How to Use Our Testbed ?

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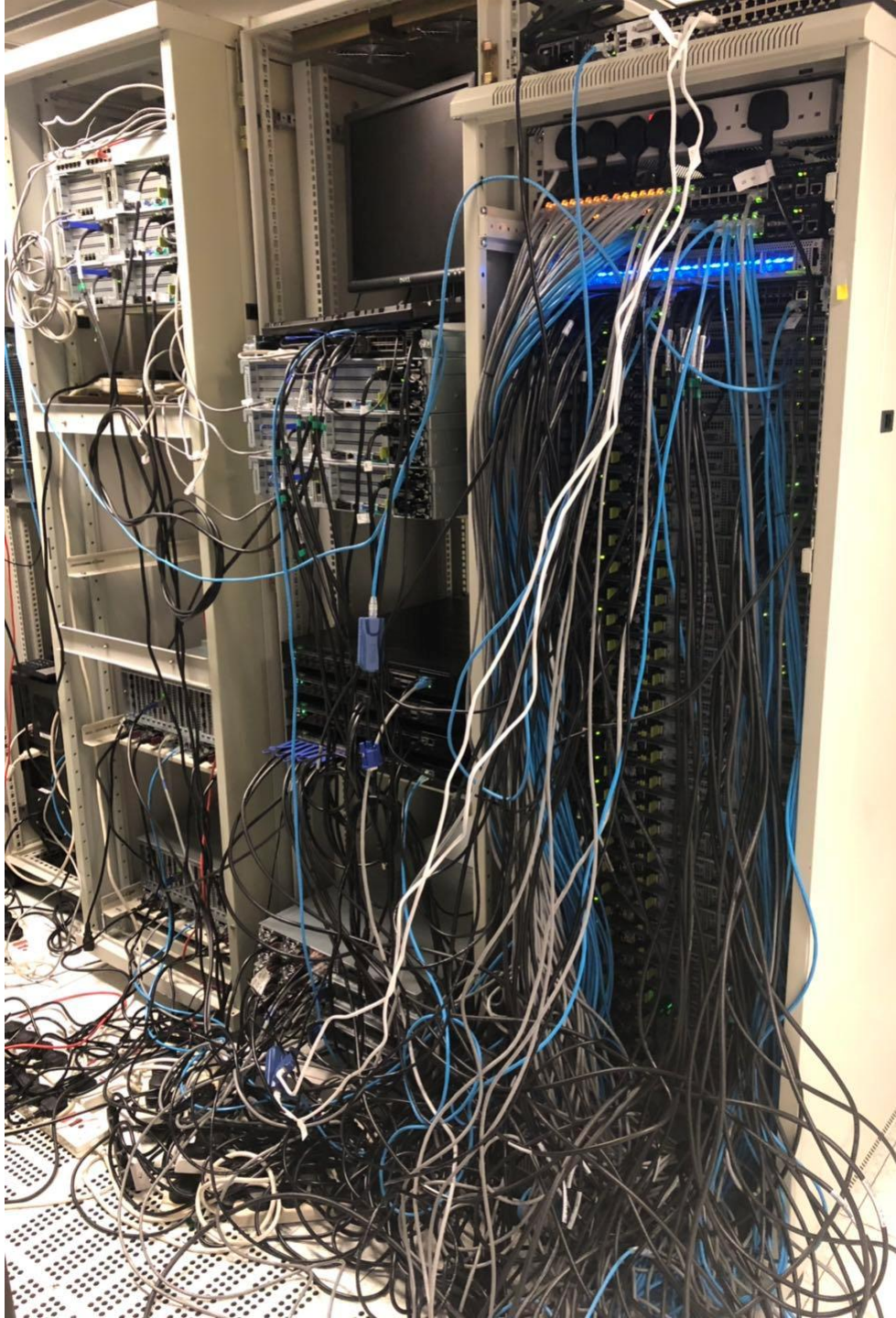
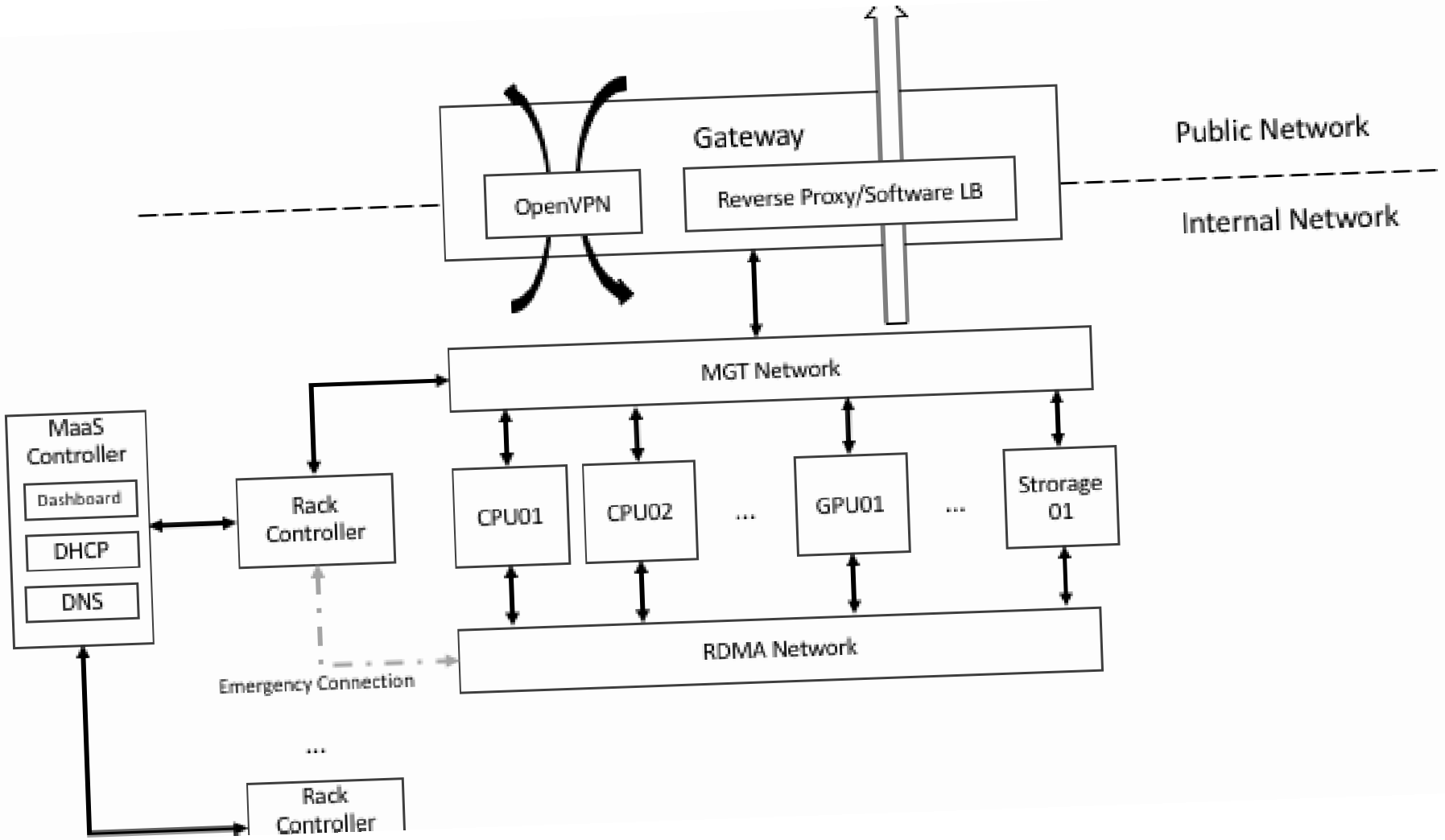
Brief Information

