Rural Broadband Council Webinar
Douglas Electric Cooperative/Douglas Fast Net (DFN)

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Todd Way, Manager, DFN

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Who is Douglas Electric Cooperative?

+ Electric distribution cooperative (10,000 meters) – 5.8/mile
+ Located in SW Oregon where there are lots of mountains, valleys and tree!
+ Formed in 1938
+ Governed by 7 member board of directors
+ Wholly-owned telecommunications subsidiary is Douglas Fast Net (DFN)
+ One of the six owners of LS Networks (LSN)
Two Part Strategy

+ Local connections via local companies (local loop providers)

+ Local loop providers connect to interexchange carrier to move data across the state and to the Internet. Local loop providers owned by local distribution cooperatives/others

+ Local distribution cooperatives and one tribe own interexchange carrier

+ LS Networks is interexchange carrier – www.lsnetworks.net

+ Today’s webinar focuses on the local loop
Who is Douglas Fast Net (DFN)?

+ Telecommunications company dedicated to making sure advanced telecommunications does not bypass Douglas County wholly-owned by Douglas Electric Cooperative
+ Lit original 30 miles of local loop and middle mile in Roseburg toward the end of 2002
+ Currently has 600+ miles of lit fiber and fiber pending construction (Active Ethernet, CWDM, GPON) – retail and wholesale – 1 mbps to 10,000 mbps
+ 14 wireless broadcast sites (fixed wireless, WiMax)
+ 79 remote DSLAMs (DSL) operational or in the queue
+ Ethernet, Internet, TDM, Collocation, Managed Servers, Web/e-mail hosting and digital voice.
+ Cell tower fiber optic backhaul
Who is Douglas Fast Net (DFN) - Continued

+ Employees - 22
+ Service Area – Greater Douglas County Area – about the size of Connecticut (5,500 sq miles)
+ Profitability – since 2006
+ Total Plant - $10 million
+ Total Debt - $6 million
How we came to pull the trigger on creating DFN

- Failure of Incumbent Local Exchange Carrier (ILEC) to provide adequate and advanced services
- ILEC failures in other areas of Oregon caused many electric cooperatives to become concerned
- Concerns - lost economic development opportunities, lost medical advancements, disadvantaged education developments, lost government efficiency improvements, and loss of competitiveness for our local businesses
- Chamber of Commerce Telecommunications Task Force
- Business plan developed
- County financial involvement to improve infrastructure
- Trigger pulled
What we tried that did not work

- Bleeding edge technology and unproven vendors
- Full cost recovery upfront (charging customers the total cost of the project instead of a break even method)
- Wholesale only model
- Reluctance to build out network (mainly due to cash flow concerns)
- Treating DFN like a utility instead of a for profit competitive entity
What we tried that worked

- Blended wholesale model / retail model
- Build cost recovery over the life of the contract
- Expansion into un-served areas
- Reliance on proven equipment vendors with proven performance record
- Developed a professional and technically competent staff
- Grants received by customers - NTIA BTOP; Secure Rural Schools Safety Net, Title III; E-rate; local foundations and USDOE Stimulus. Customers used these funds to cover portion of installation costs.
- We had the passion!
What we tried that worked (continued)

+ Interexchange carrier/Local Loop Model
+ Having our own line crews
+ Owning our own plant with only limited third party line leases
+ Built network for commercial purposes first, then utilized network for electric utility SCADA, AMI and automated line distribution (future)
+ Serve inside and outside electric service territory
Power of Adoption for Communities, Douglas County - Interviews

- Umpqua Community College (UCC)
- UCC Foundation
- Douglas Education Service District (Douglas ESD)
- Douglas County
- Mercy Medical Center
- Douglas County Independent Physicians Association (DCIPPA)
- FCC Commercial Furniture
Tip of the Iceberg
UCC - Before

