ASGC site report

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Academia Sinica Grid Computing

ASGC site report

- Facility update

- Network(WAN) update

- Activities/events update for Grid/Cloud/HPC

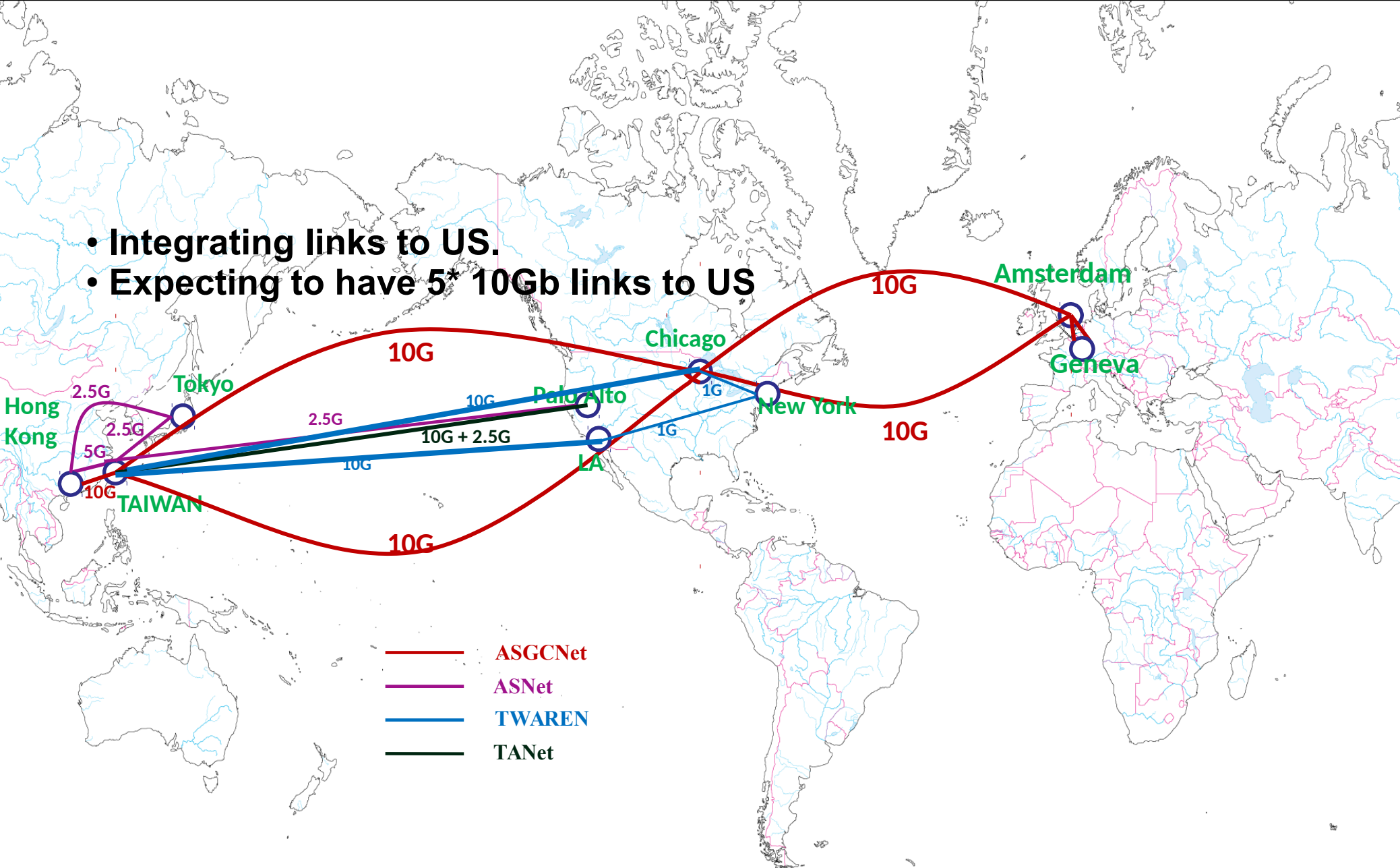- Software collaboration

Facility update

- Still targeting high denisty solutions because the rack space is pretty tight in our DC.

- Battery solution is becoming our basic requirement for new server procurement.

  - Both Supermicro and HP offers such solution.

- IB clusters are growing.

