

The Nutmeg Network

Improving Connectivity at Light Speed

Connecticut Department of Administrative Services and the Broadband
Technology Opportunity Program (BTOP)

Agenda

- Definition and Governance
- Status of Network Construction
- Financial Model
- How to Apply
- More Information and Contacts

What is the Nutmeg Network?

The Nutmeg Network is a statewide, fiber-optic infrastructure that improves upon and expands the availability of high-speed networking in the State of Connecticut. It consists of:

- Public Safety Data Network (PSDN)
 - Creates a highly dependable (redundant) and secure network that supports vital public safety and first responder applications for NG911, Collect and the P25 Radio System.
- Connecticut Education Network (CEN)
 - Increased capacity to individual sites (up to 1GB to sites on 10GB rings) and overall backbone capacity (10 and 20GB today, 400 GB capacity+)
 - Ability to deliver new services (e.g. L2 VPN)
 - Extended to include Open Access requirements of the award.
- Overall Benefit
 - Places fiber optic cable in numerous areas of the state, including many that are currently underserved, making it logistically and strategically less burdensome for municipalities to procure their own fiber connections through out the state.

The Nutmeg Network/BTOP Program Overview

- Grant awarded on September 3, 2010
- Network construction must be 67% complete by September 2012
- Network must be 100% complete by September 2013
- Network Governance for access, controls and utilization must be developed and implemented before September 2013
- Ensure proportional expenditure of the 20% matching dollars
- On-going sustainability
- “Buy American Act” compliant

The Nutmeg Network-CEN Project Overview

- Objective: To create enhanced connectivity (up to 1Gpbs) to approximately 432 educational related locations including:
 - 231 K-12 Schools
 - 146 Libraries
 - 44 Community Colleges, Universities and other Higher Education facilities
 - 6 CPTV Sites
 - 5 Other Community Support facilities
- Upgrade/refresh of current Network
 - Upgrade existing antiquated network equipment, including 8 year old Network core to support Broadband growth
 - Increased capacity to meet existing demands
 - Scalability to meet the needs of future requirements
- Open access to non-educational use to meet grant's Open Access Requirement

The Nutmeg Network- Public Safety (DESPP) Project Overview

- Objective: To create a secure, robust and redundant network to support the exclusive needs of Public Safety/First Responders
- Separated into 2 Phases
 - Phase 1 – Currently in operation
 - 112 PSAPS and related buildings
 - Phase 2 – Currently in construction
 - 269 Fire Departments (including Tribal Fire Departments)
 - 61 Police Departments
 - 37 DESPP Facilities
 - 25 Tower Locations
 - 6 Tribal and College Police Departments

The Nutmeg Network- Public Safety (DESPP) Project Overview

- Network is not “Open Access”
 - Use of Network Strictly Controlled
 - All traffic is separated to keep critical applications protected and to meet federal security guidelines for transportation of sensitive data
- Core Services
 - Next Generation 911
 - Criminal Justice Systems
 - Interoperable Communications
 - Access to Emergency Response Information and State Emergency Systems

Governance and Coordination

Education and Open Access Related

The Commission for Educational Technology (CET) is the governing body for use of the Educational and Non-Public Safety related portions of the Nutmeg network.

<http://www.ct.gov/ctedtech/site/default.asp>

Public Safety Related

The E911 Commission, in consultation with the DESPP Coordinating Advisory Board, is the governing body for use of the Public Safety related portions of the Nutmeg Network.

