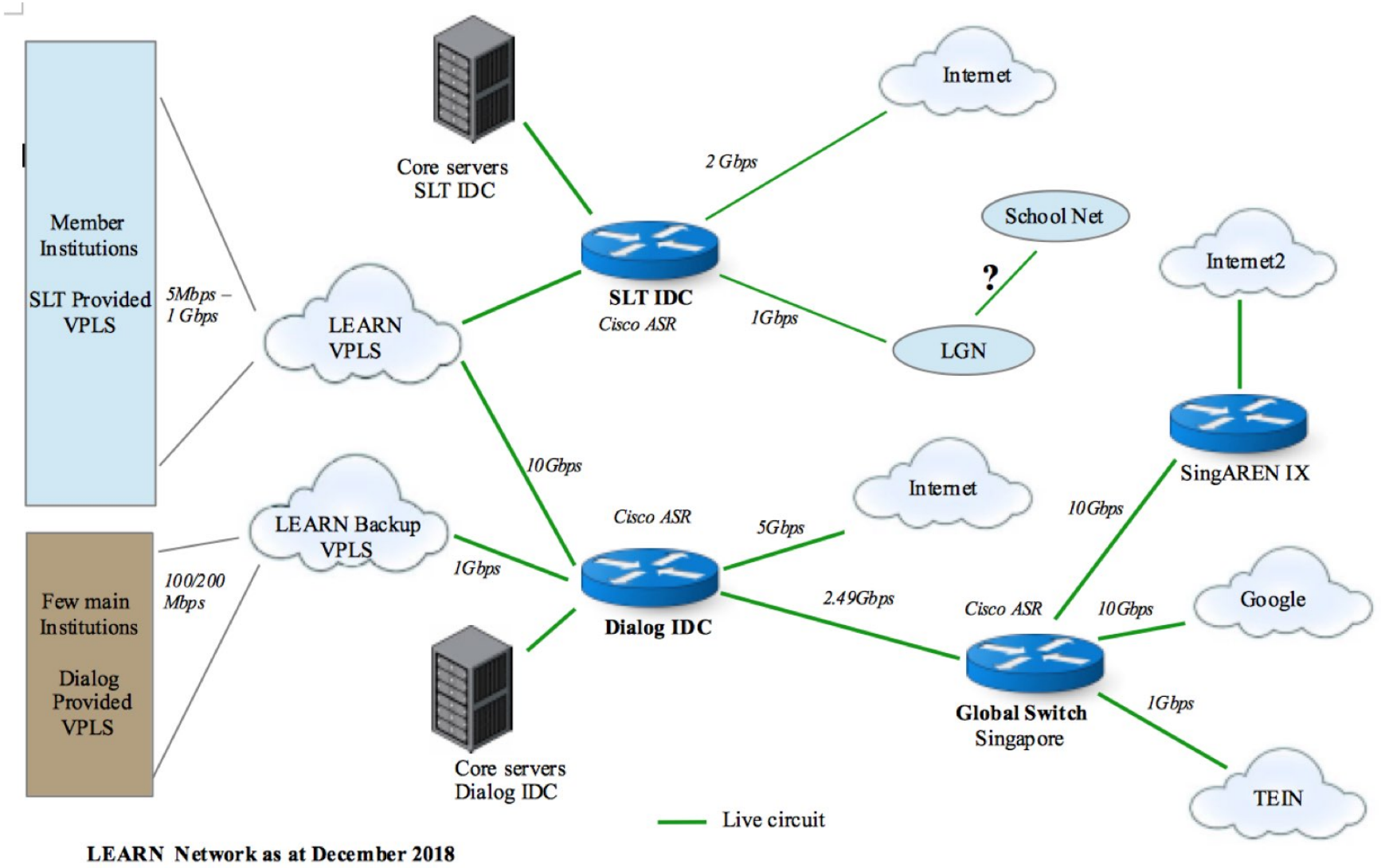
Information Technology Center

Network Operation Center
(LEARN)

Contents

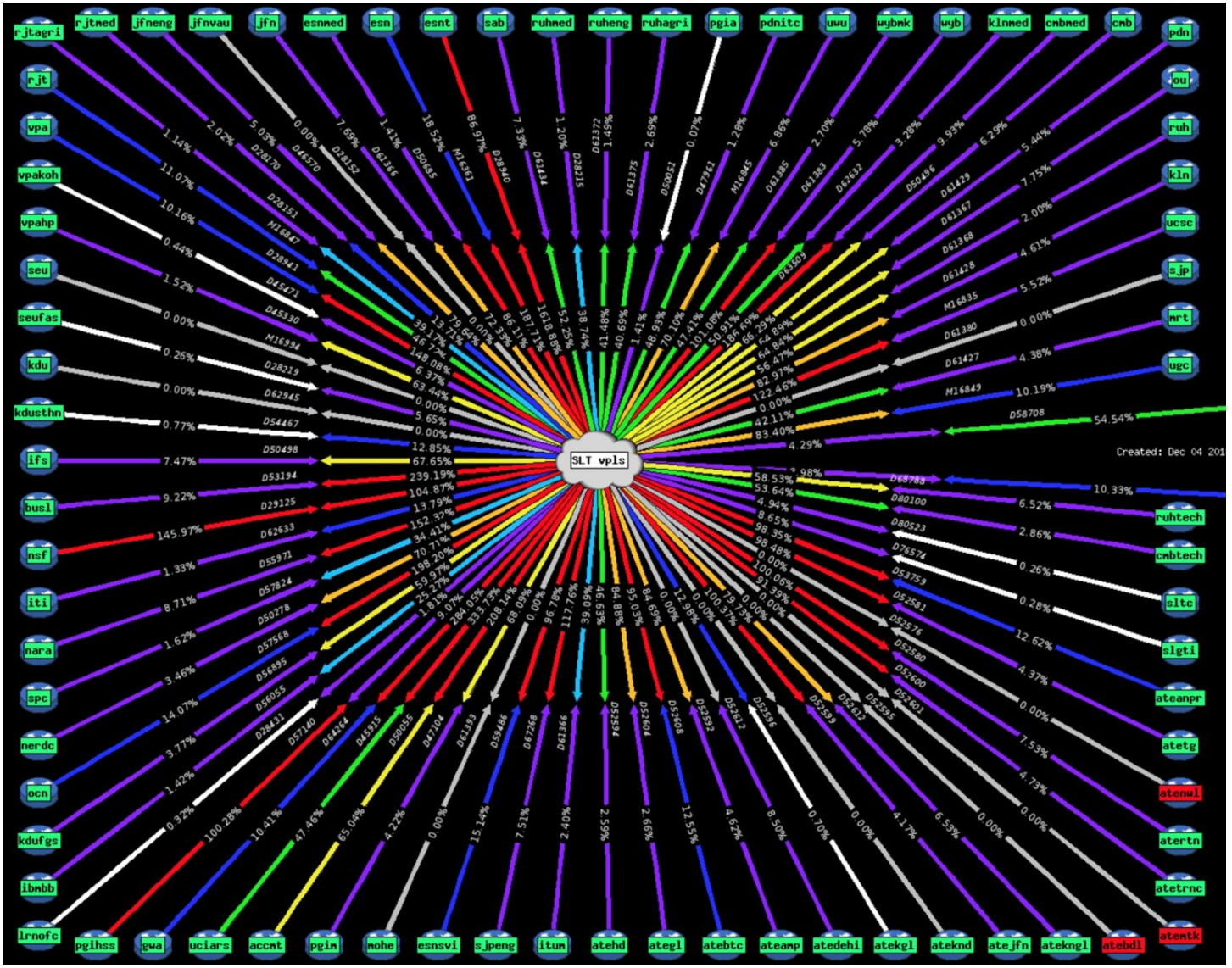
- LEARN Backbone & Outside Connectivity
- Current Traffic Utilization
- Backup Links
- LEARN Cloud solution
- LEARN TAC Service

