

Advanced Engineering Taskforce Meeting March 21, 2014

The meeting was called to order at 10:05 a.m.

Members Present

Name	Affiliation	Location
Scott Armstrong	Kishwaukee Community College	Conference Bridge
Troy Brown	Shawnee Library Systems	Conference Bridge
Herb Kuryliw	NIU	Conference Bridge
Jim Flanagan	Illinois Chief Technology Officers	Chicago-JRTC
Robert Dulski	Brookfield Zoo	Chicago-JRTC
Dennis Gallo	O'Fallon CCSD 90	Springfield-CMS
Brandon Gant	ICARLI	Springfield-CMS
Rich Kulig	College of DuPage	Conference Bridge
Joel Mambretti	Northwestern University	Conference Bridge
Steve Menken	Illinois State University	Conference Bridge
Tracy Smith	University of Illinois	Conference Bridge
Alan Pfeifer	Sauk Valley Community College	Conference Bridge
Mike Shelton	Southern Illinois University	Conference Bridge
Glen Trommels	City of Rockford	Conference Bridge
Brian Tobin	DeKalb CUSD 428	Conference Bridge

Members Absent

Andrew Bullen	Illinois State Library	
Mike Dickson	Western Illinois University	
Ken Davis	Sangamon County ETSD	
Raj Siddaraju	CC Presidents Tech Council	
Jim Peterson	Bloomington Schools/Illini Cloud	
Brian Murphy	Eastern Illinois University	
Rob Zschernitz	The Field Museum	

Guests

Anita Nikolich		Conference Bridge
Kevin Findley	NIU	Absent

Staff

Lori Sorenson	Central Management Services	Absent
Kirk Mulvany	Central Management Services	Absent
Robin Woodsome	Central Management Services	Central Management Services
Frank Walters	Central Management Services	Central Management Services
Essam El-Beik	Central Management Services	Central Management Services
Michelle Brown	Central Management Services	Central Management Services

Review Agenda, Approval or Minutes

Jim asks if anyone would like to add to the agenda. Also the minutes were received the last week. If there are any additions or corrections to make to the minutes please let us know. Is there a motion to approve the minutes? Dennis Gallo makes motion to approve the January 17th minutes and Alan Pfeifer seconds the motion. All are in favor and none opposed so the motion carried.

Old Business

Leveraging ICN's Fiber Build Experience (follow up to last meeting's conversation).

Any opportunity to go out in the communities and meet with the people and talk about community and regional fiber we would want to do that.

We are going to start using and handing out the Google Gigabit Communities document. We don't have it posted on the website but we should. It is excellent in terms of educating the communities and what they can do with fiber and taking advantage of the fiber.

A lot of people look to the ICN for direction and information. In terms of facilitating fiber builds we have responded to a bid for a school district to connect to the ICN fiber backbone directly. Our process for that is going well. A number of construction companies are on contract and Robin states our list has been shared with different groups around the State.

Within the last 6 months Robin has provided contact information of both design companies as well as contractors that the ICN has worked with to possibly 3 or 4 different groups that are interested in building community networks.

Essam and Frank can speak to in terms of facilitating fiber build as we're looking at that we want to be able to do it, and we do have a beta site that is in the works right now.

Essam states with educating customers the brochures were sent out and we're facilitating communication in terms of educating customers as to how ICN and the RTCs can help them.

Robin states that going back to the last conversation on the bullet points was pretty rich and we need to have that level of insight and conversation continuing and there's so much more that can be done and how the AET can help and direct us would be very beneficial.

Jim asks to hear from other AET members.

Brandon Gant of CARLI says thanks for the 4 pdfs of marketing material. The material will be useful for him to give to the communication staff and have them get these out to our membership and talk. Since the completion of the project in January a lot of people have asked, now what? The material will help in answering their questions.

Essam put those brochures together for the ICN and we also want to do something similar targeted to healthcare and a brochure targeted to municipalities. Those will be next to come out.

FCC NPRM on ERate

Essam states that the FCC issued a proposal of rule making back in July of 2013. It was a large document with a lot of questions relating to complete modernization of the ERate program sometimes called ERate 2.0. The FCC recognizes that there needs to be a modernization of ERate moving towards high speed broadband to schools and libraries. CMS responded to the public notice and many other people in the country responded, 1500 that commented in total.