<http://www.ct.gov/despp/cwp/view.asp?a=4153&Q=516140&PM=1>

The Nutmeg Network Technical Review Subcommittee
(engineering and operations team)

Recent Project Accomplishments

- Implement Requirements phase of Governance Model
- Completed Site Surveys at all of the required locations
- Physical network construction at 87%
- Fibertech completed new fiber installation at 541 locations
 - Off-Net Fiber miles deployed – 960 (of 1,053 planned)
 - On-Net Fiber miles connected – 7608 (of 7,827 planned)
- Equipment installed at 842 locations (including 323 upgraded locations)
- Conducted base connectivity testing
- Phase 1 of the PSDN is complete – transitioned to limited production mode for Collect and P.25 Radio applications
- Equipment ordered for remaining locations

Activities Planned this Period: January 2013 - March 2013

- Continuation of fiber construction
 - Installation of Off-Net fiber and activation of On-Net fiber miles to remaining locations
- Continue Site Issue Remediation planning identified locations
- Continued installation of equipment at planned locations
- Continue connectivity testing at newly installed sites
- Continue to establish base connectivity at planned locations
- Implement Network Use Request processes

Nutmeg Network Economics

- Over \$120M in recent capital addition to acquire equipment and fiber (20 year IRU lease)
- Combined annual network costs of \$10M
 - \$4M in annual fiber maintenance costs
 - \$3.1M in annual equipment maintenance cost
 - \$1.8 M in support staff costs
 - \$1M in Internet, Internet2 and other provider fees
- Revenue Sources
 - \$4M from Public Safety E911 fund for PSDN
 - \$3.7M from State General Fund and Capital Equipment Fund
 - Recent \$300,000 reduction in FY13
 - \$1.3 M from current paying customers
 - \$0.8M from new uses of network (Municipalities, Private Industry, State Agencies, etc.)

Rate Comparison / Examples

Internet Access

	Consumer Grade Cable	Business Grade Cable	Nutmeg Network Open Access	T1 (x2)	State Contract Rate for OPT-E-MAN (silver)
Service (Mbps)	20 – down 3 - up	100-down, 10 - up	100 handoff 10 – down 10 - up	3.0 – down 3.0 - up	100 handoff 10 – down 10 - up
Bursting	Typically no	Usually up to speed of handoff	Yes – up to speed of handoff	No	Yes – up to speed of handoff
Monthly (\$)	95	370	476	838	1,225
Annual (\$)	1,140	4,440	5,712	10,056	14,700

“How do I benefit from this?”

- Construction of the fiber footprint across the state makes access to high-speed networking less expensive.
- If you want to “build your own network”, continue to work with commercial carriers
- If you want to connect to current members of the Nutmeg Network or use the Nutmeg Network – Fill out a Network Use Request

