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From: Teresa Beamer <BEAMER@DENISON.EDU>
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Oartech 12/13/2000

Introductions:
Antioch University: Bruce Friend
Bowling Green State University: Bill Bigelow, Shawn Parsons
DAS, Ohio Department of Admin. Svcs.: Mike Yerian
Denison University: Teresa Beamer
DeVRY Institute of Technology: Dave Leitch
Heidelberg College: Kurt Huenemann, Sean Joyce
Kent State University: Kurt Eckert, Ransel Yoho
Lakeland Community College: Dave Levine
Lima Technical College: Diane Moots
Lorain County Community College: Tim Bramhall, Norman Lease
LTC: Damon Hughes, Sylvia Sargent
Miami University: Tim Gruenhagen
Mount Union College: Alex Zumbar
NEOUCOM: Bill Mayhew
OARnet: Christopher Cook, Ruth Crites, Fred Crowner, Doug Gale, Jodi Santini,
Paul Schopis, Gene Wallis
OCD Stratacache: Chris Riegel, Greg Treftz
Ohio Link: Greg German
Ohio Northern University: Robert Beer
Ohio University: Ken Bailey, Royce Holiday
Southern State Community College: Dennis Griffithm
University of Cincinnati: Kim Koeppe
University of Dayton   : Tim Harrington, Brian Meehan, Ron Wagers
University of Northwestern College: Jeff LeBlanc
Wright State University: Shane Dawalt, Patricia Vendt

Presentation from OC Stratacache, Chris Riegel

Why is the web slow? There is no single or simple answer. The Internet was

designed and optimized for resiliency rather than performance. The content is distributed. For example, the average content request would take 3.8 seconds minimum retrieval time. This is an inherent delay in the Internet. You also have applications that compete against your traffic. The user base using broadband is growing to add more congestion and carriers oversubscribe their networks. We are seeing content hosting companies becoming centralized to main centers. The size of the resources is doubling or tripling in size. The Akamai issue is a content distribution network that brings content to the local network but this only covers about .00040% of the web content available.

We care because we are concerned with budgets, and user satisfaction. We want to keep the Internet available as a research tool and the widespread use of off-campus resources.   Internet problems can increase local problems on the LAN.

These problems can not be corrected by increasing bandwidth because you can increase the number of lanes, but the distance is the same. The infrastructure costs continue to increase with larger lines and larger routers. As you continue to increase the bandwidth you also have increased telco costs. Thus annual budget for bandwidth must continue to grow. The three key solutions are Acceleration (Caching solutions), Optimization (Content Aggregation) and Control (Bandwidth and traffic shaping).

Chris gave a short history of caching and proxies. We are now in the 3rd generation of caching and the 2nd generation of commercial products for caches. Acceleration is high performance caching. We use a local storage of frequently requested web content. Why does it work- because 85% of all content is repetitive. Caching is faster than using local system cache because is optimized for that kind of work. You get a response time of 60-100msec as opposed to 3-10 sec. Caching will reduce the traffic that needs to go out to the network and provides a measuring point to look at patterns for traffic management.

HTTP 1.1 contains content freshness header tags that give an expiration of content on the page. This tells the cache when it must reload the information. If there is no expiration time, then you can by default reload every x minutes. There is also an IMS (If modified since) request to check to see if the information has been changed. If so, reload the data, if not continue serving current information.

About 2% of the 2.7 billion web pages are not written to be able to use caching. Some sites deny proxies. There is some problems between the Layer 4 Switching solutions and Cisco's WCCP Re-direction protocol. Solutions are to

educate the authors and web sites, have a good bypass strategy for problem sites, and have vendors provide good implementations of Layer 4 switching.

Optimization is the Content Aggregation. For example, a base caching solution for your pop provides about 50% hit rates. If you use a content aggregator's service, the hit rate can increate as high as 90%. Some examples include Edgix, Cidera, Mirror-Image, Akamai, TBA-AT&T. Be sure you verify compatibility with your caching vendor. Sign for 1-year contracts max because the industry is moving so quickly.