- We have many servers (CPU, GPU, Storage)
- We have many switches (Mellanox, EdgeCore, Barefoot Tofino)
- We have 2 clusters: high speed cluster (originally called Huawei cluster) and legacy cluster (originally called SING cluster, not finished yet)
- Located in Room 4217




Gateway
OpenVPN
Reverse Proxy/Software LB
Public Network
Internal Network
MGT Network
MaaS Controller
Dashboard
DHCP
DNS
Rack Controller
CPU01
CPU02
...
GPU01
...
Strorage 01
RDMA Network
Emergency Connection
...
Rack Controller

How to login

- VPN
  - Windows: OpenVPN Client
  - mac OS: TunnelBlink
  - Linux: What did you say ? Oh, you can ask Jingrong.

- VPN Configuration
  - Everyone will be given a configuration file
  - Do not give your configuration file to others, BIG BROTHER IS WATCHING YOU
  - Do not lose your configuration file 补办需要10元，充当下次团建经费

What does the VPN do ?

- Set a DNS server for you: 172.17.0.2
- Forward dedicated traffic to the tunnel
  - 172.17.0.0/24

- The VPN will not forward other traffic
- Do not use the VPN as an Internet gateway

How to use machines ?

- We provide Bare Mental as a Service (BMaaS)
- http://maas.maas
- Configure access key – Acquire machines – Deploy Systems – Login
- More complicated tasks: (please reach us via email)
  - Configure subnets
  - Configure virtual machines
- Why ?
  - Secure your environment. Avoid ‘Who has upgraded the gcc !!’, ‘Who changed the kernel parameter ???!!!’ …

How to use machines ?

- Disadvantages:
  - What if someone occupies the machines for a super long time ?

- ‘Who is using my machines’ http://who.maas
  - You can see who is using which machines
  - We have kindly put the email of the machine owner, and you can:
    - Negotiate with the owner if you can share some of the machines
    - Complain

MAAS | Machines | Devices | Controllers | Pods | Images | DNS | AZs | Subnets | Settings | aicloud | Logout

Machines 35 machines available

Add hardware

Filter by

- Status
- Owner
- Architectures
- OS/Release
- Tags
- Storage Tags
- Pods
- Subnets
- Fabrics
- Zones

Search machines

FQDN | MAC	Power	Status	Owner	Cores	RAM (GiB)	Disks	Storage (GB)
cpu01.maas	on	Ubuntu 16.04 LTS	chaoliang	24	64.0	1	2000.4
cpu02.maas	off	Ready		24	64.0	1	2000.4
cpu03.maas	on	Ubuntu 16.04 LTS	zhaoxiong	24	64.0	1	2000.4
cpu04.maas	off	Ready		24	64.0	1	2000.4
cpu05.maas	off	Ready		24	64.0	1	2000.4
cpu06.maas	on	Ubuntu 18.04 LTS	platform	24	64.0	1	2000.4
cpu07.maas	on	Ubuntu 18.04 LTS	platform	24	64.0	1	2000.4
cpu08.maas	on	Ubuntu 18.04 LTS	platform	24	64.0	1	2000.4
cpu09.maas	on	Ubuntu 18.04 LTS	platform	24	64.0	1	2000.4
cpu10.maas	off	Ready		24	64.0	1	2000.4
cpu11.maas	off	Ready		24	64.0	1	2000.4
cpu12.maas	off	Ready		24	64.0	1	2000.4
cpu13.maas	on	Ubuntu 16.04 LTS	shuihai	24	64.0	1	2000.4
cpu14.maas	on	Ubuntu 16.04 LTS	shuihai	24	64.0	1	2000.4
cpu15.maas	on	Ubuntu 16.04 LTS	shuihai	24	64.0	1	2000.4
cpu16.maas	on	Ubuntu 16.04 LTS	shuihai	24	64.0	1	2000.4
cpu17.maas	on	Ubuntu 16.04 LTS	shuihai	24	64.0	1	2000.4
cpu18.maas	on	Ubuntu 16.04 LTS	shuihai	24	64.0	1	2000.4
cpu19.maas	on	Ubuntu 16.04 LTS	shuihai	24	64.0	1	2000.4

Who is f*** using my machines ?!

If you have any questions, please contact Qinghe

Name	Status	Owner	Mail
cpu01.maas	Deployed	chaoliang	czengaf@connect.ust.hk
cpu02.maas	Ready	None	I mean, 'None' has no email, right ?
cpu03.maas	Deployed	zhaoxiong	zyangas@connect.ust.hk
cpu04.maas	Ready	None	I mean, 'None' has no email, right ?
cpu05.maas	Ready	None	I mean, 'None' has no email, right ?
cpu06.maas	Deployed	platform	chunhai@clustar.ai
cpu07.maas	Deployed	platform	chunhai@clustar.ai
cpu08.maas	Deployed	platform	chunhai@clustar.ai
cpu09.maas	Deployed	platform	chunhai@clustar.ai
cpu10.maas	Ready	None	I mean, 'None' has no email, right ?
cpu11.maas	Ready	None	I mean, 'None' has no email, right ?
cpu12.maas	Ready	None	I mean, 'None' has no email, right ?
cpu13.maas	Deployed	shuihai	shuaa@cse.ust.hk
cpu14.maas	Deployed	shuihai	shuaa@cse.ust.hk
cpu15.maas	Deployed	shuihai	shuaa@cse.ust.hk

