Level 3 Solutions for FCC Rural Telehealth

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Level 3 Profile

A premier provider of services over one of the world’s most advanced, IP-optimized networks

- Established: 1998
- Headquarters: Broomfield, CO
- 2007 Annual Revenue: $4.3 Billion
- Employees: 6,300
- Four Groups
  - Wholesale Markets
  - Content Markets
  - Business Markets
  - European Markets
- Customers:
  - MySpace, Yahoo!, YouTube, Internet2, Whole Foods, Harman Becker, AOL, Comcast
- Network:
  - One of the largest global Internet backbones
- Services:
  - Complete portfolio of voice, data, video and Internet services
Who we serve

Technically Advanced Healthcare Companies

The World’s Leading Healthcare Customers Rely on Level 3 for Their Network Requirements Including:

- Nine of the top 10 world leading pharmaceutical companies
- Seven of the top 10 US health insurance companies
- Four of the top five US hospital systems

Representative Customers

[Logos of representative customers]
What We Enable

Healthcare Applications

- Migration From Paper to Electronic Medical Records Storage
- Securely Move Large Volumes of Medical Data and Images
- Connect Intra-Campus Networks, Regional or National Networks with Cost-Effective, *HIPAA Compliant* Communications Infrastructure
- Moving Health Information and Applications to the Web
- Migration from Frame Relay and ATM Networks to Ethernet and VPN Networks
- Migration from TDM to IP Voice Infrastructure and Contact Centers
Common Drivers for FCC Rural Broadband Telehealth Grant Applications

- Linking partner hospitals
  - To enable exchange of clinical information for consultation between academic medical center physicians and community based providers
    - Real-time remote viewing by physicians to determine need to transport a patient for interventional cardiology procedures where not available locally
    - Exchange patient record information for follow ups as patients return to local care
  - To facilitate remote monitoring and management of patients in rural communities
    - Neonatal, cardiac ICU remote care coordination
  - For continuing education
    - Using existing Polycom videoconferencing

- Extending existing healthcare networks to rural hospitals
  - Telemedicine networks that include interactive video, PACS, Internet, voice and administrative data

Bottom line: Multipurpose networks for always on availability.
Level 3 provides a broad range of services across the spectrum, allowing businesses to evaluate the optimal balance of insourcing vs. outsourcing.

Partnerships with Connectors will increase our ability to meet FCC Rural Healthcare Pilot Program proposal requirements. Now is the best time to be working with Grantees to help them determine options.
## Level 3 Solutions
Ethernet-enabled WANs: Have It Your Way

<table>
<thead>
<tr>
<th>Service Requirement(s)</th>
<th>Level 3 Service</th>
<th>Benefit(s) to Customer</th>
<th>Configuration</th>
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</table>
| Northeast Health System connects locations to data center, prefers private lines        | Private Line Hub                    | ▪ Fully protected private line dedicated bandwidth  
▪ Flexible pay as you grow, adding end links                                               | Metro Hub     |
| Regional Plan Payer connects primary Metro locations and requires dedicated bandwidth   | Private Dedicated Ring              | ▪ Fully protected private line dedicated bandwidth                                                                                                      |               |
| Midwest Health System migrates frame relay network connecting acute care and radiology locations to data centers | Ethernet Virtual Private Line (EVPL) | ▪ Ethernet service with 1Meg to 1Gig connectivity  
▪ Well suited for scalable, secure partial mesh  
▪ Class of service protects critical traffic                                                |               |
| Regional Plan Payer connects locations cost effectively in a full mesh, uses VoIP on the backbone | IP VPN                              | ▪ Multiple access choices  
▪ Well suited for scalable, secure full mesh  
▪ Class of service protects voice traffic                                                  |               |
Level 3 Ethernet Services Portfolio

*Comprehensive portfolio, addressing wide array of configurations and applications*

- **Metro**
  - Multipoint, Switched Data
    - Virtual Private LAN Service (VPLS)
    - Ethernet Virtual Private Line (EVPL)
  - Dedicated Transport
    - Ethernet Private Line (EPL) Services
  - Unprotected Point-to-Point
    - Ethernet-based Wavelength Services

- **Regional**
  - Low Speed
    - 1 Mbps
  - High Speed
    - 1 Gbps
    - 10 Gbps

- **National**
  - Fiber to buildings, Managed Ethernet Access, Off-net Ethernet Loops

- **Europe**
  - SLAs

**Award Winning Offerings:** Heavy Reading’s “Service Provider of the Year” for the Ethernet Product Portfolio category (2007); Frost & Sullivan’s “Growth Strategy Leadership Award” for Carrier Ethernet Services (2007)
TelePresence MPLS VPN QoS Design

*Four-Class SP Model Bandwidth Allocation Example*

- **SP-Best Effort**: 30%
  - Best Effort: 25%
- **SP-Realtime**: 30%
  - Real-Time Interactive (TelePresence): 10%
- **SP-Critical Data 1**: 15%
- **SP-Critical Data 2**: 25%
- **Low-Latency Data**: 5%
- **Multimedia Conferencing**: 10%
- **Broadcast Video**: 5%
- **Multimedia Streaming**: 5%
- **Operations / Administration / Management**: 5%
- **High-Throughput Data**: 4%
- **Scavenger**: 1%
- **Call Signaling**: 5%
- **Network Control**: 5%
- **VoIP Telephony**: 20%
- **High-Throughput Data**: 4%

*OC3-Link (155 Mbps) Example*