Control - Bandwidth and traffic shaping - The problem is keeping the resource available and most entertainment-centric sites use the greatest amount of bandwidth as well as the explosive growth of high action ad and infomercials on web sites. Some solutions to govern your traffic include Packeteer and Sitara. Limit huge Napster content and/or streaming to make more bandwidth available for other applications. There will be products available in the next year based on Linux virtual server for small to mid-size networks. We will, also, begin seeing QoS Tags enforced by the traffic shapers.

Caching tutorials: http://www.stratacache.com/tutorial.htm
Caching Tools: http://www.stratacache.com/tools.htm
Other information and research sites:
http://www.measurement-factory.com/
http://www.web-caching.com/
http://www.caching.com/
http://ircache.nlanr.net/Cache/FAQ/ircache-faq.html
http://www.ietf.org/html.charters/wrec-charter.html

Questions:
What about local information that is changing? You may want to exclude the local content from the cache, as it is not a big draw.
What about sites that have databases or other information that is constantly changing? The cache will look at the buttons and cache those, but do a retrieval of the information that is changing.

Further questions can be sent to criegel@stratacache.com

Minutes were approved

We presented gifts to Ruth, Gene and Doug for all their efforts.

Gene Wallis, Network update

Gene showed a diagram of network from 1995, then showed a diagram of where OARnet was in June of 2000. Finally, he showed a diagram for where the network will move in 2001. They are currently working on the new AEP pop loops. AEP overestimated their workload and hopes to have the southern loop up by the first of the year. Then they will begin looking at the other new loops. They are also talking with a company to build a fiber infrastructure within the state by installing dark fiber throughout the state. Thus allowing them to change the speed of line with equipment changes. The Columbus pop structure is moving to adding dwdm(?) rings between OET, KRC, and TNC as well as BBQ, SOT and TNC.

What's the traffic been like on the Time Warner peering? Runs around 20 Mb.

They are finding places where an OC3 are no longer able to handle all the traffic. They have added new path and equipment to add a second path as a patch to the problem. Currently, to fix the problem, they are looking at using OC12 to larger routers with a redundant structure with Gigabit Ethernet down links.

Looking at implementing the new pops in the next year. We want to bring the pops closer to the schools so they can take advantage of DS3 as well as the I2 changes that have occurred. The pops in southeast Ohio are in process right now. The Lima links will probably be second, Akron link third, Wheeling link last. All should be in place by fall 2001. All these connections are OC3 links.

Waiting for additional Internet bandwidth to come on line. They are purchasing fractional OC12 to Cable and Wireless to the commercial Internet. By next fall all DS3 will be gone, replaced by OC3 and above connections with more than 1 Gigabit of Internet-1 connectivity on line.

Ruth Crites
List serves you need to be on - will distribute a sheet with instructions on how to subscribe - Updates and Oartech.

Fred Crowner - Statistics report
Patty asked if we have some input into what is put into the reports? If there is a report that you need to see and it's something everyone should see than they may be able to create it. It's not efficient to do individual reports for one or two sites. The vendor that provides the software is providing a major upgrade that will make difference on what Fred can and can't do. We may have this as future meeting topic for discussion on what sites want.

The T1 sites see a good chart for the usage and they can easily see their usage, but DS3 sites see lots of unused bandwidth because they have only contracted to use a portion of the DS3. Fred is creating new graphs that show the usage at a better scale showing the fractional use of the lines. These new graphs are currently available for all sites.

To access your statistics: http://stats.oar.net/ it will ask for your customer number and a password.

Because of the impending weather, Doug has agreed to do a working lunch. He will do his presentation while we are eating lunch.

Greg, Ohio Link
There are no changes at this time. We will be moving all the disks to a fiber channel. They are looking at a multi-database searching strategy that would allow allocation of disk space dynamically. They would like to expand the switch fabric capability so that as they move towards the dynamic replicating of databases with easier access to the needed disk space.

Could some of this information be available on line? Greg will look into what can be made available.

Mowgli, OSU Security Update

Common problems that they are seeing include:
A Microsoft virus that allows a remote user to take over machine.
Windows VNC has some registry permission problems.
Win 2000 NTLM
Win Media Play
Oracle buffer overflow
Open SSH - they are seeing a problem in the client

OSU has seen KAZ take over several student machines. Students are not keeping up with virus updates.