The FCC has been reading and reviewing the comments. A few weeks ago, March 6th the FCC released what they call the focus request for comment on eRate organization. This is where they focus on 3 areas and the 23 page document which is in our package. The 3 areas they're focusing on are on page 3.

- How best to focus ERate funds on high capacity broadband, especially high speed Wi-Fi and internal connections.
- Whether and how the commission should begin to phase down or phase out support for traditional voice services in order to focus more funding on broadband.
- Whether there are demonstration projects that would ...should the Commissioner authorize as part of the eRate program that would help the commission test new innovative ways to maximize cost effective purchasing in the eRate program.

These are the 3 areas in the document that they have questions on. Also in the document the FCC or USAC states that \$2 billion has been essentially found in unclaimed monies that could potentially be dedicated to eRate. This will be \$2 billion dollars over 2 years starting in funding year 2015, July 2015.

The deadline for responses to this document is April 7th. CMS intends to respond to this and we will respond with ours that continues to talk about our philosophy and approach which is to provide wholesale fiber based broadband to Anchor Institutions (AI). We believe this will increase competition in the market place and increase the open access nature of broadband AI.

We're also going to respond as well with suggestions on the experiments and trials that ICN could do and two concepts of this stage and will solidify this in the coming 2 weeks.

- One is to have a trial that focuses on wholesale broadband to anchor Institutions and then opening up the market base to broadband retail providers, provide service to the AI on a retail basis for 5 year terms so increasing competition. That would be addressing external connectivity to AI.
- I propose the trial for the internal connections which are the connections within school buildings. We could talk about or propose the trial that really utilizes our RTCs in combination with creating a reference architecture together with having a standard set of products that would be used within schools and have a trial by where the RTCs help in facilitate schools that don't have the lone IT directors built into their internal architecture. This would be another trial proposal.

The whole point of suggesting the trial proposals is that Illinois gets additional funding for building up broadband from the FCC for these trials to further expand broadband.

Essam states this is the summary and the deadline for it is April 7th. Once the document is complete it will be sent out. Jim requests a copy of the draft so the members of the committee can share input on it.

Brandon asks Essam if the document is more fact finding or is this actually an opportunity that you're proposing something and then they will fund it?

The FCC document is a set of questions focused around those 3 areas and CMS plans a response to those questions and the questions that relate to potentially specific funding of those trials that the FCC talks about. Presumably the FCC will allocate some funding for those trials and if we're awarded or we win then we would get the funding. Other parties in the country will respond and it will be a competitive process.

Dennis states that he knows Essam was working on some proposals and budget estimates for both infrastructures inside and outside schools potentially and is asking if this is a companion piece, or in addition to, or a replacement of? How would it fit with what Essam is already working on?

Essam had a discussion relating to the cost of internal connections and that was more related to working with ISBE in terms of what it would cost to upgrade all the schools and libraries in Illinois with private based broadband and internal connections.

Another aspect we had looked at more recently was, what is the minimum that we need to do to upgrade the schools and libraries to meet the minimum part on the online testing requirements and we've been working with ISBE and providing ISBE data in terms of cost as related to that. The information comes in useful when we're responding to these FCC responses. One thing that Chairman Wheeler has stressed in these responses is facts and data and anywhere in our responses that we can provide supporting facts based on what is actually happening in Illinois helps our response.

Dennis asks what the status of that effort is at this time.

The effort with ISBE is that we have provided our recommendation for the funding needed for the schools and libraries in IL to meet minimum part requirements. We estimate approximately \$145M would be needed for external connections, internal connections, wireless connections and devices to meet minimum part requirements.

Dennis states hopefully the testing would be around some of the first 2 bullet points could be well timed to any funding coming out so we could mark it to schools and not have them go to the lowest common denominator. This would save thousands and hundreds of thousands of dollars over time if they would build it out themselves.

Essam states that is the focus of the whole approach that is being taken which is CMS, ICN plus the school can own fiber and for lease. An example would be 4 strands of fiber to the school then we will ensure that it is wholesale fiber and that we have competition on that fiber.

The schools and libraries need to be all open access or truly open access. Possibly there is less competition than there could be if the fiber was truly open access. Yes, the schools are locked into 5 and 10 year contracts which effectively pay for construction of the fiber with a healthy rate of return. Quite often the renewal contract is at the same or slightly lower pricing.