Network Use Request Anticipated Process Flow

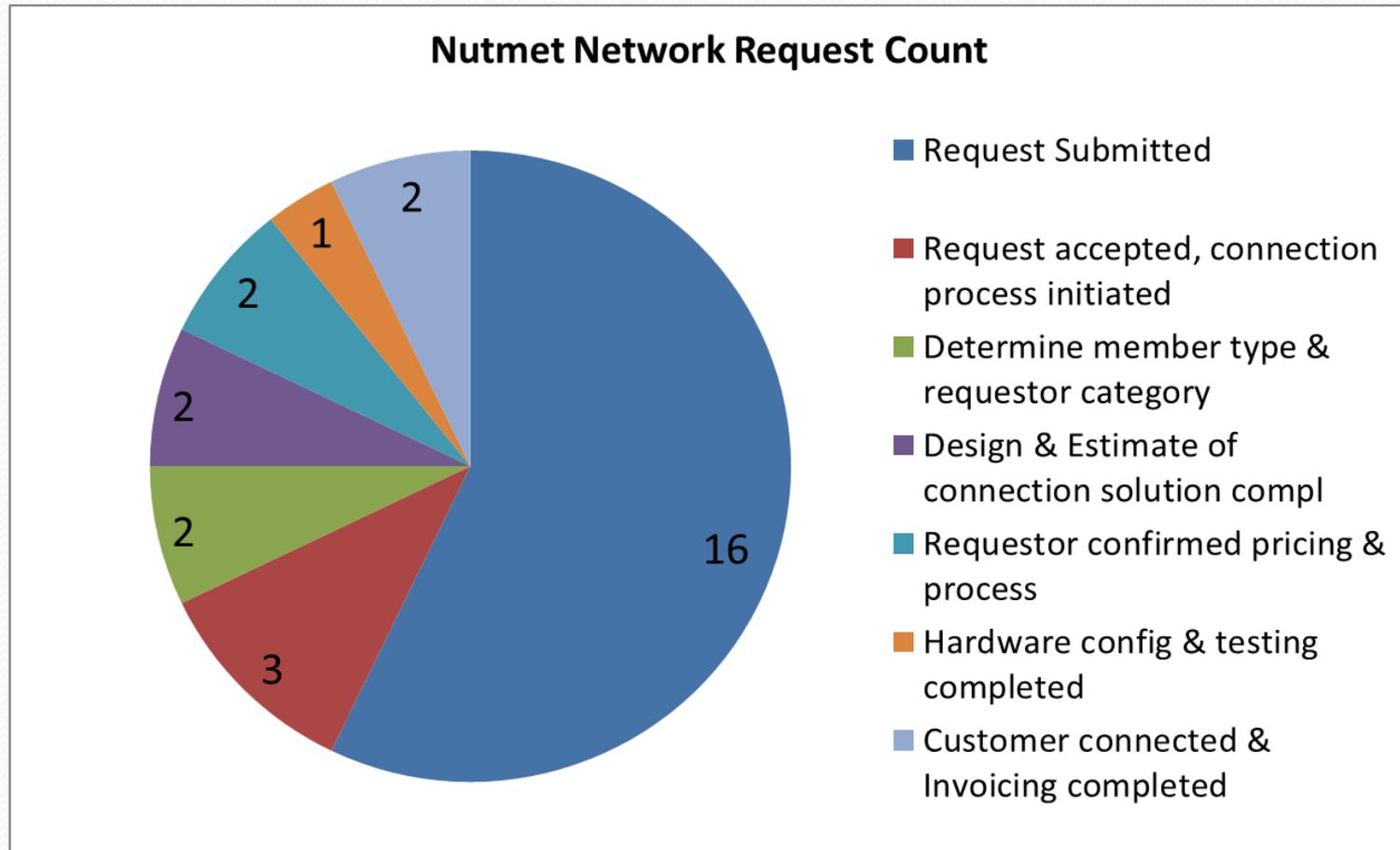
- End user (via web link) submits Network Use Request (NUR) documentation to the Nutmeg Network Technical Review committee outlining intended use and technical/operational requirements
- Committee reviews request, making determination of:
 - Determine which request falls within existing definitions of use
 - Analyze technical specifications and network requirements
 - Determine additional requirements necessary (if any)
 - Determine if any one-time or monthly recurring costs are necessary
- Committee obtains additional information from end user if needed to complete analysis
- Committee submits NUR documentation along with analysis and written recommendations to appropriate governing board for further action and approval

Network Use Request Anticipated Process Flow

- Governing Board to decide:
 - Approval to proceed
 - Establish MOU and/or other agreements as necessary
 - Determine if existing definitions should be changed to support unanticipated use
- Once approval is received, Technical Design Sessions begin
- Implement request and Test
- Customer Acceptance
- Transition to Production
- NUR form web link: <http://nutmegnetwork.uconn.edu/request/>

Status of Current Requests

(as of 1/11/2013)