LEARN Network – 2018 December

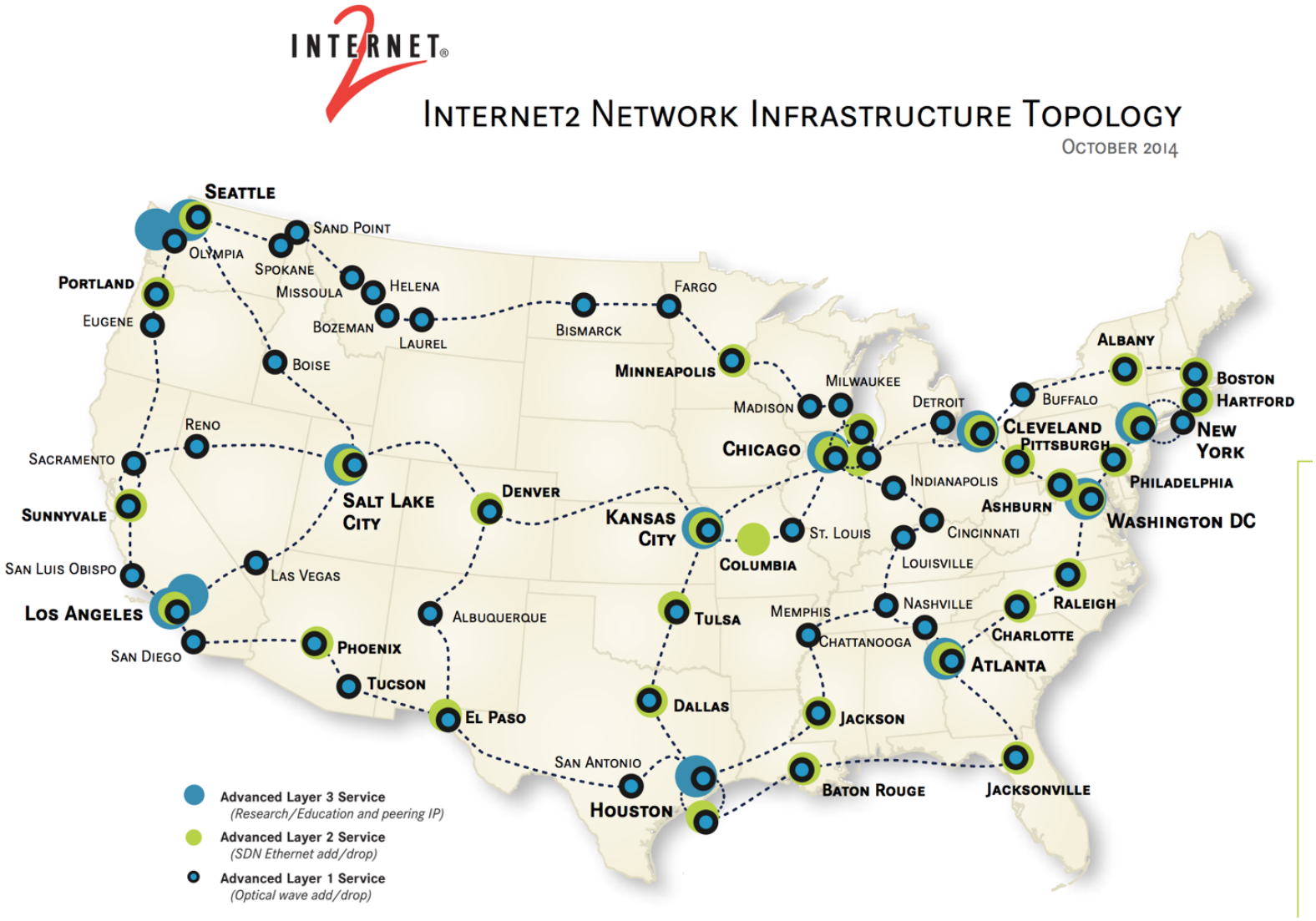


LEARN Network as at December 2018

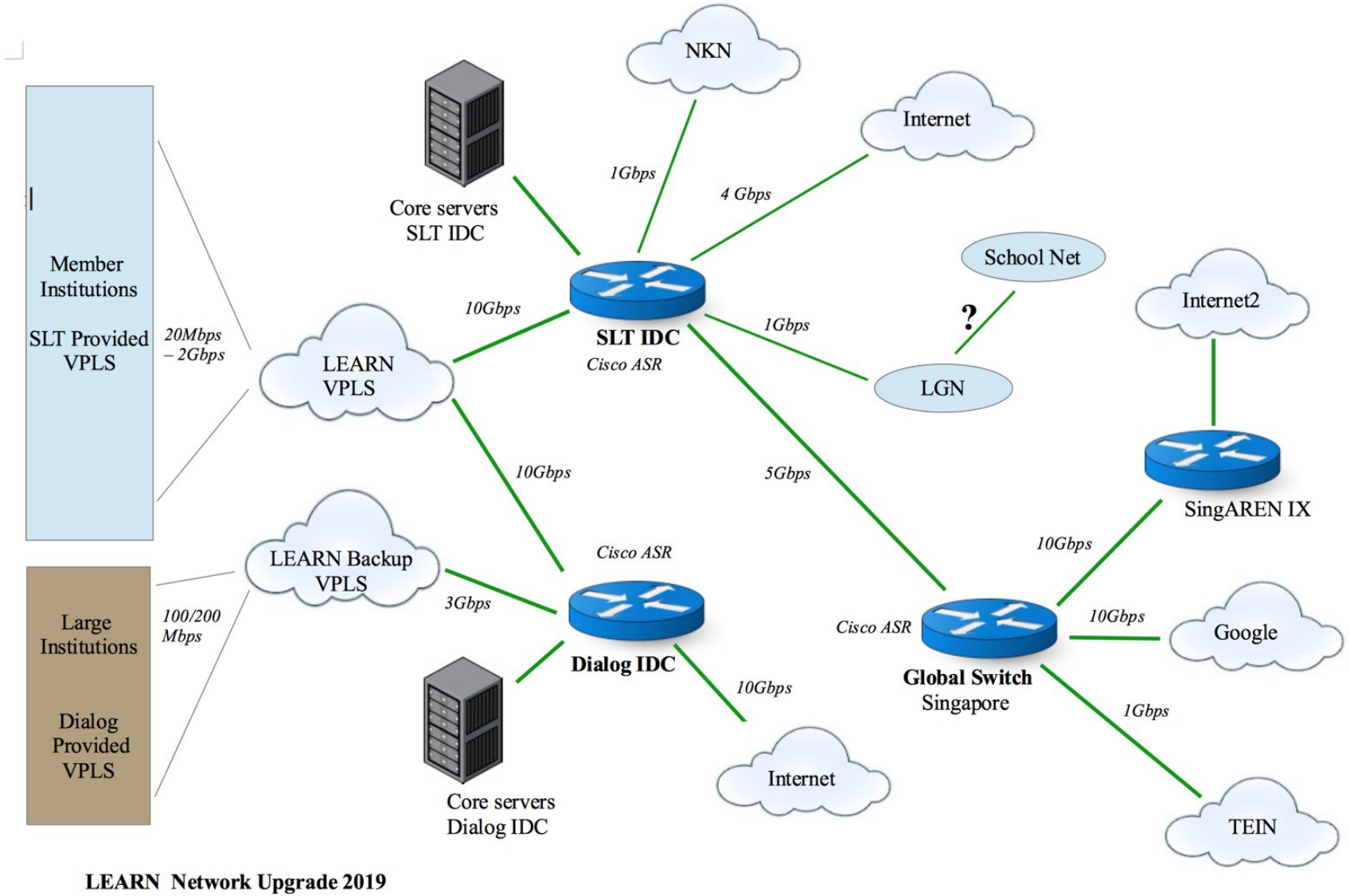
LEARN Backbone



Internet 2


INTERNET2
INTERNET2 NETWORK INFRASTRUCTURE TOPOLOGY
OCTOBER 2014
SEATTLE
SAND POINT
OLYMPIA
SPOKANE
PORTLAND
MISSOULA
HELENA
EUGENE
BOZEMAN
LAUREL
BISMARCK
FARGO
BOISE
MINNEAPOLIS
MILWAUKEE
MADISON
DETROIT
BUFFALO
ALBANY
BOSTON
HARTFORD
RENO
CHICAGO
CLEVELAND
PITTSBURGH
NEW YORK
SACRAMENTO
INDIANAPOLIS
PHILADELPHIA
SALT LAKE CITY
DENVER
ASHBURN
WASHINGTON DC
SUNNYVALE
KANSAS CITY
ST. LOUIS
CINCINNATI
COLUMBIA
LOUISVILLE
SAN LUIS OBISPO
LAS VEGAS
RALEIGH
LOS ANGELES
ALBUQUERQUE
TULSA
MEMPHIS
NASHVILLE
CHARLOTTE
SAN DIEGO
PHOENIX
CHATTANOOGA
ATLANTA
TUCSON
DALLAS
JACKSON
EL PASO
SAN ANTONIO
BATON ROUGE
JACKSONVILLE
HOUSTON
Advanced Layer 3 Service
(Research/Education and peering IP)
Advanced Layer 2 Service
(SDN Ethernet add/drop)
Advanced Layer 1 Service
(Optical wave add/drop)

LEARN Network – upgrade for 2020



LEARN Network Upgrade 2019

Backbone Upgrade

- Start from January
- Priority to those you have responded to the LEARN upgrade proposal
- Every institutional circuit is going be **double** with no additional cost
- LEARN provided router in your institutes may be upgraded
- Your assistance to the LEARN is important

