

NTNC Annual Meeting 2012
May 16-17

See attached agenda

1. Website discussion: www.ntnc.org
 - a. NTNC updates almost ready, new site, new arrangement, continue to be hosted by Internet2
 - b. Need to update graphic and ensure it is accurate and current;
 - i. Consider including known locations for NW add/drops
 - ii. Use overall graphic with ability to click on each state for more detailed graphics - showing details of how that state is connected into the NTN backbone route (aligned to initial NTNC vision)
 - c. Estimated "go live" date about June 1
 - d. Steering committee agreed to change theme - from "build" to "use," emphasize research
 - i. Examples:
 1. USFS and EROS data connection
 - ii. Other web site components:
 1. Update NTN map
 - e. RSS feeds currently come from I2, could also pull feeds from each state's site
 - f. *Action items*: consensus from group so Mike can report back to Gordy with any suggested edits and further changes: Timeline: by mid June
 - i. Each state to provide detail map to Dave/Amanda/Bob.
 - ii. Home page - make sure to include a message specific to research
 - iii. Remove all the map detail on the home page, which should allow more focus on the research message
2. Northern Wave update
 - a. Substantial completion, all equipment installed and configured
 - b. Can now discuss peering arrangements and is ready to move data
 - c. Configure more generally so not specific to individual researchers; reduces complexity
 - d. Emphasize that this is regional, much larger than any individual state
 - e. Plans to develop an FAQ – include map and list of partners, including external partners (ex: NOAA)
 - f. NOAA update: waiting for them to develop MoU/SLA to define use. PNWGP has a relationship with them for NWave in Seattle
3. BTOP Collaboration Update (Rob Vietzke, Internet2)
 - a. Overview
 - i. Pull Spokane to Fargo out of the project. Needed to adjust plan in order to avoid issues with non-compete laws in some states
 - ii. NTIA is basically providing funding for spans from Seattle to Spokane and Mpls to Chicago to KC
 - b. Current status:
 - i. Legal review of proposed contract for open interconnect & other requirements
 - ii. Funding distribution: base costs, spares/lab equipment, OpEx distribution
 - iii. NTIA approval required for route change, will take 6-8 wks for approval
 - c. Enabling & Timing
 - i. Replace interconnects in MT, ND, and replacing them with sites in IA
 - ii. Need authorized parties identified for each contributor and agreements reviewed/completed with all partners
 - iii. Issue PO's and begin
 - d. Discussion:

- i. Funding is not available to add a second path of fiber; no new construction is planned
- ii. Schedule will be tight to get this done before the snow flies
- iii. RUS program has been granting extensions, but not BTOP so that may not be an option
- iv. Suggest funding the commons as a group, then individual institutions funded the remainder
- v. Questions: what is impact on overall project funding with the route change? How does this impact the CAI's - will there be some that will no longer be served? Will there be some that now can be served? Answer: primary impact on mileage and hours
- vi. BOREAS-Net perspective:
 - 1. This move forces Boreas to deal with the interconnect issue which could be a problem
 - 2. Boreas plans to upgrade regardless whether this happens or not. Their legal counsel is reviewing details at this time.
- vii. Interconnect concern: since Internet2 stepped in to commit to mitigate the risk, then Internet2 should hold the open access contracts, not the NTN-Asset Holders
 - 1. If litigation is taken, everyone is at risk. While this doesn't change NTN's legal risk, it does change our political risk.
 - 2. This is a shift from where we've been: this is a way of managing the risk but does not change the assignment
 - 3. Boreas attorneys are combing through the contract at this time
 - 4. The agreement we're working with is the same as the PNWGP on the west coast; but - there's no open-interconnect issue with states on the west coast
 - 5. Michigan is seeing local cable companies, local teleco's, small ISP's who have started coming to MERIT to request "free access" resulting in some push-back: one small ISP threatened to go to NTIA and FCC to complain that this is not free. Message: this is open-interconnect but at market prices, not free.
- viii. Regarding open-interconnect: not sure all CIO's have adequate background knowledge. Some of them have relied on legal counsel, which doesn't help since not all legal counsel are familiar with these activities. More clarification needs to be provided for both CIO's and legal counsel so everyone's on the same page.
- ix. Potential impact on emerging "prairie wave" proposal going north and south
 - 1. Considering ordering equipment now for pre-staging in preparation for later implementation.

