OARtech Meeting
August 11, 2004

Introduction Question: What is your school doing for this fall's student network registration? How will you deal with MS's XP service pack 2's firewall on default?

Miami – Using Perfigo for registration, no registering mac addresses at this time.
Denison – Using Bradford Manager, Blue Socket on wireless, register all mac addresses. Don't know what our group is doing for the XP firewall.
Ashland – Register mac addresses using Netreg – not doing anything at this time on the firewall.
OSU – Don't know what they are doing with XP firewall. They have found that there is a very organized group of hackers interested in high performance computing.
University of Dayton- Don't have a strategy for XP Firewall. They are using Bluesocket for wireless and are coming up with their own version of quarantine with Cisco URT, and scanning.
Wright State – They are not doing network registration. Have been doing ISS evaluations. They are trying to formalize a security strategy by reorganizing all servers into secure subnets and getting another firewall to handle the server segments. They also register servers on campus. All non-standard ports will be blocked by December 1st on non-registered systems. They are developing an incidence response policy and implementation.
Sinclair CC – They rolled out MAC EPO, micro SUS for patches, and Intercept from McAfee. They use ASM from Interasys for IDS port policy implementation.
Mount Union – <missed it, sorry>
University of Northwest Ohio – Students use a third party vendor for internet access. They are looking at several solutions for bringing them onto the campus network. They segment off the student network. The XP solution they are currently looking at employing group policy to force systems to their use their policy.
Case Western – They are looking at Cisco's NAC

Anyone using 802.1x? One school indicated that they were requiring it for wireless access. They use all Interasys access points. Another non-residential campus said they are using it on the wireless side and will begin using it on the wired side.

OARnet Updates
Christine Darcy – Newest OARnet engineer. She will present a demonstration of a new OARnet Network Portal.

The portal is a simple website for all academic customers and is maintained by NOC Engineers and Support Center Staff to provided up-to-date info on OARnet

provided network tools.

Go to http://portal.oar.net username oarnet <<please contact the support center for the password>>

The portal provides a centralized gateway for technical advances, publishes and distributes utilities, and provides an FAQ area. There are 3 sections – Statistics, Networks Status, Utilities and Projects. The statistics portions has links to StatScout and its' server user and startup guides. The Network status has the netflow devices, and notices page as well as some documentation on Netflow. They are interested in feedback on other items that could be put here. Utilities and projects page has links to working OARnet networking tools and they will add tools as they become available.

This is a work in progress and they are interested in comments and suggestions on what else would be beneficial. They are looking at implementing a better authentication.

She showed the web page portal. Training slides from StatScout are available on the web site.

StatScout
There is a startup guide. Network monitor console comes up and the guide shows the screens for working looking site statistics. Remember as you bring us stats to look at times, and scales based on the type of statistics you are requesting and the type of line (and if it is capped) you have.

Netflow
Not available for all customers. Currently they contain data on I2 sites. However, the new network will have netflow boxes in all pops. So they will be gathering statistics for all traffic. You are able to see the top talkers using this tool.

Linda Roos
Is this what you are looking for in a "one stop" place for tools?

What about a weather map? The server they had was an old one and is broken at this time.

Feel free to send mail to the OARtech list to discuss anything that might be needed.

Does any site use netflow on their campus? Several use it some in just troubleshooting some with actual daily reports.

Paul Schopis

Third Frontier Network

TFN Optical layer is scheduled for completion September 2004.
The turn-up targets will depend on the last mile option. The Lambda provisioned for School Net is waiting for funding with the new capital budget.

Currently 41/42 fiber spans characterized.

All routers are installed. Rings 5, 4, 0, and 3 are lighted and tested. Ring 0 will be in production this week.

Ring 2 is to be installed the last week of this month. Ring 3 and 1 targeted for test and acceptance by beginning of September. He showed a schedule for equipment installation at the schools that are getting new equipment. Because of delays in installation and equipment they have decided to bring up the network in sections. The first section to come up first is ring 0 since all other rings will be using it. That will come up this next week during the maintenance window. This will be the first production traffic on the new network. They will not be taking down the old lines until they are sure the new lines are up and stable.

The map is available on the TFN web site.

He talked about a few things that have caused delays. They had to reorder some equipment because of information that came out of the fiber characterization. They had to reorder equipment based on Cisco configuration upgrades. They had to reorder equipment because of a change in the local ring configuration. They had some installation and turn-up problems. They also had delays in the delivery of equipment from the manufacturer.

Things are changing rapidly on this project so the best method of keeping track is to watch the TFN website and to access the ePMO via the SBC ePMO website. Contact OARnet if you wish to have access.

