Public Notice
Technical Committee Agenda
Public Notice for the Policy Committee

Regular Meeting
January 10, 2012 – 3:30 PM - City of Champaign Council Chambers

1. Call to Order
2. Roll Call
3. Approval of Agenda
4. Approval of Minutes
5. Policy Committee Updates
6. Action & Discussion Items:
   a. Construction Update
   b. Subcommittee Reports and Actions
      i. OSS/BSS RFP (Fred)
      ii. Marketing and Outreach (John Kersh)
      iii. FTTP Procurement Process/Status Update (Mike Smeltzer/Teri Legner)
   c. Discussion/Approval of Core Network Plan and Design (Tracy)
7. Discussion items:
   a. Tasks or Items for the next meeting
   b. Next Meetings:
      - January 24, 2011 City of Champaign Council Chambers, 3:30 PM
8. Audience Participation – 5 minute limit per person
9. Committee Member Comments and Announcement
10. Adjourn

Sign-in Sheet

UC2B Technical Committee **Date: 12-27-2011**
Time: 3:30 PM **Room: Champaign Council Chambers**

VOTING MEMBERS	**ORGANIZATION**	**Present**
Fred Halenar	City of Champaign	✓
Tony Vandeventer	City of Champaign	
Tracy Smith (Chairperson)	University of Illinois	
Connie Dillard Myers	University of Illinois	
Bill DeJarnette (Vice-Chair)	City of Urbana	✓
William Gray	City of Urbana	
VOTING ALTERNATES		
Craig Shonkwiler	City of Urbana	
	University of Illinois	
Mark Toalson	City of Champaign	✓
NON-VOTING MEMBERS		
John Brighton	University of Illinois	
Chris Hamb	University of Illinois	
Mike Vrem	City of Champaign	✓
Omar Sobh	City of Champaign	
David Young	City of Urbana	
Ross Veach	City of Urbana	
OTHER ATTENDEES:		
Mike Smeltzer	U of I	✓
Teri Legner	Champaign	✓
Peter Folk	Volo	✓

UC2B

MINUTES 12-27-2011 3:30 P.M. CHAMPAIGN COUNCIL CHAMBERS

MEETING CALLED BY	Bill DeJarnette, Vice-Chair
TYPE OF MEETING	UC2B Technical Committee
GENERAL ITEMS	• Bill DeJarnette, Vice-Chair (for Chair, Tracy Smith) called the meeting to order. • Quorum was verified – Verbal Roll call was taken (see Roll Call sheet). • Approval of Agenda. Mark Toalson made motion. Fred Halenar 2nd. Approved. • Approval of 12/13/11 Meeting Minutes. Fred Halenar made motion. Mark Toalson 2nd. Approved.

#5. POLICY COMMITTEE REPORT UPDATES MIKE SMELTZER - TERI LEGNER

DISCUSSION	o Discussed Fiber to the Premise Procurement. o 4 items listed as decision points (leave the 25% waiting for Diversity alone, pursuing lower bonding requirements for smaller contracts, basic split) o 6 component pieces were approved (no limitations), to be addressed with the public next month, back to the Policy Committee for final approval and then to City Council.

#6A. CONSTRUCTION UPDATE MIKE SMELTZER

DISCUSSION	o The Urbana plowing crew was on High Cross Road (in snow). o The Champaign crew was working on Green Street. o Western has completed a lot of work on campus – very successful.

#6B. SUBCOMMITTEE REPORTS & ACTIONS

DISCUSSION	**OSS/BSS RFP (Fred, Chair)** • On hold, waiting on specifications. **Marketing & Outreach (Mike Smeltzer – Teri Legner)** • Mike Smeltzer said that the canvassers gave a report to the Policy Board and 58% of the people they've talked have indicated they want them to come back & discuss signing up. They've knocked on about 2000 doors (half not home), but of the people (400+ homes expressed interest in signing). • Shut down door-to-door activity for the winter break (until March), but will continue public meetings. • Teri Legner reported that Neo is working on service tiers, rate evaluations, and equipment deposits, etc…and they should have a revised draft report soon. **IRU/Transport Contracts & Adoption (Bill DeJarnette, Chair)** • Completed, to be removed from agenda. **FTTP Procurement Process/Status Update (Mike Smeltzer/Teri Legner)** • No further update.

#6C. DISCUSSION/APPROVAL OF CORE NETWORK PLAN AND DESIGN MIKE SMELTZER

DISCUSSION	o The committee reviewed & discussed the design, cost, and equipment (handout provided/attached). o The committee discussed possible money savings (if any) & cost in depth.