4. Infinera Update

- a. From their perspective - this is an upgrade to an existing 100G network.
- b. The design is complete and ready to move forward: any changes to be made at this time are within a capacity perspective
- c. Installation process will be phased in order to meet deadline
- d. Infinera is willing to work only with Internet2 or, work individually with each AH - all pricing and distribution is equal and will make this as simple as possible
- e. All entities currently have an existing agreement with Infinera so that won't cause any delays
- f. Definition of initial order:
 - i. Infinera looks at this as an initial order and will honor the original 20% discount during the agreed upon timeline. Any additional orders after that timeline will be considered outside of the "initial order"
 - ii. Initial order can begin today (May 16) and will hold till the end date of xxx (Infinera would suggest June 30). Can be somewhat flexible if needed. Likely a 6-8 week window for the "initial order" status

5. State Reports

- a. North Dakota

- i. Completing stimulus funded NSF ND/SD interconnect –
 - 1. Build is complete from Fargo to Aberdeen, traffic is moving
- b. Montana
 - i. EPSCoR grant will focus on connecting their Tribal Colleges
- c. South Dakota
 - i. GPN looking to go to 100 Gb in KC. A north/south route path through SD is likely
 - ii. Research servers will have their own server connected to the core; DMZ servers will have 10G throughput to get rid of bottlenecks
 - iii. GIS from EROS is on their network and the 3rd largest data transfer user in the nation
 - iv. Core and network are both updated - now looking to update individual research buildings
 - v. DUSEL/SURF www.dusel.org/
 - 1. \$15 mil from DOE for SURF operations, not any construction so future is still very tentative
 - 2. LUX and Majorana labs are going live in June
 - 3. Expect to do several Tb of data capture within the next 6 mos.
 - vi. EROS
 - vii. EPSCoR - proposal to get the TC's to the state network and then sustain the funding
- d. Minnesota
 - i. Rochester: IBM is discussing support of state of the art tools to support medical research, requiring significant bandwidth
 - ii. Also looking regionally to hospitals regarding gov't mandate for access to health records, etc. looking to connect their rural health sites to national backbone
 - iii. Links to Fargo/SD are active - much to the credit of NW - will be firing up peerings soon
 - iv. Retooling commodity peering services: moved bandwidth in behind WI - helps to alleviate congestion on Chicago I2 node and also because WIScNet is more regional - it allows MN to peer with resources they have not had a chance to do previously
 - v. While not directly servicing the residential customers, they do support connections for the public to gain access to resources. Facilitates the university mission for outreach, ex: master gardeners, etc. While research is important the outreach mission of the universities shouldn't be ignored - some of those are easier to explain to the layperson what this is all about.
- e. Alaska
 - i. AK K20 network
 - ii. Petersburg, Bristol Bay, Nome project?
 - iii. AK Dist Ed Consortium Fed (AKDEC): working on common federation agreements with schools. Hoping to leverage a data agreement between Univ AK and AK Federation to develop dist ed network
 - iv. Carriers make a point of not peering with each other - local teleco's do not collaborate
- f. Wisconsin
 - i. WIScNET is a 501c3 - all are UW employees; need to realize we now live in an environment where the teleco's will continue to file lawsuits
 - ii. Update on BTOP grants, CANs (community anchor networks): typically CAI's are open to the public, some private network activity particularly in the medical environment. Some actually sell dark fiber or lit services. Putting more facilities in the ground or air, attempting to bring more broadband to the greater good
 - iii. WiscNet inbound has been doing "settlement free peering" (no contract needed) in Chicago and Madison - where they exchange traffic with more common public peers. The model works well with networks that have a lot of "eyeballs" in other words, staff support that is available due to the extra student employees etc helps to provide the