This is essential because if the schools are not educated ahead of the funding that may be available they are going to run into the exact same models that they've always ran to not knowing that there's another model. If they don't know there's a big financial gain by putting in your own fiber and managing

it maybe through maintenance contract with somebody in case something goes wrong with it. I know timing is never very good for schools when it comes to funding and processes but if this doesn't all line up well you're going to have a whole bunch of schools spending a lot of money getting something done that may not financially benefit them in the long run.

ICN has a great opportunity to assist schools because of their experience over the past couple of years in putting in the fiber around the state.

Jim asks if the \$145M would necessitate a different kind of contract and if part of the \$145M would be money that would pay for the build out of fiber to schools and that if a contract was entered into for instance with a Charter it would be for the management of maybe the last mile of fiber with the fiber being owned by the State or some other entity.

If this is the way it was offered it would really break the old model.

This is exactly one option. The ICN owns the wholesale fiber and ICN retail can provide these services or other providers can provide the service. For example a 5 year term and then after that the other provider can respond.

The whole point with ICN owning the fiber is that their barriers to entry have been dramatically reduced for other providers so they will need to bring in their electronics to light the fiber but you're really increasing competition.

You would not have to build new fiber to change ISPs. Today if you want to change from AT&T to Comcast, Comcast has to build out new fiber to you and AT&T has you locked in. In this model all you would have to do is say okay the fiber is already here we're just negotiating for whoever is going to provide us with maintenance and updates on maintenance on the fiber possibly and internet access.

To the point that was made about educating customers we can look into creating a brochure, white paper that explains this and the timing is right because it is going to be relevant to the funding year 2015.

Robin asks about the white paper lay out and sending it in response to the bids that the schools put out. The forms that are used for the requests should clearly lay out the options and should clearly give precedent to the districts that are getting the best deal for their buck and not on long term contracts.

Essam states that in the material it talks about the process that we would use to distribute the funds and about the RFP type process where we solicit from partners, for shared open access fiber so they understand what we're saying.

Sustainability should be part of the scoring for this and have a couple different models should also be presented along with the cost benefit tied to it. It has to focus on superintendents if you want to get anything done with a S.D. in a language that they can understand. They will recognize the cost benefit if it can be presented clearly along with the scenarios and the outcome of the scenarios over time.

If either of these comes to fruition we should have a presentation at the various conferences that

Superintendents and business officials typically attend. There are about three of them statewide on an annual basis.

- If there were a couple of sessions on how you can take advantage of these new opportunities to improve your schools connectivity and readiness before testing.
- Digital learning in a conference type setting and questions could be asked and laid out very clearly for the Superintendents.
- You also need it for those districts that are already tied in and have them make the decision whether or not it would be to their advantage to reinvest in a different build that would financially benefit their district in a longer period of time.

Dennis states that's where his district is now and if they need to rethink this and spend the money now and redo it so we can save thousands, and hundred thousands of dollars down the road.

Robin states there are 2 initiatives. The initiative that ISBE is working on and the Initiative we're working on with ISBE.

New Business

FCC Connect America Fund Pilots –Letter of Intent

The FCC at the end of January issued a NPRM. It is an order that relates to the transition from TDM voice to IP and the FCC is soliciting providers to submit plans for experiments for transition from TDM voice to IP. AT&T is the main respondent that has proposed an experiment at a wire center in Alabama and another at a wire center in Florida.

This same FCC document also asks for expressions of interest for experiments in specifically rural areas, high cost areas, and Universal Service Funds (USF). CMS responded with an expression of interests for an experiment in a rural area. The FCC is open for individual approaches to bring Broadband (BB) to rural areas. Bringing Broadband (BB), or fiber based BB, or wireless BB to Anchor Institutions (AI) in rural areas as a means to facilitate the BB to a residential community. This is all of interest to the FCC.

CMS responded in an expression of interest and that document is also in the package. What we talk about is that CMS would focus on wholesale fiber to the AI and we would partner with a Private Service Provider (PSP), we would select by a ... process. And the PSP would be focused on the BB to the residential community. The experiment would be a partnership between CMS and the PSP bringing broadband to a high cost rural area.