Different machines

- CPU01-05, GPU01-02, Storage01-05 are connected to the same switch via 100Gbps links (We will connect more machines together to ensure at least on port of the machine is connected together)
- GPU01-GPU02, each has 4 1080Ti GPUs and 1 NVMe
- k40m01-k40m04, each has 4 k40m GPUs
- Storage01-Storage04, each has 1 NVMe
- Except for CPU06-CPU09, all machines have 1 100Gbps NICs

Deploy OSes

- 2 Different OSes
  - Ubuntu 16.04
  - Ubuntu 18.04

- If you deploy 16.04, the Mellanox OFED will be deployed at the same time
- If you deploy 16.04 and your machine has an interface named ‘rdma0’, PFC & ECN will be automatically configured

IP address or domain name ?

- By default, all machines get auto IP addresses (Please do not change)
- If you want your machines to have some specific IP addresses, please contact us
- We prefer use domain names
  - ping cpu01.maas
  - ping rdma0.cpu01.maas

Important notes

- After you finish using your machine, please release them
  - Please choose erase disks + quick erase
  - All your data will be erased, please BACKUP YOUR DATA BY YOUSELF

- If you encounter any problems, please ‘Mark Broken’

Do we have shared storage ?

- Yes. We are planning to build a shared storage
  - with at least 2 replica
  - supports S3

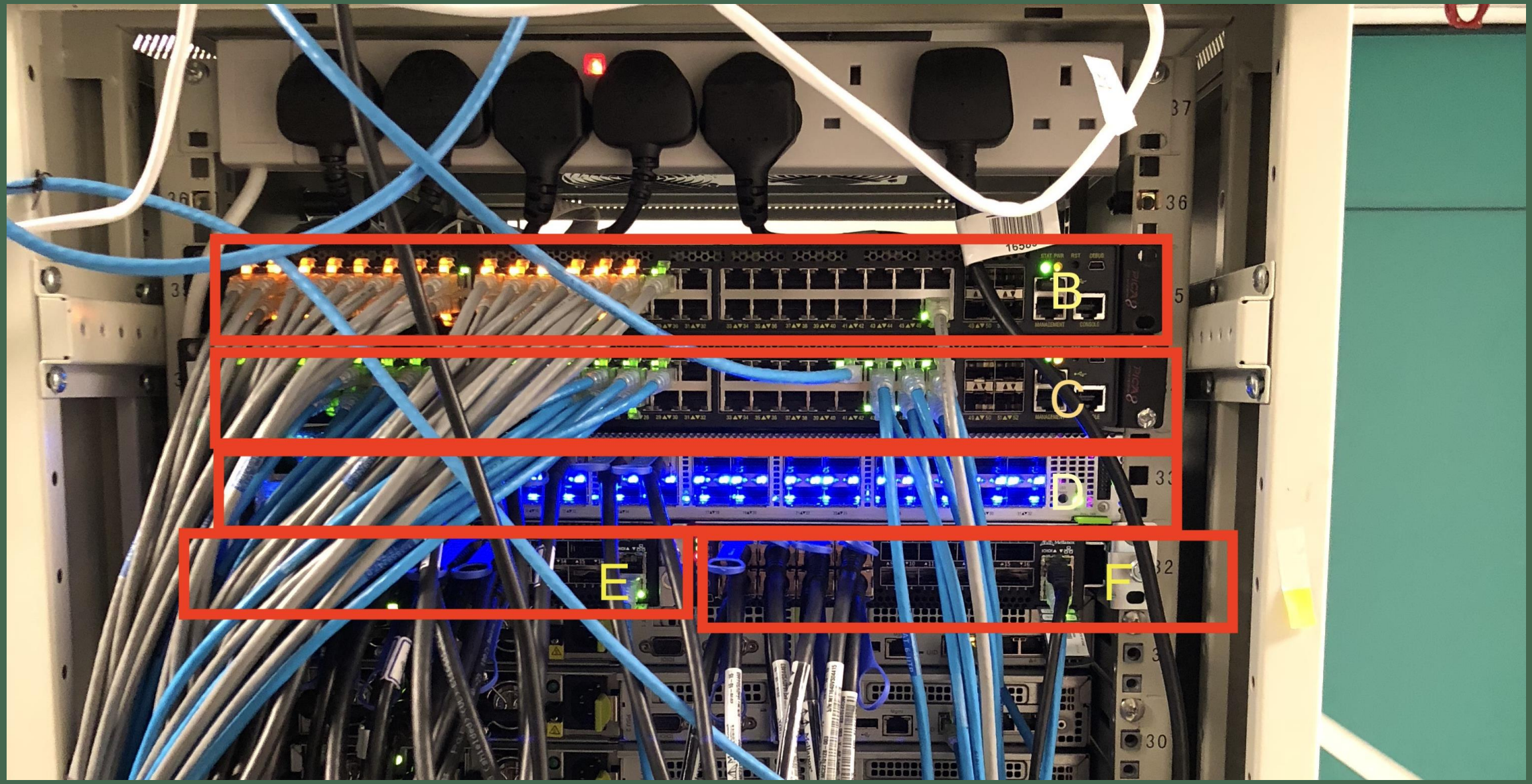
- BUT!! You should keep your own data safe even if we have a shared storage with data replica
  - Do not reply on any technics to ensure your data safety
  - Do not reply on others to keep your data safe
  - You are always responsible for your own data