How does OSU handle scans from their internal net?
When checking for a scan from internally, they first check for viruses then move on to other things. Generally the first attempt gets a warning, on the second they will show up with security. At Wright State, if the first attempt is seen as malicious it will go to student judiciary.

David Barber,
Next Oartech will probably see someone from OARnet hired by Clifford who will

be working on authentication. Currently they are looking at the use of middle
ware and PKI and what it means for Ohio.

White Paper,
There was no mention of the White Paper on the agenda because submissions for
the new sections have not been coming in.

Jodi Santini
Orange barrel report is now available. It is called http://notice.oar.net/.
She will send the address out to the Oartech list. They do not have automated
email alerts implemented yet. If sites have outage sites that they would like
to have links off the outage page, send the information to Jodi. Jodi will
also put outages for the individual schools on the sites as well. Please
provide comments, questions, etc on what you see. Sites need to get an outage
alias for the email notices so that they can have a standard address to send
the notices to.

Bob Beer has noticed that when a line is down the telcos are slower in their
responses to correct the problems then they used to be. OARnet confirms this.
 Ameritech is concentrating all their support people in the residential
support areas.   New line installations have very long installation times.
OARnet has been meeting with Ameritech regularly to work through the issues.
Currently OARnet is without an Ameritech account representative. SOMACs lines
are currently going in about 60 days instead of the expected 30 days. They
are working with Ameritech to get credit for the time the lines are down
because the support response has been unacceptable.   Currently, Jodi is
putting in the updates on the orange barrel reports. She is working to have
others on her staff add to it.

Paul Schopis
NEW QoS Initiatives

Paul has been looking at expedited forwarding per hop behavior. This means
the traffic must meet or exceed a configurable rate on the interface. In
other words you have to leave faster than you arrived in order to avoid
queuing delay. In looking at a degenerate case you see the classic over
provisioning model.   The problem is how you control bandwidth allocation.
The current protocol is MPLS traffic engineering. This only works as long as
the glass is half empty. Cisco has DiffServ Aware MPLS.

They are trying to prove or disprove some of the Cisco routing protocol
theories to verify the relationships and assumptions that are made in the I2
and Abilene initiatives. These may be useful in the edge to edge QoS issues.

So this may become important as this work moves to the edges.

EF - Expediting forwarding - no queueing delay in the transmission of the
packet
MPLS - MultiProtocol Label Switching - The routing is based on the tags in the
MPLS tunnel, not on any other info.

Lunch

Doug Gale

The bad news is OARnet can provide the bandwidth you need, but the schools
will not be able to afford it.

There is a part of the community that believes that the Internet is done.
"All problems can be addressed by AOL so what does this organization do?"
The strategic plan was handed out for the sites to look at.   In the month of
January, they will be scheduling 5 regional meetings to discuss the plan.
They want participation to address the strategic plan and any changes you want
to see.   The times will be posted to the Oartech list.

The section that is most filled out is the cost section. The costs are coming
down, but the usage is growing faster than the cost is going down. Current
solutions are short-term solutions. They are trying to find a long-term
strategy to make the costs affordable. They are looking at the short-term
strategy only to give us some time to develop the long-term strategies.

OARnet is talking to a company that is installing dark fiber in the state to
see if they can participate and get some use of that fiber. This would give
OARnet a growth capacity that they can control via electronics. Commodity
traffic out to the Internet will still cost commodity prices, but they can
move the research and educational piece to the lower cost model. They hope to
have something to bring to the next Osteer. The main issue on implementing
this is the cost, so they are looking at a source to finance the fiber
installation. They are afraid that if they miss this build out they will miss
the opportunity, as they don't expect another build out in the near future.

I2 has changed its conditions of use such that it can become a k-20 network.
The sites can become members as a group. They hope to open it up to all
education and research sites (including libraries).

Web Site Coordinator - Ransel Yoho (Oartech.oar.net)

Minutes from last month have been posted. Could former chairs look at the site and send any minutes that are missing, please send him a copy to Oartechwm@oar.net. If you have a network page you would like to see linked off the Oartech page send the link to Oartechwm@oar.net as well.

Meeting was adjourned.