There have been a lot of expressions of interest submitted to the FCC throughout the country. Also there are many providers in Illinois that have submitted roughly 15 providers. The idea that we have is that we take a partnership between a provider and CMS and that would essentially increase the chances of us being selected by the FCC. The FCC asks for the expressions of interest to gauge the level of interest in the country for trial and also to gauge how much funding should be made available. They're talking about \$50M to \$100M of funding for these rural broadband trials. That could be revised up or down. This is in the document dated March 6th and is on page 38.

What is expected within the coming 2 quarters is to get a more formal request for experiments within a quarter or a quarter and a half, and then we would plan to respond to that. Then by that stage we would have selected a private provider to respond with, and we would respond. The whole point of this is getting some of the funding to build up broadband to Anchor Institutions.

Essam provided suggestions as to where we could do trials but we would work with the private partner and work with them as to where the trials should be. It is likely to be in an area that is shaded in blue and we would obviously we want to hit an “X” number of Anchor Institutions. The ideal area would be where you would have the most AI in the area in blue for the lowest cost. These are only suggestions that are in the document.

Google Fiber Community Checklist

Robin stated that Lori asked that this document be shared with the group in today’s meeting. It is a document that we refer to and it covers the bases very well and one that we’re happy to distribute. When you look through it you will find that it covers the steps in what a community might need to think about if they were to initiate a local fiber network.

The Google fiber document is a good resource for communities that want to do something similar and it is a good starting point. This is something that we have felt captures a lot of information, benefits, and detailed information about what would be involved at the local level to install a network. There are ideas about equipment, placement of equipment, and sharing of resources. It covers a lot of bases and it is a document that we are starting to share with people.

AET Constituent Group Updates

Jim asks the Constituent groups to give us an input on the things that they might want the AET to focus on or that also are important to their group.

K-12 has spoken and Jim asks if Libraries have anything they want to speak on.

Troy states that libraries, especially in the area of these Federal grants are available to install fiber like the Clearwave project which has really made leaps and bounds progress in those areas. There are still a lot of libraries where their options for connecting to the ICN are a T1 or go with another service provider (SP). Unfortunately a lot of those SP don’t compare with the ICN so the only option is to buy cable commodity internet access from another provider. Many times the speed is higher than what they could’ve gotten from the ICN but the performance break makes up for it because the bandwidth is high enough that they don’t see it. We would like to see more options to connect to the ICN. Right now in so many areas it’s still just the traditional service providers. Bandwidth is becoming a huge issue. The billing from ICN has been an issue for a lot of libraries, and making that transition from not having to pay for so many years to now having the bill coming has raised concerns. Troy stated that has tried to tell a lot of the libraries to apply for eRate as possible but it doesn’t always get through until the first few bills come. Those are the issues that Troy is hearing from Libraries right now.

Jim asks Troy if he has anything in mind when he states having more ways to connect. We encourage our Libraries to connect to the ICN but right now the filtering product is the most attractive incentive to connect to the ICN for the libraries because it is very affordable. It’s hard to justify it on cost anymore.

Robin states the issue is that the libraries can’t afford a metroethernet connection out of their budget and we’re seeing this a lot. They can get a business class cable modem service for maybe \$100.00, and you can get up 50 meg download but not guaranteed. The only other option is the discounted T1 line that you can get for \$238.00/month which is probably one of the lowest costs you can get on a T1 line and that’s only for 1.5 meg.

We do have libraries using the commodity cable service for their public access and a lot of their high demand. If they kept the T1 line from ICN then they reserve it for their critical business applications or maybe their online catalog and things like that.

This is a problem because we've seen so many libraries the last couple of years disconnect because of this. Comcast and AT&T are starting to market up a Metro Ethernet service over copper and they will deliver that service back to us as a Metro Ethernet service over their existing infrastructure. Robin hasn't talked with New Wave but they want to work with ICN. They want to partner with us in a few different initiatives so it may be worth it to reach out to them to see if they have a product like that.

Frontier also comes to mind for the southern part of the state. They sell Metro Ethernet but it's not sure if they're a partner at that level yet. They have talked to ICN about offering Metro Ethernet service over their copper connections but Robin has yet to see them to actually do it.

Jim states that libraries should be thought of in the projects that Essam was speaking of because for most school districts they are looking at going 1 to 1 or higher density computers or bring your own device.