Demo

How to use switches ?

- 2 Mellanox 100Gbps switches, 1 switch is under repairment
- 1 Mellanox 40Gbps switch
- 4 EdgeCore 100Gbps switches with Microsoft SONiC
- 1 Barefoot Tofino 100Gbps switch with ONL
- Several 1Gbps/10Gbps Ethernet switches

- If you want to use those switches, please reach us via emails


B
C
D
E
F

Mellanox TECHNOLOGIES

Mellanox Onyx MSN2100 Management Console

Host: mellanox.maas **User:** admin **Logout**

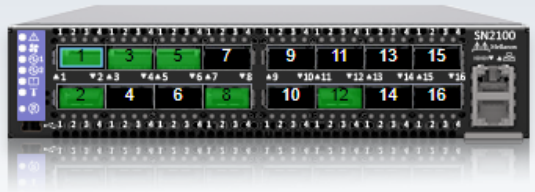
Standalone

Setup | System | Security | Ports | Status | VPI Cpblty | VPI Cpblty | ETH Mgmt | IP Route | Gateway | Save

Ports Information

Product Documents

- Ports
- Phy Profile
- Monitor Session
- Telemetry



Port Info

Port number :	1	**Mac address :**	50:6b:4b:8a:10:98
Port type :	ETH	**MTU :**	1500 bytes
Port description :		**Flow-control :**	receive off send off
Admin state :	Enabled	**Actual speed :**	100 Gbps
Operational state :	Up	**Auto-negotiation :**	Enabled
PFC admin mode :	On	**Switchport mode :**	access
Last clearing of counters :	Never	**PFC operational mode :**	On
60 seconds ingress rate :	8 bits/sec, 1 bytes/sec, 0 packets/sec	**Threshold Level :**	N\A
60 seconds egress rate :	320 bits/sec, 40 bytes/sec, 1 packets/sec		

Port Counters

Clear Port 1 Counters

RX packets :	7291181482	**TX packets :**	7314170692
RX unicast packets :	7291181263	**TX unicast packets :**	7308005966
RX multicast packets :	180	**TX multicast packets :**	2077089
RX broadcast packets :	39	**TX broadcast packets :**	4087637
RX bytes :	7854726213127	**TX bytes :**	7874486931150
RX error packets :	0	**TX error packets :**	10858
RX discard packets :	0	**TX discard packets :**	937
RX pause packets :	4	**TX pause packets :**	0
		TX queue depth TC0 :	0
		TX queue depth TC1 :	0
		TX queue depth TC2 :	0
		TX queue depth TC3 :	0
		TX queue depth TC4 :	0

Demo

How to change topology ?

- Please send us your detailed plan via email
- We will review it since changing topology may affect many people

Acknowledge

- Jiacheng
- Qinghe
- Jingrong
- Gaoxiong
- Justin
- Wenxin
- Chaoliang
- Shuihai

Any Questions ?

Useful links

- MaaS: http://maas.maas
- Who: http://who.maas
- KVM: http://kvm.maas
- Notebook: http://notebook.maas

- Guide: https://github.com/HKUST-SING/Equipment-SINGLab/blob/master/Cluster-HKSTP-Guide.md
- Installation notes: https://github.com/HKUST-SING/Equipment-SINGLab/blob/master/Cluster-HKSTP.md