The Nutmeg Network Information

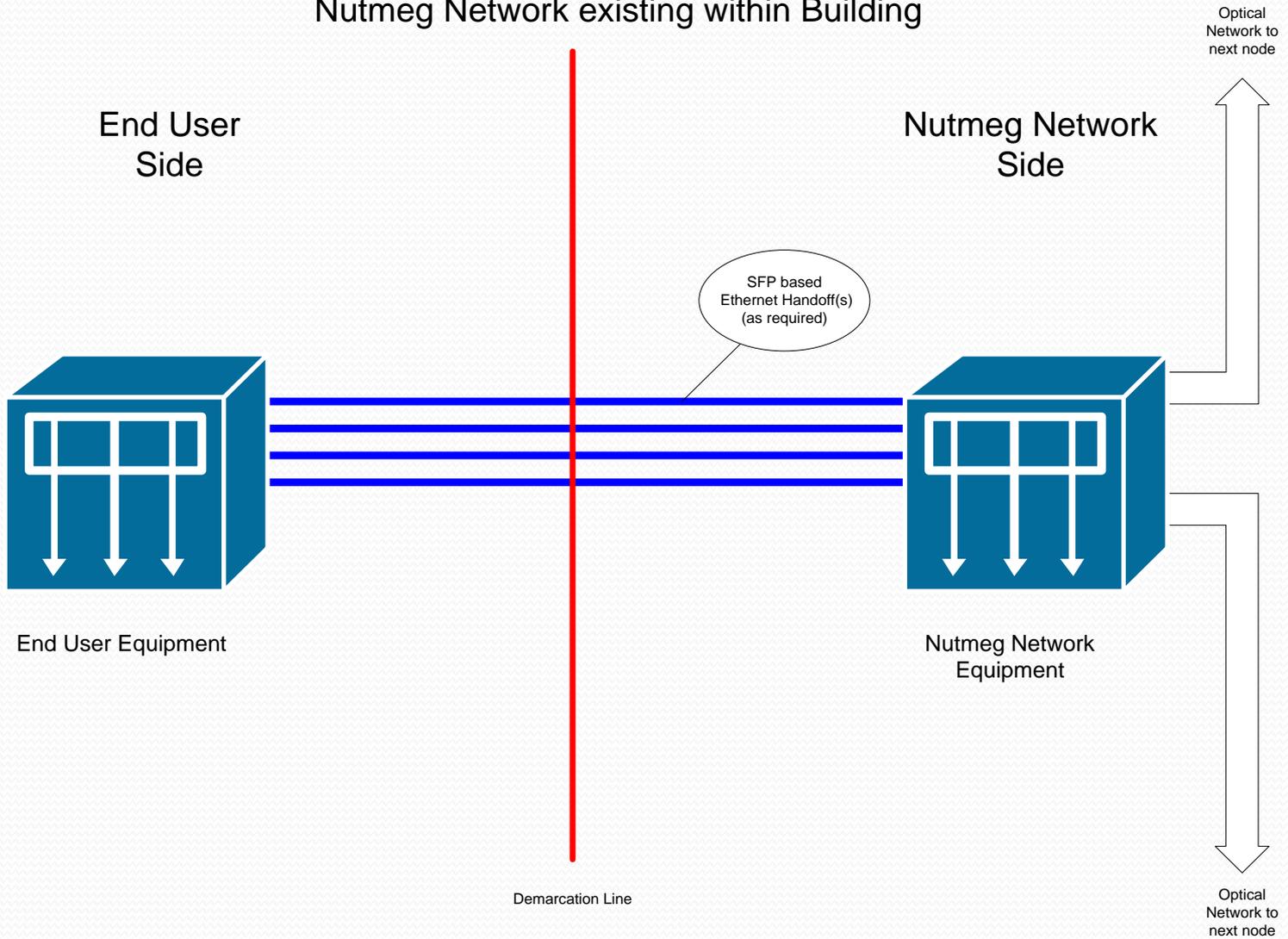
- Nutmeg Network Request Form
 - <http://nutmegnetwork.uconn.edu/request/>
- CEN
 - <http://www.ct.gov/cen/site/default.asp>
- PSDN
 - <http://www.ct.gov/despp/cwp/view.asp?a=4153&Q=516140&PM=1>
- General information about ARRA and NTIA BTOP Grant
 - <http://www2.ntia.doc.gov/>
- Current information on this project
 - <http://www.ct.gov/doit/cwp/view.asp?a=3790&Q=446266>

