

Connectivity / Media Options

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What We'll Be Covering

- ! Terminology
- ! Access alternatives
 - " Twisted pair
 - " Coaxial
 - " Fiber
 - " Wireless
- ! Local Area Network
 - " Sharing the wealth

Terminology

- ! Signals
 - " Analog
 - " Digital
- ! Bits
- ! Bytes

Terminology

- ! Kilobits per second (Kbps)
- ! Megabits per second (Mbps)
 - " broadband, commercial
- ! Megabytes (MB)
 - " storage, memory

Terminology

- ! Best Effort
 - " Up to...
- ! QoS
 - " Guaranteed -- CDR (committed data rate)
- ! Symmetrical vs. Asymmetrical
 - " Different speeds coming and going

Access Alternative

T-1 Media

ISDN

Frame Relay

- ! Shared wide area network
- ! Options:
 - " 56 K
 - " 128 K
 - " 256 K
 - " 384 K
 - " T-1
 - " T-3

Fiber (Optical Carrier)

Digital Subscriber Line

- ! Asymmetric DSL (ADSL)
 - " downstream speed = 144K to 2.2M
 - " upstream = 90K to 640K
- ! DSL Lite
- ! High-bit-rate DSL (HDSL)
- ! Very-high-bit-rate (VDSL)
- ! Symmetric DSL (SDSL)
- ! Rate adaptive (RDSL)

DSL

Cable

- ! Asymmetric
 - " 200K - 1.2M downstream
 - " 100K - 200K upstream

Satellite

- ! Asymmetric
- ! Providers
 - " DirectWay
 - " Starband
 - " Tachyon

Wireless

- ! 802.11b (unlicensed spectrum)
 - " Last mile, line of sight
 - " 2.4GHz
 - " Upstream = 11mbps
- ! 802.11a
- ! MMDS, LMDS
- ! Mobile
- ! PCS

HPWREN

- ! High Performance Wireless Research and Education Network
 - " Connect remote SCSC laboratories and the surrounding Indian reservations

Which is right for you?

- ! Availability - can you get it?
- ! Speed - wireless, DSL, cable, satellite
- ! Cost - push (\$35-60/month)
- ! Applications - what do you want to do?
 - " P2P, H.323, Streaming, Hosting
- ! Addresses?
- ! Security/Privacy

Sharing the Wealth

- ! Modem - router (\$100 - discounted)
- ! Hub - \$75/\$275 (cable vs. wireless AP)
 - " Firewall, DHCP, NAT
- ! Cables (\$15-20)
 - " Cat 5, Cat 6
- ! Ethernet cards (\$25-\$150)
- ! Configuration (free)

Resources

- ! Books
 - " *The Essential Guide to Telecommunications*,
2nd edition - Annabel Z. Dodd, Prentice Hall
 - " *Building Wireless Community Networks* - Rob
Flickenger - O'Reilly
- ! Magazines
 - " i.e., PC Magazine, Network Magazine, etc.
- ! Web
 - " Broadband Reports.com
 - " Technologies Across Nebraska
 - " Google

Links to resources given in this seminar are available
at: www.ianr.unl.edu/excite/