One of the big issues is that there are a decent number of children who do not have internet access at home and the solution in many of the school districts is to tell people to go to the public library (PL). Why that's good if you have 30 kids coming into the PL to do their research and the PL has this T1 line or has a commodity business class connection that may not be very good you just made the problem bigger for the library and you're not solving it for the kids.

The library should be thought of as a solution but if we're building out broadband to the schools we could build out right next to the libraries. Libraries don't exist in isolation. Jim asks Troy or Brandon if that is a possibility that we should be pushing towards a little bit more of a partnership view with libraries and schools putting their bandwidth together?

It is a great idea and most libraries are in the vicinity of schools because of the way towns are built. All libraries that have the Clearwave connection have benefited greatly. Unfortunately they aren't able to fully utilize it because of the limits where of the baseline of free bandwidth lies right now and not really being prepared for those costs when they encountered them. Making that fiber available would be beneficial.

Herb states in DeKalb County one of the BTop grants was successful in connecting the libraries all but two very small ones. It is a value add that we're giving the libraries today and is starting to wake them up a little bit.

- To start with the DeKalb Technologists group with schools that we have in DeKalb County and the IT administrator of the schools is currently looking at the DeKalb Library system which includes Malta, Courtland and the City of DeKalb in creative capability and is called an In-band Network where it doesn't go over their ISP network and where they'll be able to connect back to the school for a 1 on 1 program via libraries. This is one way that we are trying to enhance the libraries and the capabilities there.
- The other one is that NIU is taking a great initiative to embrace this and we have a few programs now that are running libraries again on that kind of Inband and not using their ISP bandwidth called the Esteem Read Program, A Step Program as well as on March 26th.

Next week some time we actually have the libraries using a program that is going to have 3 libraries connecting back to a central location at NIU and they're going to be teaching music back and forth in a two-way low latency software that we've developed to do that. Now we're starting to use this broadband in higher capacities in libraries that have a very meaningful state for our libraries. We have to start thinking about the broadband networks and not so much of its only ISP bandwidth but rather its content and deliverables where we start to use those facilities and making something functional of it. Herb states this was a general comment.

The Inband idea is interesting because the library is connecting to the school and using the schools internet access at a time in which the schools internet access is largely going unused.

Herb states this is a little bit different in the way that NIU designed these broadband networks for IFiber in DeKalb County in that we sold the schools and libraries a gigabit connection. From there we have an EMA concept. Electronic Maw where they can pick up to 10 to 13 ISP providers, bid against them where they can have an ISP and that might take a 100 megabit of their gigabit and they have this 900 meg sitting there throwing out the bit bucket so we created a cloud concept. It allows all of them to interconnect with each other using that kind of inband. We have schools using backup over that inband, schools that are interconnecting systems on that inband so that it is not using that precious commodity internet, rather it is using that leftover gigabit internet that we have our network connection. It is a bit different in the way a traditional ISP might deliver services in that we're allowing schools and libraries and municipals to encumber that other gigabit portion of their network.

On the Inband Network if you're in the DeKalb County Network already or the IFiber network you can talk between one another.

The conversation we had about the On-net traffic with the ICN versus Off-net or Internet traffic, I think that there is some value to that conversation especially for the Library Systems across the state that are encouraged to use CMS's collocation services, and ICN's collocation and the idea of a backup and not going the traditional flavor or any kind of media but going to Cloud services or our own off site data storages back to our offices. This idea of going beyond what we purchase for internet access in order to create high-speed backups, literally terabytes of data is a conversation that is still a valid conversation.

Brandon states he is representing libraries but CARLI is a Higher Education Consortium. We're very different from the K-12 and public libraries. Our biggest issue right now is storage and there is a meeting at the CARLI office today, March 21st. It involves the 13 Public Universities and the Library Directors of those 13 Universities. A new law went into effect in January that stated Public Universities are required to make research, publicly funded research, publicly available and there is no infrastructure for this and no funding for it and this usually falls to the Library, a University or Community College to figure out how are you going to archive this material and make it available to everyone. Many of the Universities are having a storage problem and they need more and more storage and they can't afford it. They're being asked to archive material forever that are digital. So the question becomes who do we partner with to do that? The ICN is going to be a major factor in whatever happens because more than likely we are going to end up with centralized storage systems either in the Big 10 or in the state where a lot of traffic is going to be moving around Higher Education Institutions to these centralized storage systems if they can ever agree on whose is going to start building it and running it which is still up in the air.