Backup Links

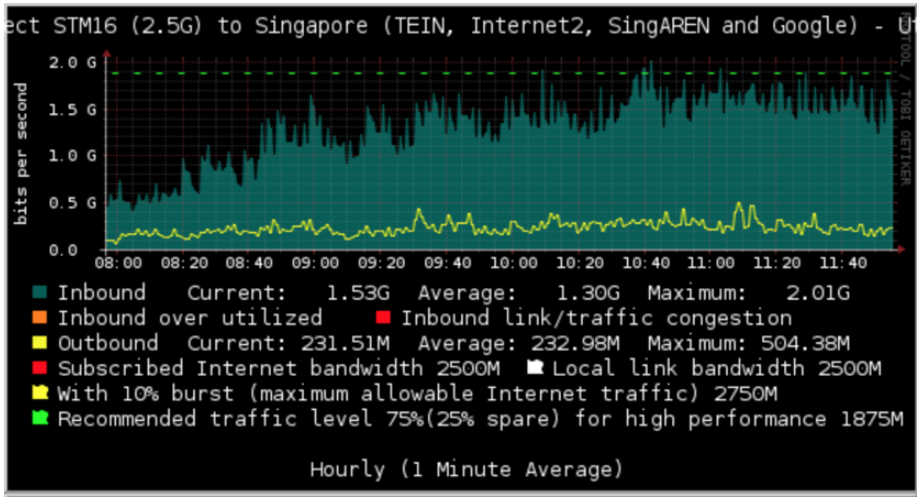
- To avoid single point of failure at the institutions
- Provide an active low bandwidth backup links (100Mbs, 200Mbps)
- New VPLS from a different ISP
  - New VPLS to connect institute through a complete independent physical network
    - Through Dialog fibers
  - Initially 4 institutions going to be connected at speed of 100Mbs or 200Mbps
    - UoM, PDN, KLN, SJP
    - Others are welcome to accept the given proposal, can be connected at any time
- Every campus owned a primary link over 300Mbps get a backup
  - > 300Mbs – get 100Mbs
  - > 1GMbs – get 200Mbs
  - It is free of charge

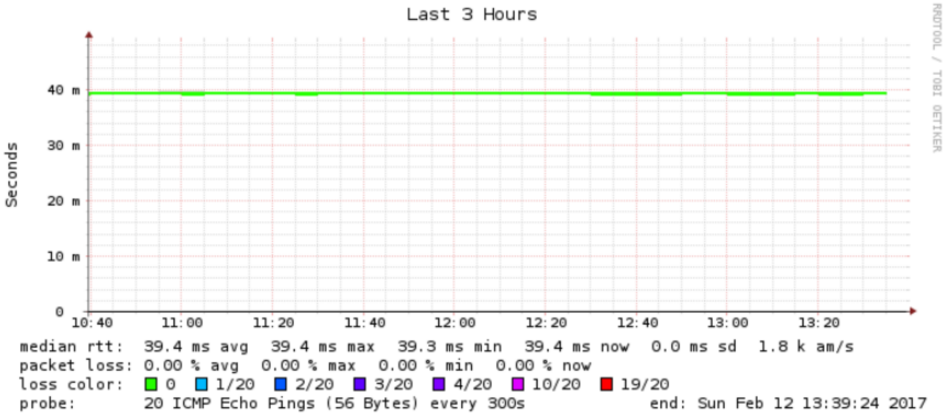
Backup Links Implementation Process

- Dialog team visit your institute for a survey
- You have to show them
  - termination location
  - fiber path deferent from your primary SLT fiber path
- Dialog will provide you a cable path map in written
- You have to get it approved from the institution
- Dialog lay the fiber
- LEARN will provide you the connectivity
- You can test it and connect to your network to use it in a way you interested.