- human tech support needed to keep things running smoothly
- iv. WiscNet is roughly 12G for the state: looking at Google Global as an option
- v. WiscNet Peering Service added: currently doing about 35G of transit, primarily out of Chicago.
 1. Purpose: they were filling up two 10G links for Internet2. More public ISP's have moved in behind them to utilize this transit. Lots of interest in the Chicago area; thus some of the interest in the NTN is because they would like to extend similar access out to Seattle.
 2. New reduced-price contract for managed services through AT&T
 - a. Rates are postalized across the state; from a Univ standpoint dark fiber is quite advantageous to acquire at this time.
- vi. WiscNet has moved to 802.11n wi-fi and students are happy - but they're still draining it pretty quickly. Working to convince folks that wireless is good for general/mobile connectivity, but not research - keep it available for the regular users.
- vii. WiscNet has about 110k active ports (link-lite connected - not 110k devices). Allows them to reduce their physical switches and in some cases increasing their ports - essentially a 3 to 2 swap. Need to have ubiquitous wireless coverage, but that doesn't mean it replaces the wires. Still need wires
- viii. The ugly – update on WI political issues. Where does NTN fall in all of this? Will we make the story a good one or a bad one?
- g. Wyoming
 - i. UW-NWSC WAN fiber and BISON ring
 - ii. NCAR supercomputing facility - build completed
 1. Storage = IBM iDATA, 150 Tb memory and 1.6 petaflops. Great machine for climate research
 2. 20% to UW access - researchers are looking to fill that pretty quickly
 3. Primarily air-cooled, power is cheap - under .04 cents/kwh
 4. NSF funded <http://nwsc.ucar.edu/>
 5. Hired 4 new sys admins - got them from the east coast where folks wanted a change in lifestyle. So far, not pulling local folks to the center which is good news because public ed system could not compete with salaries, but good to bring outsiders in
 6. Microsoft announced they're going to build their next datacenter in Cheyenne as well. WY is actively promoting data centers for economic development - due to natural cool dry climate - significantly decreases heating/cooling costs.
 7. Verizon - Laramie, WY was one of two finalists for a multi-billion \$\$ data center (did not get, but was second in line)
- h. Michigan
 - i. Update on: BTOP: 140 Community Anchor sites have signed up to date
 - ii. MI lambda Rail (MiLR) a strong partner with Merit,
 - iii. Continue to develop ci services - research projects using storage short term and archived storage
 - iv. Internet2 Net+ services provider: provide services to regional R&E networks or directly to institutions. Always looking for services that are cheaper, regardless of location.
 - v. Expanded professional learning program
 1. Averaging 2 events/month with a wide range of topics
 2. Monthly webinar for IT professionals
- i. PNWGP
 - i. Updates: NW completed; setting up peering exchange for PNNL in WA for employee

access; economies of scale allow rerouting traffic (ex: New Mexico); West coast build is moving quickly; working with court system to consider CAI status and connect more of their sites; A lot of energy is going into the student information system.

