

Lanka Education and Research Network

LEARN UPDATES

Status of Cloud and eduroam Deployment

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LEARN Cloud Deployment

- Physical servers
 - Core services were running 12 physical servers
 - DNS servers (primary, secondaries and resolvers)
 - email gateway for .ac.lk including spam filtering
 - VOIP gateway (kamalio)
 - Web servers
 - central configuration/data backup (bacula)
 - eduroam (flr.learn.ac.lk)
 - Network monitoring server
 - perfSONAR node
 - Flow monitor
 - LEARN office
 - asterisk IP PBX
 - account data base
 - Identity Management (LDAP)
 - institutional eduroam radius server

LEARN Cloud Deployment

- Difficulties with having lot of physical servers
 - core-located in a remote location, no frequent physical touch possible
 - remote console access, not easy to use IP KVM switches
 - cable management, power management
 - checking alarms
 - maintenance
- Virtualization (using VMs)
 - Easy to manage few machines
 - Cost effective, less use of power, less rack space
 - Better utilization of hardware resources
 - High availability
 - Failover
 - Hardware maintenance without service shutdown

LEARN Cloud Deployment

- LEARN initially tried OpenStack (with KVM, libvirt)
 - Failed because its high complexity
- LEARN next try was Google Ganeti (with KVM)
 - Easy to deploy in less time
 - Simple cloud (clustering) solution
 - Clear documentation
 - Management is also easy though it is in command line

LEARN Cloud Deployment

- Current Status

- There server solution

- 2T disk space , 48Gb memory and 2 CPU (6 cores) in each
- All core services are now on the Ganeti cluster
- DRBD replication for high availability (HA)
- Live migration
- Manual failover
- Remote VNC consoles
- Web console through Ganeti Web Manager

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- How could a NREN initiate
 - Just start with two servers, you may scale up later by adding new servers
 - Create VMs for non critical services first and move them to the cloud. You may get some experience during process. You may later move the critical services.
 - Define secondary for all VMs (DRBD replication)
 - Get Ganeti Web Manager for monitoring and remote web console
 - Use CLI for the cluster management
 - Documentation
 - A lot of documentation in the web
 - NSRC documentation is very good
 - <https://nsrc.org/workshops/2014/sanog23-virtualization/>

LEARN eduroam Deployment

- Everybody knows what eduroam is ?
 - is the secure, worldwide roaming access developed for the international research and education community
 - Hierarchical radius servers like DNS hierarchy
 - eduroam delegates authorization
- TEIN XeApp eduroam project
 - TEIN is going to provide support for NRENs to implement NRO service and institutional RA servers
 - Lead by AARNet
 - 7 countries selected
 - Bhutan, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka

LEARN Eduroam Deployment

- LEARN eduroam history
 - First implementation in 2012 August for APAN conference in Colombo
 - For international delegates
 - Only for the program venue
 - No institutional RAs implemented but partial NRO
 - After the conference, we completely forgot about the eduroam
 - Next effort few months ago
 - TEIN asked expressions of interest from NRENs join with XeApp eduroam project
 - Then we triggered and thought we should refresh previous eduroam setup
 - We went through the current documentation and build a single instance of eduroam FLR server (NRO)
 - We also found three voluntary institutional participants

LEARN Eduroam Deployment

- Current Status
 - Eduroam NRO
 - Single instance of FLR server
 - Peers towards etlr1.eduroam.org and etlr2.eduroam.org
 - Institutional RA servers and IDPs
 - Four institutions joined
 - LEARN office with LDAP
 - University of Keleniya with AD
 - University of Peradeniya with LDAP
 - Open University with AD

LEARN Eduroam Deployment

- Future Activity
 - Working together with XeApp eduroam project
 - Improve exist FLR to meet the requirement of eduroam compliance
 - Locally conduct a eduroam workshop for the member institution
 - Get the main campus joined

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- Radius Proxy Configuration for (NRO)

- radsecproxy.conf

- Peer towards top level servers

```
client etlr1.eduroam.org {  
    host 192.87.106.34  
    type UDP  
    secret .....
```

```
}  
  
server etlr1.eduroam.org {  
    host 192.87.106.34  
    type UDP  
    secret ..  
    statusserver on  
}
```

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- Define realms

- Other realms

- #Institutional realms*

- # Kelaniya*

- realm /@.*kln.ac.lk\$ {*

- server kln-ra*

- }*

- # Open University*

- realm /@.*ou.ac.lk\$ {*

- server ou-ra*

- }*

- realm /@.*.lk\$ {*

- replymessage "Misconfigured supplicant or downstream
server: uses known-bad realm in this federation!"*

- }*

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- Define realms
 - default realm at the end

```
realm *{  
    server etlr1.eduroam.org  
    server etlr2.eduroam.org  
}
```

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- Peer with institutional servers

```
server kln-ra {  
    host 192.248.24.21  
    type UDP  
    secret ...  
}  
  
client kln {  
    host 192.248.24.21  
    type UDP  
    secret ....  
}
```

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Thank You

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