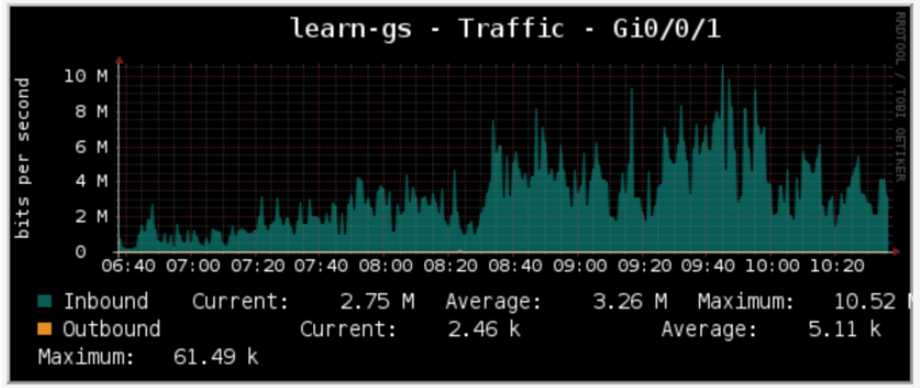
Circuits Utilization and Performance

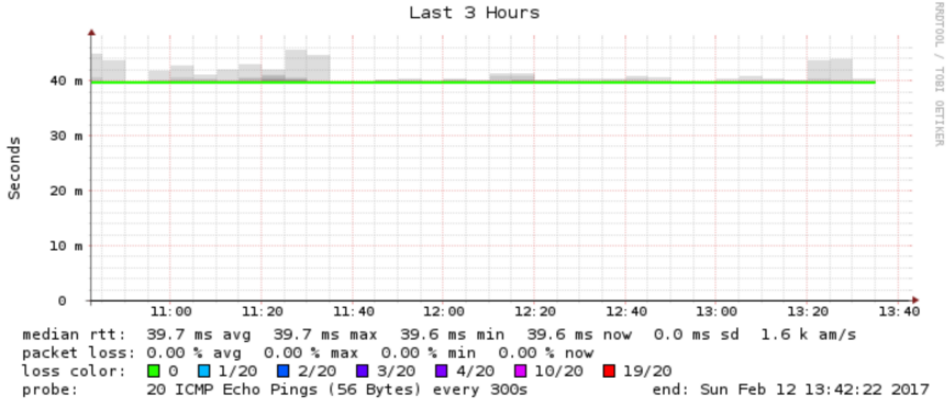
- LEARN – SG Circuit





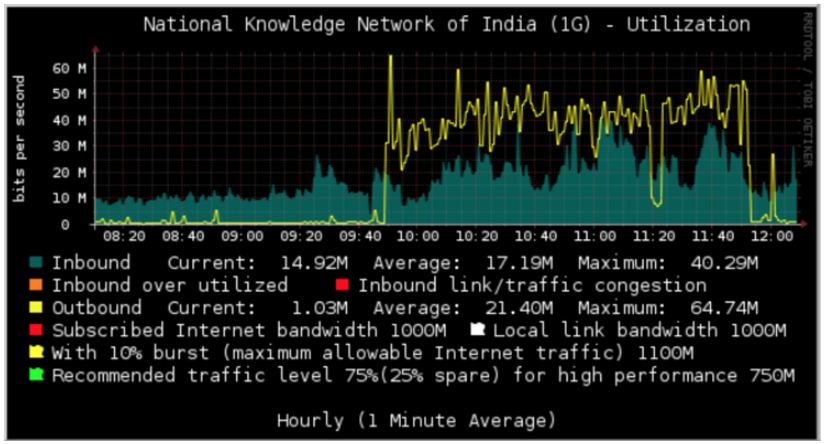
- TEIN





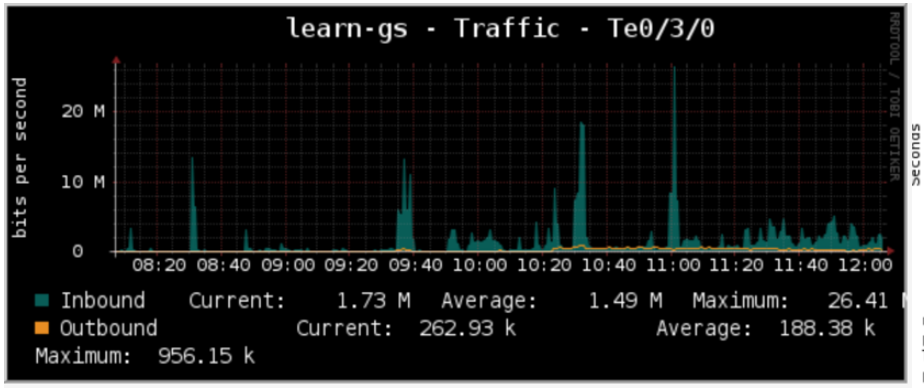
Circuits Utilization and Performance

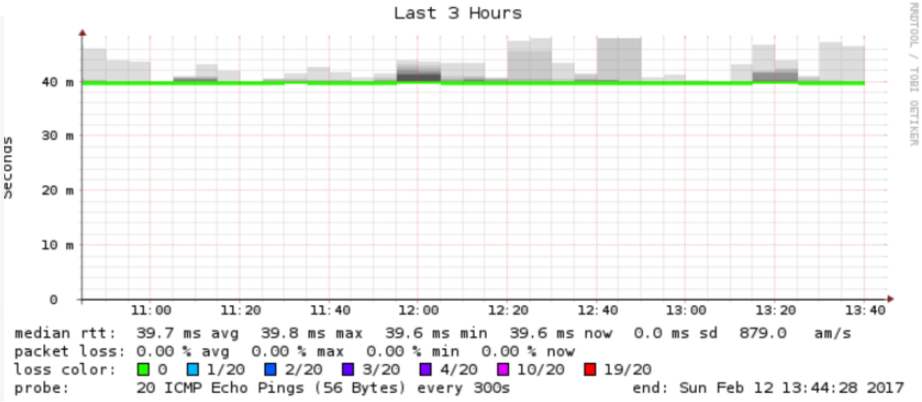
- NKN



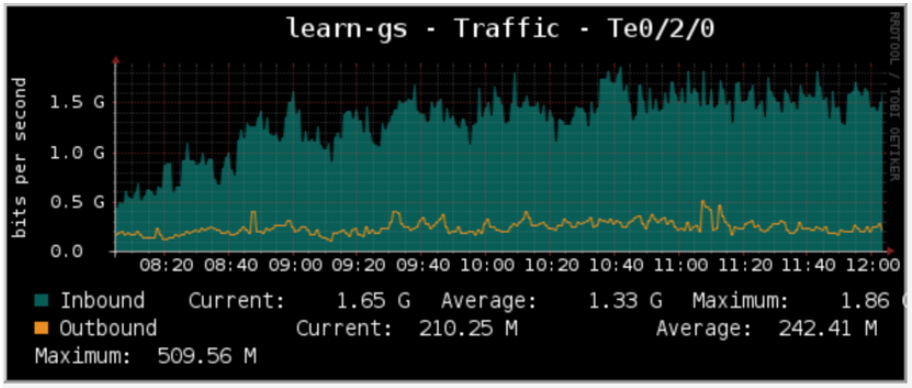
Circuit Utilizations and Performance

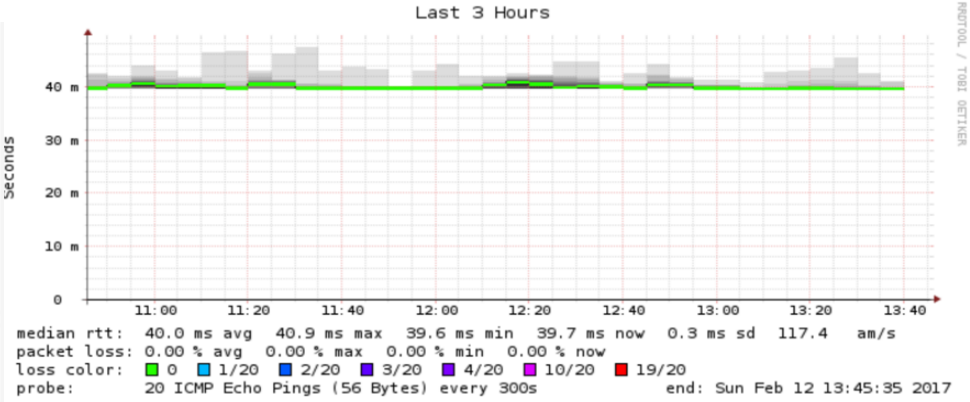
- SingAREN, Internet2, …..