  - QDR(40Gb) : 3200 cores

  - FDR(40/56 GB): 2160 cores
    - Another 2208 cores are coming with Supermicro battery solution: SYS-6028TP-HTR

- Over 1152 cpu cores(dual core platform) have been decommissioned:

Taiwan Global R&E network

- **Integrating links to US.**
- **Expecting to have 5* 10Gb links to US**

Amsterdam

Geneva

Chicago

10G

Tokyo

Palo Alto

New York

Hong Kong

10G

2.5G

2.5G

2.5G

1G

10G

5G

10G + 2.5G

1G

10G

LA

10G

TAIWAN

10G

10G

10G

ASGCNet
ASNet
TWAREN
TANet

IPv6 Deployment

- We finally made it
  - After a long fight with our new Brocade router...
- Have established the BGP peering sessions
  - CERN, ESNET, GEANT, APAN-JP
- Enabling the perfSONAR Ipv6
  - Just need to configure ipv6 DNS.

SDN Deployment

- Have deployed SDN enabled router around the world.

  - Brocade MLXe-4 & MLXe-8

- One collector server directly connected to the each router

  - Design to collect the s-flow network information
  - Try to make use of those s-flow data as reference for SDN controller.

- Deploy the SDN controller OpenDaylight at ASGC DC.

  - SDN is still in R&D state.

Grid Activites

- Network is still our major problem for world wide grid.
  - Cisco N7K core switch has potential issue which would cause network performance drop to everywhere but local data center.
    - Its design is grouping 4 ports to share one buffer, which is not enough in certain condition.
      - e.g. long distance requires big tcp buffer, but big tcp buffer will make port buffer full quickly.
  - It's a bit hard to identify this issue, because everything is just fine but long distance transfer.
  - Thanks ESnet people for helping us to figure it out.
- Trying to reconnect disk server directly to router
  - Brocade router line card offers dedicated port buffer.

Cloud service update

- Openstack Kilo
  - 128 hypervisors (2256 cores).
  - Upgrade plan to Newton is coming.
- The usage of docker container is growing
  - It's good for CI.
  - It's also convenient for some batch jobs.
    - In most of cases, user doesn't have to install their applications to our cluster.
    - And they can get bare-metal performance.
  - Couple production services are hosted by docker container.
    - e.g. ELK, some condor head nodes.
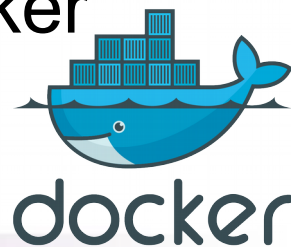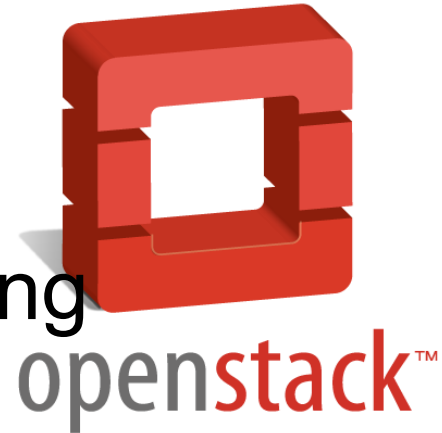
HPC Power saving

- There are some old and energy hungry IB clusters
  - Jobs will only go there when the other queues are full.
- There are also some clusters not always busy.
  - Some of them are dedicated to certain applications, so, it's shame that we can't contribute them to WLCG...
- Of course, they are still consuming some power when there is no job running.
  - It wasn't a big deal until these days, as we are now in green DC era.
- We are trying to deploy a mechanism to automatically:
  - Turn off such worker node when there is no job coming
  - Turn on them when jobs are coming.
  - PoC is done, deploying it as pre-production service.

Software collaboration

- Keep collaboration with Atlas panda team to evolve our DiCOS software.

- Collaborating with STARLight on SDN and DTN(data transfer node)

  - We hope DTN can be a little bit helpful to solving long distance transfer issue.

  - Integrating openstack Ironic + SDN

    – Don't follow openstack neutron. :)

Software collaboration

- Collaborating with University of Chicago on Parcel and BioInfometic activities.

  - Parcel is based on UDT which can be a solution to solve long distance transfer issue...

    - We can easily rearch 700MB/s to U.C by single 10Gb link .

  - Also make use of our DiCOS system to support their bioinfo activities:

    - RNAseq

    - Mutation analysis for Cacner.

- Collaborating with our local Institute of Statistic on Financial risk assessment.

  - Modeling and MC.

ISGC 2017

- International Symposium on Grids and Clouds (ISGC) 2017
  - CALL FOR PAPERS
  - 5 ~ 10 March 2017, Academia Sinica, Taipei, Taiwan
  - http://event.twgrid.org/isgc2017
  - Looking forward to seeing you in Taipei. :)

Thanks a lot!