+ No fiber optic connection
+ Had Frame Relay connection between main campus and satellites. Was expensive, bandwidth constricted and required an engineering process that was time consuming. Lacked easy and affordable scalability.
+ No on-line class offerings
UCC - Change

+ Fiber optics now installed at main campus and satellites
+ Wide Area Network (WAN) Ethernet Point to Multi-point connectivity between main campus and satellites
+ Large, physically redundant Internet feed
UCC - After

+ 424 on-line classes with 8,754 enrollees
+ UCC Construction class at UCC Starlight Satellite location has on-line students located in Coos Bay, Brookings and Weed, CA
+ Military take UCC online courses while stationed in Iraq and Afghanistan
+ Moving to cloud network system where fiber optic connectivity and redundancy are critical. Can’t afford to have on campus data center to house all the needed applications.
+ UCC has a campus wide WiFi network for students
Douglas ESD - Before

- Shared Frame Relay Network with 1 mbps capacity to schools was congested with little ability to increase capacity.
- School’s IT personnel determined when students could take the State of Oregon online testing, usually in batches of 10-12 students at a time shared between three schools. Had plenty of PCs.
- No on-demand video streaming. Teachers had to download video overnight and show next day on CD.
- Video classroom was poor quality. Language teachers could not see lips of students as too jumpy/blotchy
- Costly, decentralized servers at each school
Douglas ESD - Change

DougNet

Network Diagram

Key

VPN
Fiber optic cable
T-1 Point-to-Point
Wireless
61 connected sites

DougNet_current.vsd
August 10, 2011

Douglas ESD

- Change

Fiber optics now installed between Douglas ESD and most school districts
- Wide Area Network (WAN) Ethernet Point to Multi-point connectivity between Douglas ESD and most school districts
- Large, physically redundant Internet feed to Douglas ESD
Douglas ESD - After

+ Each school district has WAN Ethernet 10-100-GigE fiber optic connections (with a few exceptions).
+ Teachers schedule when the students take state online tests not IT personnel.
+ Teachers can stream on demand video at the same time
+ Video classrooms in HD and high quality. The language teachers can see their student’s lips move in sync.
+ ESD moved to centralized virtual servers, reducing server counts from 200 to 20. Saves about $500,000 initially and periodically thereafter with upgrades.
Mercy Medical Center and DCIPA - Before

- Sneaker Network for images on film via foot and vehicle.
- Film images were placed with patient when transported out-of-town.
- Lab tests and image results were placed with courier and took 1-2 days to receive by doctor.
- Had difficulty recruiting radiologists as they worked during the day and were on call at night and weekends.
Mercy Medical Center and DCIPA - Change

- Fiber optics now installed at hospital, clinics, physician offices, labs, imaging centers, pharmacies, PACs, and back up data centers.
- Wide Area Network (WAN) Ethernet Point to Multi-point connectivity between all.
- Large, physically redundant Internet feed
Quote “fiber optic broadband has dramatically transformed how patient care is delivered in Douglas County” (Nancy Laney, Mercy Medical Center)

Douglas County enjoys integrated Electronic Health Records (EHR) that dramatically reduces the time between imagery and lab production and physician receipt to 5 minutes. The Sneaker Network is gone!

Umpqua One Chart EHR allows any doctor with the proper authorization to view a patient’s medical records. In the future, physicians will have iPhone apps to allow them to view lab reports and other health information from their iPhone.
Out-of-area telehealth implemented in the summer of 2010 for specialty areas that Douglas County lacks depth including neuro, stroke and pediatrics. The InTouch Robot (equipped with portable telemedicine cameras and monitors) allows OHSU specialist to provide real time second opinions at Mercy Medical Center. OHSU doctors view the patient via the MCC InTouch Robot including images, take blood pressure and view cuts in HD for color and appearance.