Thank you

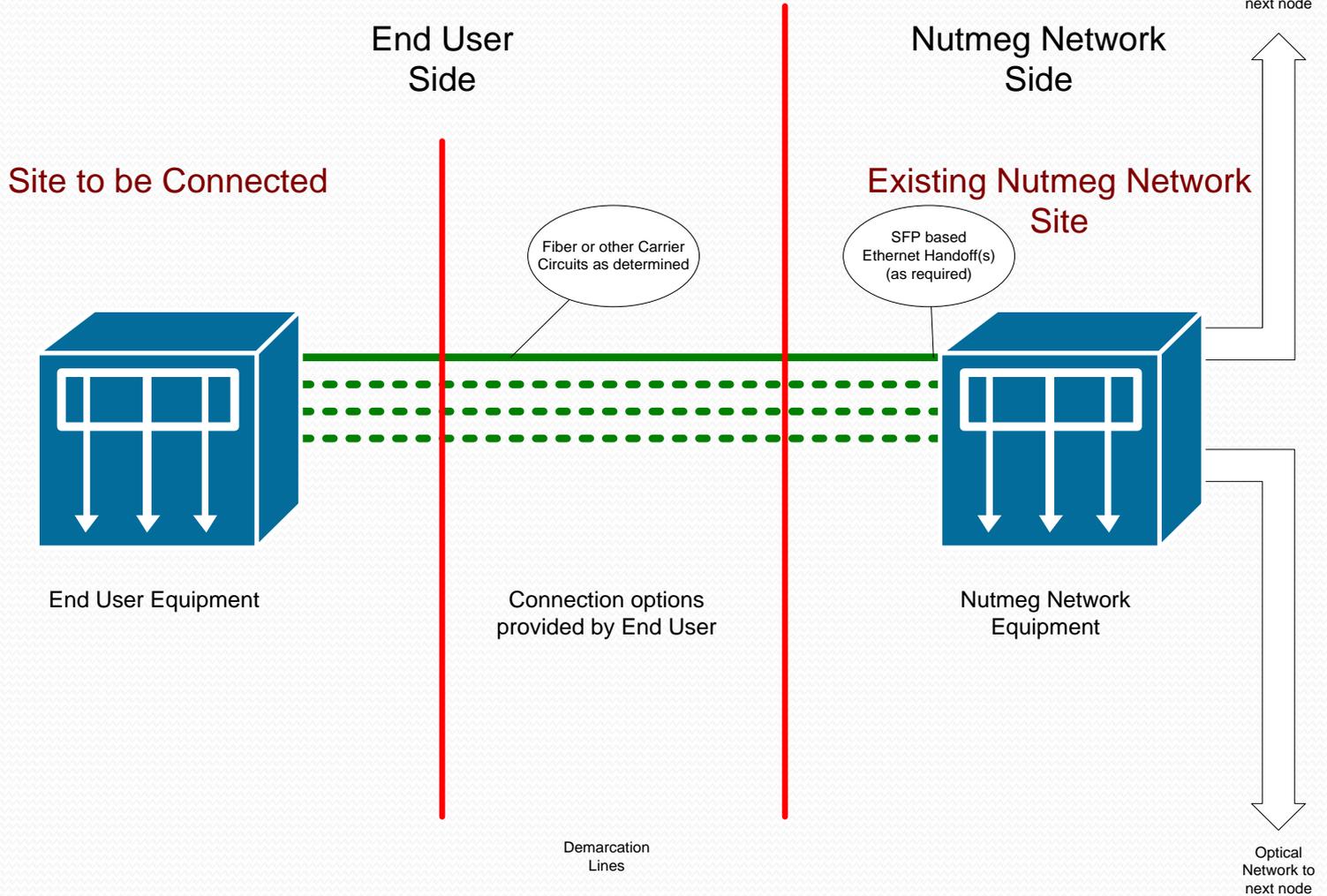
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Appendix

Typical Connection Nutmeg Network existing within Building



Typical Connection Nutmeg Network not existing within Building



Alternative Connection Option – Node Expansion Nutmeg Network not existing within Desired Building