This is the big issue right now. The network is great and we're thankful to the ICN for that but now there's a big switch into how do we handle storage.

Jim moves to talk about colleges and universities. Is there anything from the College and University constituents that we need to be focusing on?

Tracy Smith from the U of I echoes what Brandon stated and in their environment we're seeing a lot of consolidation whether it's computer resources or storage and having good access to that. It is very important to us and a significant impact to ICN. Enabling our remote facilities whether it's Libraries or University Extension facilities and having access to those aggregated services like storage or computer resources is important to us. The remote facilities are getting those types of access through the ICN.

Now that ICN has the fiber network in place and there's much greater bandwidth that is available is there something else that can be done to better meet those needs?

Scott Armstrong with Kishwaukee CC states that it is going to take a year or two to get everything spun up. The idea we had in mind, and plans we had in place, and now we have the bandwidth I think we're able to do the things that we've been planning to do for years. It might take a couple years to see what else is new for us. I know that the CC has a variety of challenges when it comes to connectivity but I think most of the schools are in a much better position now. I will add that the CC CIO's are meeting in the 1st part of May so by the next meeting we have for the AET we may have some better input as well.

Rich Kulig with the College of DuPage the things I've been hearing are similar. The cloud idea and the amount of bandwidth needed to support some of that.

Allen Pfeifer states the same thing is going on. The only challenge they are having is the redundancy and right now we're working with getting on the IFiber and having redundant service through our old Comcast connection. I think our K-12 schools are very happy with the fiber.

Jim states he did an audit at a University last year and one of the things he saw was how much the University was spending for Disaster Recovery (DR) services and that it was huge. With the fiber, ICN is now offering the opportunity for Universities to partner with one another and to provide DR facilities at each other's sites. A DR partnership amongst a group of Universities would make all the since in the world.

Jim asks if there's anything else from the Universities.

Jim asks if anyone from the Museums, Cities, Municipalities, and Healthcare Agencies would like to make any statements or comments to the ICN.

No further comments and Jim thanks everyone for their input and states that it was a good discussion.

Network Update

Frank states all of the legacy circuits that are in the footprint of the grant are now replaced with fiber and have been migrated over to the DWDM infrastructure. The only ones left are out of Moline where we don't have the fiber yet and this is a good thing to have finished. Those circuits have all been disconnected.

Jim asks what this means in terms of the budget. If we get some of the big contracts off of our back does that help out at all?

Robin has been working on the overall budget itself and states he doesn't have a number but it has dropped significantly.

It puts the ICN in a good position. It is an expected drop so it's not a surprise and it was budgeted for that. The forecasting and planning that was done includes those disconnects and it does overall lower the ICN's operating budget considerably. The other piece is that when we need to go to 20, 30 or 40 gig it's a small onetime fee to make that change. For ICN the real part of the project is getting rid of those circuits and being able to say that all DWDM circuits are operational.

Jim asks if we are seeing money from leases to commercial entities or partners for using some of our extra fiber or extra bandwidth. Frank states yes.

Essam reports that we've sold over \$2.5M worth of dark fiber leases. We have 9 customers and many have purchased and made multiple purchases. That is where the bulk of the money has come from thus far. We've also sold some LED service collocation dark fiber on a monthly lease basis. The \$2.5M is cumulative and that is for 20 year dark fiber IRU. The customer pays a onetime upfront fee and they get use of that fiber for a 20 year period. The one time money received is over \$2.5M in terms of the yearly maintenance and the revenue we will receive at the moment is \$340,000.00 a year.

The maintenance fees are annual that go along with the leases but that wouldn't be the numbers that Essam is talking about.

Jim asks if this money goes into an account that really can't get swept. Lori may have to answer this question.

Frank asked about the funds being swept and he was assured it wouldn't happen again. The concern is that the revolving fund might get swept. One thing we've changed a little is how we operate overall. We buy equipment and it lasts about 60 months then about 70 or 80 months we are able to replace and upgrade the equipment in total for the network because of the issues with the funds being swept when we leave too much money on the table in those revolving funds plus it helps us level out our Capex. We are looking at our next refresh which is going to be done over 3 years and we'll be splitting these into yearly upgrades. The bad side to that is from a networking and engineering perspective we don't have the luxury of having one homogenous environment. You may have phase 1, phase 2, and phase 3 so we are starting to split these large network upgrades into yearly phases and we might do 1 a year earlier than we would've done it but that lets us capitalize on the funds.