Radiologists now are able to read images from home. Local rads work 7am to 9pm seven days a week. Out-of-area Nighthawk rads read all other hours.
After the out-of-area telehealth implemented in the summer of 2010 for specialty areas that Douglas County lacks depth including neuro, stroke and pediatrics. The InTouch Robot (equipped with portable telemedicine cameras and monitors) allows OHSU specialists to provide real-time second opinions at Mercy Medical Center. OHSU doctors view the patient via the MCC InTouch Robot including images, take blood pressure and view cuts in HD for color and appearance.

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Mercy Medical Center and DCIPA - After
Douglas County - Before

- Library and branches did not have broadband
- Remote health clinics had no broadband
- Arraignments performed by four Justices of the Peace in person in four towns in Glendale, Reedsport, Drain and Canyonville
- All maps, assessor records, et al were on paper
- 911 was radio only from dispatcher to field officer
- No reverse 911
Douglas County – Change

+ Fiber optics now installed at health department, health clinics, library and branches, courthouse, justice center, juvenile corrections center, 911, public works facilities and more
+ Wide Area Network (WAN) Ethernet Point to Multi-point connectivity between all.
+ Large, physically redundant Internet feed
Douglas County - After

+ Main library and branches provide Internet to public
+ County Health Department on EHR
+ Video arrangements are conducted between Justice of the Peace Courts and Douglas County Jail. No transport of inmates needed. Saves on transportation costs, officer time and is safer. On a typical day, Douglas County performs about 15 video arrangements.
+ All maps and assessor records can be accessed online
+ Patrol cars, fire vehicles and EMT fleets have in-vehicle PCs that link to state and Federal agencies for needed information
+ Reverse 911 enabled
FCC Commercial Furniture - Before

+ FCC designs, constructs and installs dining furniture to all major fast food restaurants including McDonalds, Taco Bell, Jack-in-the-Box and more

+ T-1 connection was expensive and bandwidth limited

+ No video conferencing and burned CDs sending to clients via overnight mail

+ Poor shipment tracking

+ Business was done over the telephone and was limited
FCC Commercial Furniture - Change

+ Fiber Optic line now installed
+ Large Internet connection
FCC Commercial Furniture - After

+ FCC conducts many GoTo meetings with clients for design presentations and development
+ Frequent 50-100 mbps AutoCAD and rendering files transfers
+ Shipment tracking much easier
+ E-mail much more efficient and effective than the telephone. Instant photos helps to troubleshoot problems with return design corrections. Replacement part photos for determining replacement parts.
+ A remodel finds an FCC associate taking about 30 photos, completing a scaled shell site drawing and site questionnaire that is then sent to FCC HQ via e-mail. FCC can complete and send remodel design back the same day!
Thank You

- Astika Welikala, Douglas ESD
- Nancy Laney, Mercy Medical Center
- Larry Strickland, Roseburg Radiologist
- Gilbert Florescu, DCIPA
- Kevin Potter, Douglas County
- Gary Crowe, Peter Felton, FCC Commercial Furniture
- Dennis Stutes, Rena Gulick, Kathy Thomason, UCC
- Dennis O’Neill, UCC Foundation
- Miles Ellenby, OHSU
- Todd Way, DFN
Thank You!

Q & A

After Presentations
Join us for more informative Webinars
Part II. From Pilot Project to Full Scale Fiber-To-The-Home
October 10th from 1:00 – 2:00PM (EDT)

**Presenters:** Ken Johnson, Co-Mo Electric and Randy Klindt, Co-Mo Comm

Part III. – Federal Grant Spurs North Alabama Electric Co. Fiber-To-The-Home Project

November 13th from 1:00 - 2:00PM (EST)

**Presenters:** Bruce Purdy and Jerry Sharp, North Alabama Electric Co.

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Cybersecurity Webinar Series

Part I. The New Cybersecurity Environment - What You Need to Know, September 26

Part II. Cybersecurity Performance Measurement Primer – Tuesday, November 12

Part III. Cybersecurity in Your Organization – Strategic Communication and Engagement – Tuesday, December 10

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