7. DISCUSSION ITEMS

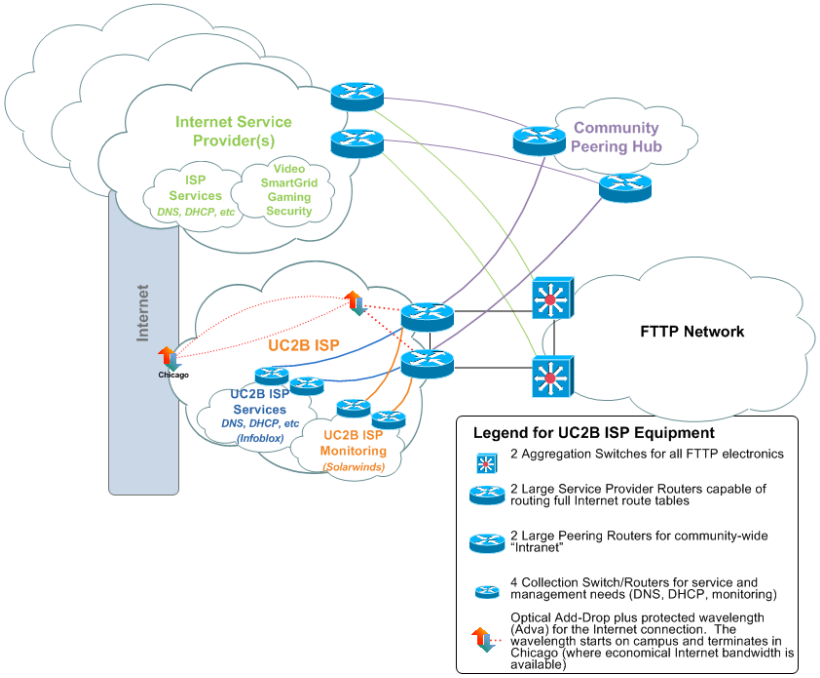
DISCUSSION	**Tasks or Items for the next meeting:** o Mike Smeltzer to take back the Core Network Plan & Design to Tracy Smith & her team to review more closely the budget and detailed costs. Item to be brought back to next meeting. **Next Meetings:** o January 10, 2012 City of Champaign Council Chambers, 3:30 PM o January 11, 2012 City of Champaign Council Chambers, 3:30 PM – (Special Joint Meeting) o January 24, 2012 City of Champaign Council Chambers, 3:30 PM **Audience Participation:** o None **Committee Member Comments or Announcements:** o None **Adjournment – Bill DeJarnette announced the meeting was adjourned.**

Overview and Recommendations for the UC2B Core Network Design

OBJECTIVE
To to build a redundant, highly available core network infrastructure from which Internet services will be offered to UC2B subscribers.

BACKGROUND
To launch the UC2B ecosystem, a baseline Internet service is required. For a minimum of 2 years, the University of Illinois has agreed to manage the core of the UC2B Internet Service Provider (ISP) service. As such, network equipment must be procured.

DESIGN DETAIL



DESIGN EXPLANATION
The FTTP "cloud" will aggregate into two switches each of which is located in the UC2B core node sites. Any provider (service, application, etc.) will deliver services to UC2B-connected locations (homes, anchors, businesses) via these FTTP aggregation switches. These are the entry point for any provider to any UC2B subscriber. To maximize availability, all providers will be required to redundantly connect to the UC2B network via these two aggregation switches.

The community-wide "Intranet", which is unique to the UC2B project, is where all UC2B providers will also connect. This community peering hub will provide unfettered access between all UC2B-connected entities. For example, students will have direct access to local schools, libraries, and the University regardless of their Internet provider on the UC2B network. The community peering hub will consist of two "service provider class" routers each of which will be located within a UC2B core node site (for redundancy).

The Internet service provided by UC2B will be leveraging the University's contracts for commodity Internet bandwidth. Again, to provide a resilient service, one "service provider class" router will be located within each of the two UC2B core node sites (for redundancy), and the connection to Chicago will be on a protected ring.

As part of the UC2B Internet service, critical supporting services like DNS and DHCP are required. Redundant servers running those services will attach to one of the two smaller routers in each core node..

Out of band management of this network is also critical. The other small router in each node will connect the servers providing network management and access management as well as supporting tools, such as network monitoring.

DESIGN GOALS

While the University has agreed to manage the core network equipment for 2 years, management afterwards has not been decided. To ensure that the appropriate class of equipment is procured and to facilitate an easy management transfer, we recommend Cisco as the vendor. Their software is considered to be "universal". Cisco equipment also excels at rate limiting and multicast, both of which will be important for the UC2B network.