- ii. International updates: upgrading PacificWave to 100Gb
 - 1. Allows PW and NW to peer since they will be on same switch - for those on NW they'll immediately see the new opportunities to peer
 - 2. Just connected the first European connector to PW
- 6. General discussion – this leads to two critical questions:
 - a. What is the performance
 - b. What is the quality down to the application layer?
 - i. Utilization and Performance:
 - 1. Need to get CIO's to understand what does good utilization of a 10G link actually look like. They cannot compare to the old teleco standards that 5% of phone use in the U.S. is considered good - when actually that's underused.
 - 2. Suggest metric should change away from purely operational measurement
- 7. Gwen Jacobs Presentations - Campus Cyberinfrastructure discussion: EPSCoR 20-30 workshops
- 8. General Updates
 - a. Dues/Charter - no changes made
 - b. Pamphlets for Researchers - Develop flyer to promote NTN (Committee: Bob Stovall, chair; Kim Owen, Roberta Amber, Myron Lowe, Rich Greenfield)
 - i. Goal: promote NTN/NW and include contact for each member state
 - ii. Discussion:
 - 1. Determine content for the publication - refine message to researcher
 - 2. Also develop form letter to be used locally by all members
 - c. Meeting schedules: currently steering committee meets once/year; and annual meeting is once/year - the two meetings are at separate times. Consensus to keep current model in place.
 - d. Funding: AK meeting will be more expensive than others
 - e. Joint Techs –
 - i. Steering committee suggests sponsoring more tech staff to attend and convene for a BoF so we can collectively increase skills/knowledge base among our tech staff across the NTN membership institutions
 - ii. Discussion: determine need and best time of year (summer/winter)
 - 1. Agree that BoF would be a good idea, maybe consider scheduling an evening BoF to avoid congestion of other BoF's typically scheduled during the meeting
Summer 2012 July 15-19 in Palo Alto, CA
 - 2. Internet2 meeting schedules are changing in 2013: one Internet2 meeting and one Joint Techs per year
 - 3. Tech World Congress (another option)
 - iii. Action Item: for summer 2012 Joint Techs in Palo Alto - communicate to list regarding a potential BoF at the meeting. This would go with an offer of a scholarship for \$250 to attend. Likely this would help fund the registration.
 - 1. See notes from winter 2012 steering committee meeting regarding criteria for attending, could also consider sponsorship of one or more "fellows" to attend their first meeting.
 - iv. Confirmed: NTNC membership will offer a scholarship of \$250 to go toward covering a Joint Techs meeting registration for summer 2012
 - 1. Stipulation: state rep should coordinate with institutions in the state on who should attend. Purpose is to encourage participation by someone who has not previously attended. Coordinate with Amanda.
 - f. Scholarship /Grant fund to attend Indiana Global NOC 10 week training session

- i. Includes students and also the expanded invite to Quilt membership
- ii. Discussion:
 - 1. NTNC to consider running an application process in order to screen the applicant pool and select a group to attend.
 - 2. Consensus to table the idea at this point – more discussion needed
 - 3. Stan (MT) to get more info from Ray and forward that to group
- g. Meeting with CIO's
 - i. Intent to address the turn-over in leadership across our campuses
 - ii. Likely just convene via a conf call not f2f, as efficient as possible
 - iii. Plan for a conf call in July to convene CIO's for an initial meeting - may push back to August if necessary
 - iv. Who to convene and facilitate this meeting? Content? Agenda?
- h. Website updates: see details in first agenda item on May 16.
- i. Next meetings:
 - i. 2013 Winter Exec Meeting @ Univ of Iowa in Jan or Feb 2013
 - ii. 2013 NTNC Annual Meeting in WY, June 13-14, 2013

NTN-Asset Holders (AH) meeting/ 1 pm Wednesday

Marc to take notes and share via Google docs

- 1. Discussion:
 - a. Cannot have open-interconnect available between Spokane – Seattle
 - b. Not just ND/MT, WA has some issues as well - it's not that they don't want to take the risk,
 - c. If Boreas has to take the risk for NTN, that's unacceptable to Boreas; Boreas is prepared to do this upgrade regardless if it happens through UCAN or not. If they're the only group at the table, why should they participate?
 - d. PNWGP is concerned about open-interconnect in Spokane
 - e. Likely PNWGP would fund the upgrade in WA state - not take any fed \$\$
 - f. Spokane node is approx \$250mil; that footprint would be included in the miles in order to meet the NTIA miles required
- 2. Who's going to bring \$\$ to the table for what is yet unresolved?
 - a. Other options: (clarify: are these numbers before or after fed and I2's commitment)
 - i. Mileage (of footprint)
 - ii. Equipment that's in the state - each state responsible
 - iii. Divide by number of states to cover the spares
 - b. Cost: lab equipment, spares and remainder of field equipment and upgrades
 - c. Wavelength allocation
 - i. Manage capacity (managed at state, NOC, or level of contribution, or residual capacity (unlit capacity - how to split that up among AH (2-5 OCG's lit on the system depending on how we go about this)
 - ii. Who has right to light more
 - iii. How do we pay ongoing?
 - iv. How do we pay upgrade costs? How are they allocated?
 - v. Is draft contract viable? Is it a workable framework or do we need to start over?
 - d. Outstanding issues regarding open-interconnect?
 - i. Not common representation of what we need
 - ii. Not needed at the fringes, but should not preclude us from having a base understanding of what we should all know about this