Egress is currently at 28 gig wire speed where our current peak is between 11 and 14 gig depending on whether you count the amount of service attacks or not. ICN had its largest attack in the last 2 months. The largest attack before 2014 was around a gig. In the industry from Frank's reading is around 20 to 25 gig from some of the banking institutions. In 2014 our biggest attack has been 8.5 gigs, and the biggest on the internet at large is around 400 gigs which was 3 or 4 weeks ago now.

It makes it challenging to plan because it makes the ICN have to be able to drain the bandwidth before the attack is characterized and mitigated. There's a few minutes where we were dumping the traffic. We have to be able to sustain that level of bandwidth until we're able to sink it to AT&T or Cogent. We are

looking to AT&T which has a service that looks like we would be able to take advantage of and it's on our contract. It allows us to dump the traffic off-net which would be a big help.

We're moving to a different model for egress. With egress we would traditionally only purchase what we need times 2 because we've taken the approach that if we have a failure we need to be able to satisfy all the customer needs so you'll hear us talk about 50% is the new 100%.

We're looking in our next round to move to a pay as you go rate where we start talking about wire speed and in day to day engineering we really don't look at the how much we are paying today rate.

- Example, we would have 10 gigs from provider "A" and we'll use 2 gigs from provider A and they'll bill us for 2 gig.
- When we start doing a capacity planning and management of that sort we look to that 10 gig number rather than the 2 gig number for planning.
- In budgeting we look at the 10 gig number to make sure we have enough money available.

We're predicting that might save us as much as 60% on our egress side if we can get all of our vendors to participate in it. We did not expect the Chiefs to support it and we were surprised in our first round to find that was not the case.

ICN Services Update

Customers have started to take advantage of the services that we talked about through last year's AET. Some have gone with the DNS services and some of with the BGP services and those types of things. One way is that IFiber is very streamline and they're limited in the services that they provide in the DNS world so we're seeing a couple of the ICN customers move to IFiber as their last mile provider and still get services from ICN perhaps taking advantage of the DNS service as a separate adhoc service.

We could do a better job internally at marketing those services. ICN staff can tell constituents what is available that we currently do, what we do for free as part of our service, the value add, and what are the other services are that we would actually bill for.

The Moline to Galesburg to Macomb span is all in the ground except for the A and Z end, the laterals and we are working on that now. The scope for the A and Z end has been provided to contractors for a quote and is moving forward. Galesburg will probably go to quote the week March 24th. The fiber has not been turned over to DOT so we're right on schedule for this. They're expecting the contractor to actually turn that over to them in the next 4 to 6 weeks. It is in the ground and we have the hand hole locations where we can go and splice to that point. We'll be working with IFiber to get up to DeKalb or Rockford based on their infrastructure from Moline. We've been talking about joining them at Prophetstown.

We have the pilot that Robin was talking about earlier which was the school district that wanted us to build so that we could get it covered under eRate. Tom Oseland and Robin have been working together on this.

The Walnut space in St. Louis is ready for equipment but we won't put equipment there until we have customers or customer sales that are appropriately sized. As Essam has been talking and looking at possibly selling lit services there. We may put a 1RU device there that would support the equipment when we start having DWDM or 10 gig customers or greater there, and we already have an order and a quote standing by.

The Core and Distribution refit project is one of the things that we talked about earlier where we're not doing it once every 60 months anymore and we'll be going to phase 1 for both of those. It may be phase 2 because we did some of it under the grant. This will be replacing the Core Routers with ASRs and replacing the Distribution Router with a combination ASR and Nexus 7k gear. There might be some sites that are smaller and we won't put a Nexus 7000 in but that's the general methodology there.

The other large thing that the ICN is working on is the REP Ring where we're shooting to have that at least partially operational by the beginning of the school year. It is an endeavor getting everything priced, in the proper places, and configured properly. This would allow our customers to purchase a Metro service. Conceptually it would allow any CAI to have a connection to any other CAI or any other point on the network from a Metro services perspective and have it in a redundant fashion.