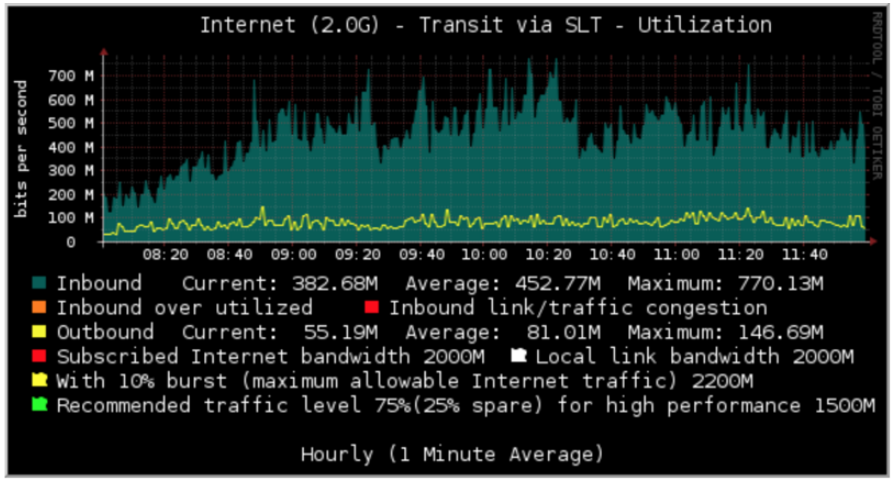
- Google

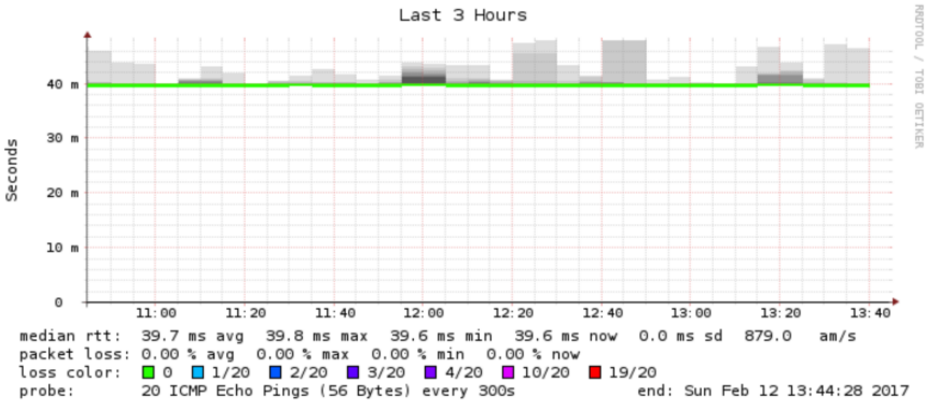




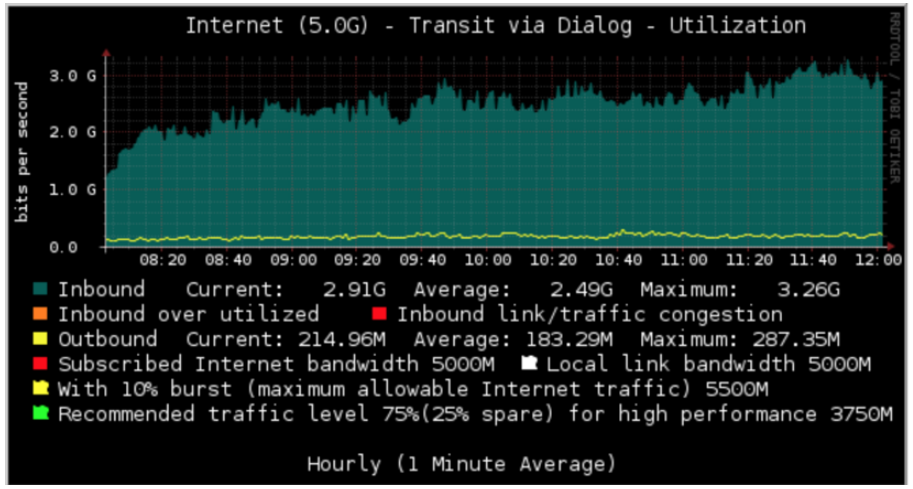
Circuit Utilizations and Performance

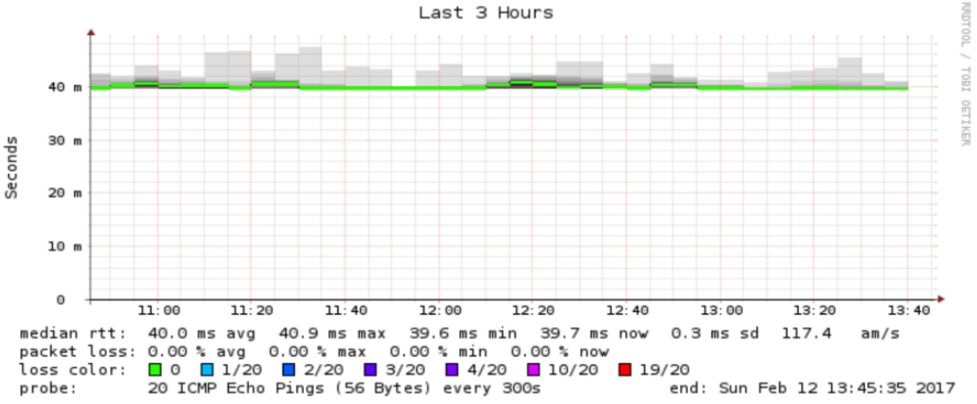
- SLT 2.0Gbps Internet Transit





- Dialog 5.0Gbps Internet Transit

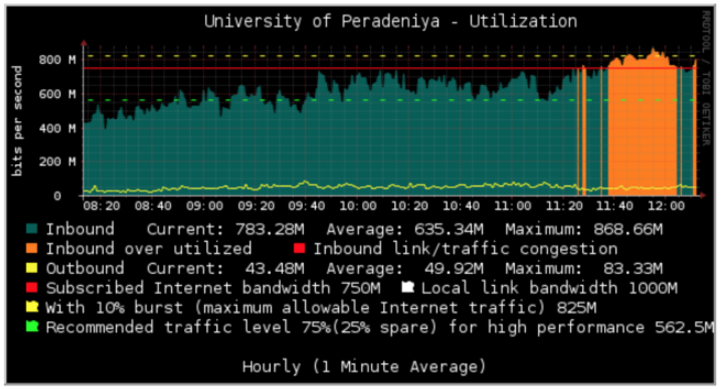