- iii. Some statement of what I2's role would be in the event of an open -interconnect request. All lawyers have to agree that this is a workable approach: I2 would accept the request and respond based on their portion of the network. The agreement requires us all to understand that I2 is doing that
 - iv. I2 takes responsibility to accept those requests: it is incumbent on all of us to realize this is going on
 - v. We'll need to specify the responsibilities are - already somewhat included in the draft, but still needs refining
 - vi. What portions of the segment are subject to open interconnect and which are not?
3. Communication to all NTNC partners:
- a. CIO's need a bulleted list so they don't have to scan a multipage contract for that information
 - b. It appears that most definitions of "interoperability" are similar, mostly based on FCC guidelines
 - c. Dave to Amy: can they create a bulleted list of the issues.
 - d. Almost all IRU's have some kinds of restrictions
 - e. Two things:
 - i. I2's definition of the risk they are assuming
 - ii. Agree on term of open interconnect and non-discrimination
4. What are benefits/common objectives of moving forward with the proposal?
- a. The resulting resources and how they will be split up
 - b. Additional feature capacity
 - c. Shade - cover for multiple groups to point to others as
5. Refer to current spreadsheet:
- a. Which are we referring to for the split?
 - i. Just the \$3.1 mil (made up of demands - you pay for your own demands)
 - ii. Lab and spares - how to split that?
 - 1. Option - remove the spares so that's a non-issue/ however, if a segment goes down, how is maintenance handled?
 - 2. ND's goal is to follow Boreas's model and strive for a 4 hour response time and ND doesn't have enough staff to dispatch from a near-by town to do this efficiently; not enough techs that have been trained and received AT&T certification to have access to the huts
 - 3. Spares kit: one in WA; two in ND
 - b. What's included in the \$1.5 mill equipment sub-total
 - i. Lab and spares
 - ii. NTN-AH equipment sub-total. All demands plus 500G layer.
 - c. Per spreadsheet - each participant funds the demands for the segment that is yours
 - d. Cost/segment based on equipment in the field (Internet2 would recommend even split of spares because all benefit)

NTAH funded details	
Boreas-net	\$2,206,993
NTN-ND	400,064 (this reflects cost of only spare)
NTN-MT	176,921
PNWGP	335,659
Deficit (total)	\$3,512,672
 - e. Cost/segment based on mileage: may not work because it would be unfair to MT; not driving the costs
 - f. Internet2 issues:
 - i. Not comfortable with going back to NTIA and asking to reduce numbers of miles

originally proposed

- ii. Do we have a path to resolve these issues quickly, can we move to a contract that we can agree on? Rather than dwell on split of the \$3.1 mil, determine if the framework is agreeable to all, otherwise none of the discussion on splitting the deficit matters.
 - iii. How to define open-access? NTIA has not defined...
 - iv. Internet2 has defined, within grant proposal - according to their policies. BUT - this doesn't mean anything if a private company pushes this to legislation
 - v. This is legally defensible, not politically defensible
 - g. PNWGP is interested in 2Gs - not currently on the spreadsheet
6. Action items:
- a. Update CapEx/OpEx numbers to include allocation of spares/field equipment
 - b. Contract by Internet2 of workable framework to be reviewed by all members
 - i. Identify any existing contracts that need to be changed (each entity needs to clarify internally and only notify NTN-AH if something is pending that could change the whole picture)
 - c. Identify which segments are eligible for NTIA funds and which are not? (Fargo and east only - will that be acceptable to NTIA?)
 - d. Identify benefits or common objectives?
 - e. Boreas leadership to convene and review proposed changes and potential impact
 - f. Convene NTN-AH call to report out on these action items: make sure tech folks are on the call
 - g. Consider hiring Linnea Simmons, CO attorney who could follow litigation on this in order to guide our steps
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