At the next AET meeting we will probably have the ICN Roadmap completed. We will try to socialize the roadmap with the AET members between now and then as we prepare. Before the fiber project was the annual roadmap that would get us in position to make sure we have no surprises. We went through the AET to get blessings for that and there was a part where we were very interested to hear some of the things that you were interested in so we could make sure those things was incorporated into our long term planning.

Jim states one thing that was discussed and talked about in terms of cost was obviously the cost to internet egress access which is a cost that is fairly fixed in many ways and I don't know how much we could change that cost as we go through and negotiate a better contract. Maybe we could offer more bandwidth for slightly less money.

- Those things would be incremental as was mentioned by several of the AET members and the need for bandwidth that allows them to reach out to other constituents around the state and as Herb mentioned the model they're using at DeKalb for their on-net bandwidth.
- One of the things that we might want to consider again is to look at whether we could make it so that our on-net bandwidth is not just slightly incrementally lower than our off-net bandwidth. Right now they're built in two different ways, one is built for 2 way stream and the other is built essentially for each direction you get a certain amount.
- If you really want a connection from point A to point B you're paying for 2 of them on-net.

The on-net cost was probably about 75% of the off-net costs. Jim asks if we could revisit the numbers because for a lot of uses that the libraries talk about when they talk to connections back to central catalog and for other kinds of resources from the state, the things the Universities talked about in terms of putting their research online and being able to share it around the state is a lot of things that could benefit from an on-net bandwidth. The cost is so much lower that it makes sense to School Districts, Universities or Libraries to purchase both kinds of bandwidth. To say I'm going to buy 25 or 50 megabytes of off-net bandwidth and I'm going to buy 20 or 40 megabytes of on-net bandwidth. That would be one thing that Jim states he would like to revisit if we can.

It was a little disappointing when we went through the last rates it fell off the table. This has always seemed like it would be helpful to ride that free peering access to the ICN or at a very low cost. What was done was not free but a multiplier of what had been purchased and I think was what was discussed at one point as some of the options. Frank tells Robin that he would like to continue that conversation and the pricing Jim was speaking to is point to point and that doesn't give customers access to the ICN.

- An example would be a library would like to have access to another library at a 100 meg speed because that's where they have their system stored and they don't want internet or IP. They only want a direct connection and that's pretty competitive but it doesn't provide you with the layer 3 access.

Frank states that he thinks it's doable. The problem was that at the time there were too many different subjects when ICN was trying to run it through.

It might be another selling point on the ICN network to talk about it as not just the formal community network for Illinois but also the actual community network for Illinois if there is a lot more of this kind of peering going on between Universities, Colleges, K-12, Libraries, Museums, and all those other constituents.

Herb states that in DeKalb that is something the University is extremely interested in and personally he was unhappy to see that it fell off the table as part of the discussion. This is part of the model that the data group, Northern, or NIU net has followed for the constituents up here. NIU has 2 schools on fiber and they are backing up to each other and they're not touching any model unit of it at all and not doing anything other than bouncing through the glass which happens to be a white wave. It's not costing anybody, and not carrying anybody else on the network, and for us this will be nice. As you see different entities build up or whether we want to do a project with Northern or U of I, or SIU. To do a project with SIU or U of I we have to go out commodity internet and back in rather than just utilizing the fact that we are both on the ICN, and I'm connected to the ICN, and flip the switch but I'm throttled down to my commodity internet purchase from the ICN.

Frank states another thing to look at as far as general usages. We're a network which leaves a tremendous amount of egress bandwidth on the table every month, every minute, and every second. Having some sort of pricing structure that helps incent this, providing a resource type service where you're a resource. You're a content network and we have a different price for that because right now we don't have customers using that outbound traffic. Someone stated to use the surveillance at night and leverage the bandwidth that is idling at night.

Robin states he's been talking to Lori about it and Essam and Robin have talked about the option as well.

Robin states that Kirk wanted him to mention that it's time to look at membership again. He would like to get the AET's recommendations before the PC meeting in July which would mean we would need to wrap it up at the May meeting. Sometime between now and April Michelle and Kirk will be sending out the membership list and requesting recommendations. Anything on membership and does that include attendance? Yes per Robin. Jim states yes because it is public information.

Other items

No other items for discussion.

A motion to adjourn meeting was made at 11:41 a.m. by Dennis Gallo and Brandon Gant seconded and the motion carried.

The next AET meeting will be May 16, 2014 at Heartland Community College.