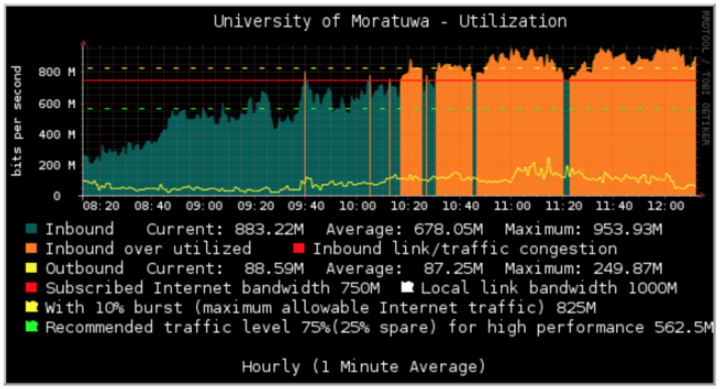
Institutional Circuit Utilizations

Thu Dec 06, 2018 12:13 pm

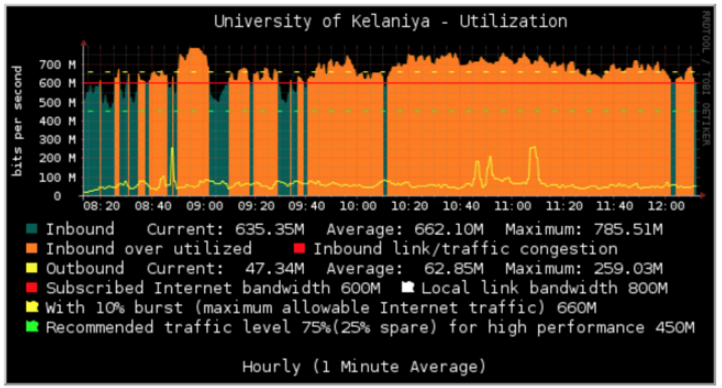
University of Peradeniya (D61429)



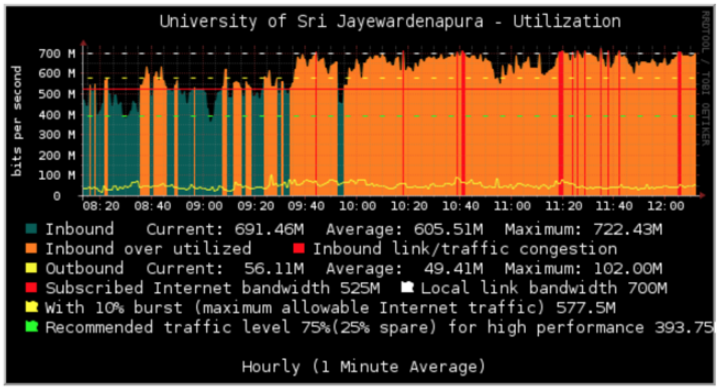
University of Moratuwa (D61427)



University of Kelaniya (D61428)



University of Sri Jayewardenapura (D61380)