The University has access to negotiated contracts with Cisco and UC2B has an existing contract for ADTRAN equipment. Each Adtran aggregation switch will have 26 10-Gbps ports and 16 1-Gbps ports. Each Cisco Service provider router will have 8 10-Gbps ports. Each Cisco Peering router will have 6 10-Gbps ports and 20 1-Gbps ports. Due to the volume of equipment procured annually, the discounts extended to the University by far surpass what would be extended for a separate UC2B bid for 8 Cisco routers and 2 switches. It is recommended that the existing University and UC2B contracts be utilized for the procurement of the following:

TYPE	MODEL	UNIQUE REQUIREMENTS
2 Aggregation Switches	Adtran	Multiple high-density 10Gbps and 1 Gbps ports; Same provisioning software for the FTTP equipment
2 Service Provider Routers	ASR-9006	Adequate memory to hold full Internet route table; initially 4 10Gbps links with 1Gbps links for connecting the service and monitoring routers. Ability to significantly expand 1Gbps and 10Gbps port density.
2 Community Peering Routers	ASR-9006	Initially 2 10Gbps uplinks and 20 1Gbps links for peering connections. Ability to significantly expand 1Gbps and 10Gbps port density. Memory to support large route table.
Service Routers	3750X	High density 1GB interfaces
Mgmt Routers	3750X	
Monitoring Software	Solarwinds	
IPAM appliance	Infoblox	DNS and DHCP management
Servers	DELL	Monitoring, etc

In addition to the unique requirements previously listed, the follow considerations were given when specifically selecting the Cisco ASR platform:

- Similarly equipped new 6500's would cost more than the ASR's.
- Purchasing used equipment on Ebay is not a desirable purchasing option, nor is it an option available to us.
- Other "peer service providers" (Illinois Century Network, WiscNet, NorthWestern University, University of Chicago, and the Ohio State University) utilize and highly recommend the ASR platform.
- Cisco (with the exception of Juniper) out-performs other vendor solutions on critical features, like multicast and rate limiting abilities.
- Unlike Juniper, Cisco has universally understood management software.

BUDGETARY EXPLANATION

The following chart describes the various components including the amount needed and the approximate costs:

TYPE	MODEL	QUANT	DESCRIPTION	TOTAL PRICE
Aggregation Switch	TA5000	2	Adtran switch; 26 x 10Gbps; 16 x 1Gbps each	$135,407
			TOTAL PRICE	$135,407
Service Provider Routers	ASR-9006	2	Chassis, DC power	$9,000
	ASR9K	2	Controller cards with 4G memory; 1 per router	$14,400
	A9K-4T-L	4	4 x 10Gbps low queue line card; 8 total 10Gbps ports per router	$66,600
	XFP-10GLR	10	Multirate XFP module	$18,000
	Smartnet	N/A	8x5xnext business day	$7,226
			TOTAL PRICE	**$115,226**
Community Peering Routers	ASR-9006	2	Chassis, DC power	$9,000
	ASR9K	2	Controller cards with 4G memory; 1 per router	$14,400
	A9K-2T20GE-L	2	2 x 10Gbps, 20 x 1Gbps low queue linecards; 2 10Gbps links to service provider routers & 20 1Gbps ports for peering connections	$33,300
	A9K-4T-L	2	4 x 10Gbps low queue line card; 4 total 10Gbps ports per router for other service provider connections	$33,300
	XFP-10LGR	4	Multirate XFP module	$7,200
	GLC-LH-SM	8	GE SFP, LC connector LX/LH transceiver	$3,584
	Smartnet	N/A	8x5xnext business day	$4,962

			TOTAL PRICE	**$105,746**
Service Routers	3750X	2	24 port GE SFP IP Base	$18,000
	C3KX-NM-1G	2	Catalyst 3K-X 1Gbps Network Module	$450
	GLC-LH-SM	2	GE SFP, LC connector LX/LH transceiver	$896
	C3KX-PWR	2	Redundant 440W DC power supply	$450
	Smartnet	N/A	8x5xnext business day	$2,280
			TOTAL PRICE	**$22,076**
Mgmt Routers	3750X	2	24 port GE SFP IP Base	$18,000
	C3KX-NM-1G	2	Catalyst 3K-X 1Gbps Network Module	$450
	GLC-LH-SM	2	GE SFP, LC connector LX/LH transceiver	$896
	C3KX-PWR	2	Redundant 440W DC power supply	$450
	Smartnet	N/A	8x5xnext business day	$2,280
			TOTAL PRICE	**$22,076**
IPAM	Infoblox	2	1852-A network service appliance (dns, dhcp, ipam)	$95,000
Monitoring Software	Solarwinds	1	Orion Network Performance Monitor	$24,975
		1	NetFlow Traffic Analyzer	$14,995
Servers		4	Servers for Solarwinds, etc	$12,000
Optical	Adva	N/A	Optical equipment for Internet transport from Chicago	$82,000
			GRAND TOTAL	**$627,988**

SUMMARY & RECOMMENDATION

A UC2B Internet service offering is essential to attract subscribers. The UC2B Internet service should be delivered via robust, redundant, "carrier class" equipment. The University and UC2B have existing contracts for the desired class of device. In addition to availability and cost, manageability is also a factor. To facilitate the potential management transition after 2 years, seeking "universal software" defines the equipment vendor to be Cisco. The recommendation is to proceed with purchasing the UC2B core equipment immediately so that such infrastructure exists to provide service to subscribers beginning as early as April.