During the next few weeks, OARnet will be doing more work during the maintenance windows to bring things over to the new network.

They are working with SBC to roll current customers that will be staying with SBC into the new contract with lower rates.

Linda Roos
They have moved forward with the new SBC Contract. She will be sending updates as things move on.

The Joint Techs conference was held here in July. They had good participation and it was very successful. It was video conferenced and had wireless access.

Next Osteer is October 28th.

There was a question from the floor on software contracts. Linda said they would find out more information and send it to the list.

Patty Vendt went to Budepest for a security conference. She went to an internet cafe and found the connectivity was very fast. A traceroute showed it going to Wright State via I2 lines through the European university. There has been another mailing list started up for the XP2 rollout to universities. Patty will send the information to the list.

Designing High-performance Ethernet networks for cluster and GRID Computing
Mr. Sosman, Force 10 Networks

Evolution of computing has gone from specialized vector processing with proprietary operating systems to UNIX/RISC microprocessors based on scalable systems and then to High performance computing clusters built as a type of parallel or distributed computing system with common off the shelf equipment. A cluster is a collection of computers that are focused on a specific purpose with a common management usually in a geographically set area. With clusters, you get economies of scale in price and performance with flexibility, scalability.

A grid is a collection of clusters. For more information see http://www.ggf.org, http://www.globus.org, http://www.gridalliance.org. It is more heterogeneous than clusters with differing hardware and software, and can be geographically separated. The grid is much more dynamic in nature than a cluster.

Understanding the applications, the inter-dependencies and requirements are very important in the design of the logical aspects and physical aspects of a cluster.

Physical
The applications need to be able to execute the processes in parallel and. You also need to determine the storages, I/O, security, etc…. to design your cluster. Terms he used: EP = Embarrassingly Parallel, NEP = Nearly Embarrassingly Parallel. These indicate the ease with which an application can be run parallel and thus be easily clustered. The coupled applications with dependencies use IPC between the processors in a low latency fabric to communicate what is happening.

I/O requirements determine the type of fabric and method of access to data.

Resilience requirements determine the availability of the cluster. This allows

jobs to run for days/weeks to complete. You build in master/slave nodes with check pointing, with a resilient architecture for the communication fabric and data access.

Logical perspective:
You would have to build the platform, interconnect, protocol, operating systems, middleware and applications that run on top of everything. You may used different kinds of interconnects, or protocols, operating systems etc, depending on the task of that particular node.

Coupling (MPI) Fabrics: Myrinet, Quadrics, IBA, Gig-Ethernet – selection is dependant on the application requirements. The bandwidth and latency is different for each of the listed MPI fabrics and should be selected based on the application needs.

Storage Fabrics: Direct Attached Storage (DAS), Network Attached Storage (NAS), Full storage fabric (SAN)

Myth: High CPU for TCP/IP stack processing - Current GigE NICs sustain 990Mb/s or 120 MB/s at < 5% CPU. Most GigE NICs shipping include a TCP Offload Engine (TOE)
Myth: Context Switching results in excessive Latency ~ 80us – Several RNIC now have OS Bypass and Remote Direct Memory Access offload.
Myth: Ethernet is too expensive for large clusters. Force 10 is $950/port, Myrinet is $1100 – 1700/port.

Current view is Ethernet is good for EP, NEP and loosely-coupled applications. This is increasing as density and speed increase and $ decrease. They do not see it as a good solution for tightly coupled applications because latency is high, but with the memory access card becoming more available the latency may be brought down. It is a good fabric for I/O. Ethernet is becoming a much more viable fabric for high performance computing. This will allow you to simplify the solution with just one fabric. You can use the “Fat tree” design with a non blocking solution 10 GE Aggregation to 6 Access layer switches to 8192 nodes.

Did some looking at the Force 10 products and how they compare. Their products have very high bandwidth and very fast backplanes that run with layer 2 and layer 3 solutions to interconnect clustered systems and interconnect clusters.

The main thing is to know is you might need to look at this as sites start bringing up “Grid Ohio” and understand how your campus networks and interconnects might effect possible high performance computing applications in the future.

New business:

Need to re-initialize the security sub-committee. Looking at an October, November meeting. Patty has information from the previous attempt. If you are interested in participating contact Patty Vendt at Wright State. Previously, they put together a survey with information that would allow you look to see who else in Ohio was working on the same stuff your site is. They would be looking at security issues outside of the OARtech meetings in a more secure manner, less public meetings. If a site wants to be on the distribution list, contact your OARtech representative who can then get your name on the list.

Meeting adjourned at 2:00pm.