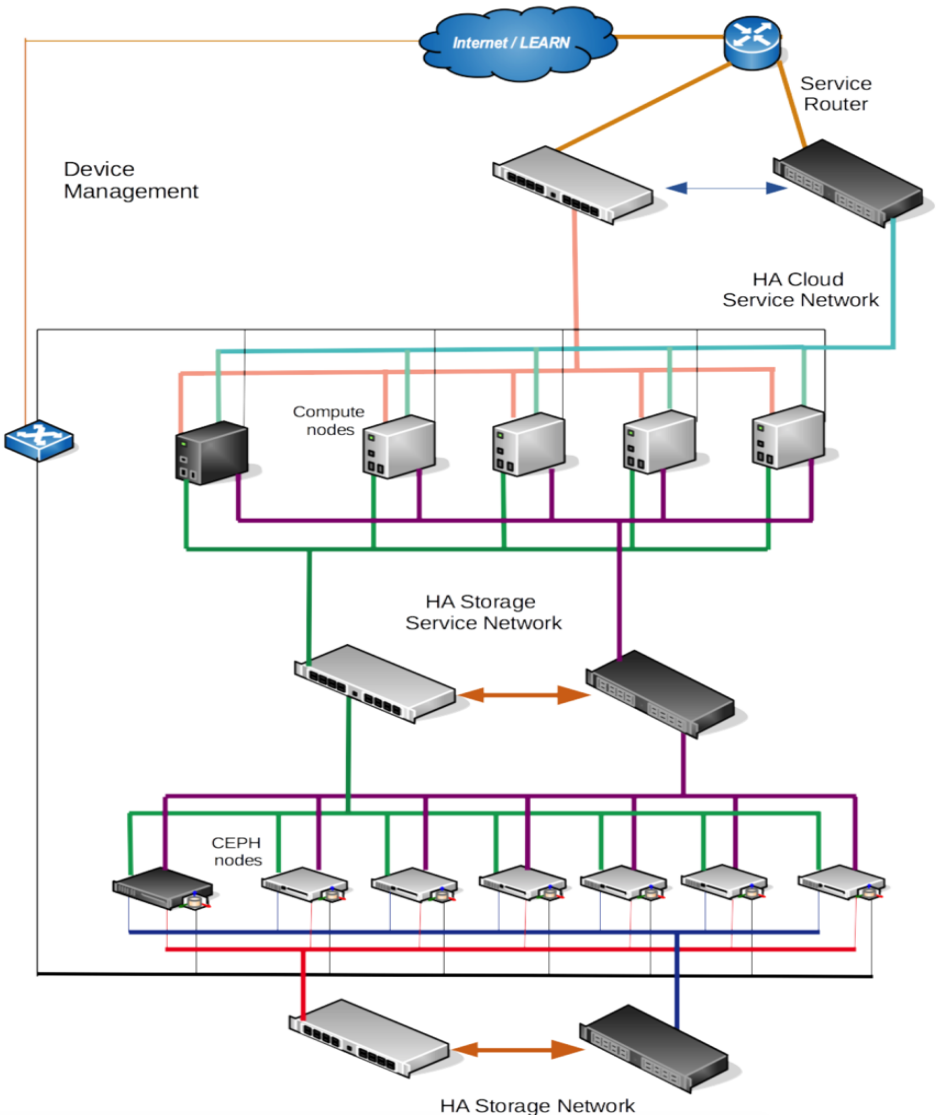
- https://ac.lk/traffic/vpls.php

LEARN Cloud – Objectives and Status

- Objectives
  - Hosting services (such as the web, LMS, mail, IPPBX, storage, etc.)
  - Disaster Recovery (remote location for data backup or replica of in-house applications)
  - High-Performance Computing (HPC) resources for researchers

- Status
  - The proposal has being approved
  - Around Rs. 60m for the hardware
  - Zero cost for software, free open source way
  - Need a talented engineer. LEARN looking for someone who can take the challenge

LEARN Cloud Architecture



DR ?

LEARN TAC

- LEARN Technical Assistance Center
  - To provide remote technical support to LEARN member institutes
    - LEARN may visit an institute not more than three times a year
  - How an institute be qualified to obtain LEARN TAC service
    - have a dedicated person who is in computer application assistance or higher level
    - have a Laptop or a PC with 3G/4G dongle and a mobile phone or a LAN phone for communication
  - Domain to be addressed
    - Assistance to develop institutional infrastructure
    - Design networks, provide technical specifications for them to prepare tenders
    - Remote configuration of network devices, servers which are used for network services (NAT, proxy, email, DNS, VOIP, Eduroam, monitoring)
    - Assistance to handle security incidence

LEARN TAC

- Domains not going to be touched
  - shall not do physical installation of cables and network/server/computer hardware
  - shall not be asked to involve in troubleshooting of servers where the institutional confidential/critical data are stored (for examples: LMS, MIS, Account system, etc)
  - It shall not develop web sites or software for institutions

- More interesting on
  - deployment of new technologies
    - IPv6
    - eduroam
    - VOIP

LEARN TAC during its first year

- Onsite help for NIFS in restructuring their network to include VLAN's and IPv6
- Onsite guidance in merging LEARN subnet with UoP network using pfsense in PGIHS, UoP
- SIP trunking in KLN
- Onsite guidance in designing campus network for Faculty of Technology, Ruhuna
- Guidance in installing eduroam in ITI, Faculty of Medicine- Ragama
- Guidance in installing IPv6 for ITI
- Guidance in resolving hacking attempts in multiple institutes

IPv6, Eduroam, Federated IAM status

Institute	VLAN	IPv6	Wireless	Eduroam	FederatedID
UGC	no	no	yes	no	no
University of Colombo	yes	servers+core	yes	no	no
Eastern University	yes	no	no	no	no
University of Jaffna	yes	servers+core	no	no	no
University of Kelaniya	yes	100%	100%	100%	Med.Fac only
University of Moratuwa	yes	100%	100%	100%	no
Open University of Sri Lanka	yes	servers+core	yes	yes	no
University of Peradeniya	yes	60%	Eng. Fac only	Eng. Fac only	no
Rajarata University	yes	servers+core	no	no	no
University of Ruhuna	yes	servers+core	Eng. Fac only	Eng. Fac only	no
Sabaragamuwa University	yes	servers+core	yes	yes	no
South Eastern University	yes	servers+core	no	no	no
Sri Jayawardenapura	yes	servers+core	no	no	no
Uva-Wellassa University	yes	servers+core	yes	yes	no
University of the Visual and Performing Arts	yes	servers+core	yes	yes	no
Wayamba University	yes	servers+core	no	no	no
Arthur C Clarke Institution for Modern Technologies	yes	servers+core	no	no	no
Bhiksu University of Sri Lanka	yes	servers+core	no	no	no
Buddhist and Pali University of Sri Lanka	yes	no	no	no	no
Industrial Technology Institute (ITI)	yes	no	yes	yes	no

IPv6, Eduroam, Federated IAM status

National Institute of Fundamental Studies (NIFS)	yes	75%	no	no	no
General Sir John Kotelawala Defence University	yes	no	yes	no	no
Ministry of Higher Education	no	no	no	no	no
National Aquatic Resources Agency (NARA)	yes	servers+core	yes	no	no
National Science Foundation (NSF)	yes	no	no	no	no
National Engineering Research and Development Centre (NERDC)	yes	no	no	no	no
Postgraduate Institute of Agriculture (PGIA)	yes	no	no	no	no
Sri Lanka Law College	no	no	no	no	no
Postgraduate Institute of Humanities and Social Sciences (PGIHS)	no	80%	no	no	no
National Centre for Advanced Studies in Humanities & Social Sciences (NCAS)	no	no	no	no	no
Informatics Institute of Technology (IIT)	yes	80%	yes	yes	yes
Institute of Surveying and Mapping	no	no	no	no	no
University of Vocational Technology (UNIVOTEC)	no	no	no	no	no
National Institute of Social Development (NISD)	no	no	no	no	no
Ocean University of Sri Lanka	no	no	no	no	no

Thank You

Senevi Herath, Network/Systems Manager, LEARN

Email: senevih@learn.ac.lk
noc@learn.ac.lk