

WHO'S WIRING COLORADO?

Every conceivable way to deliver telecommunications services is coming to Colorado. We have a variety of needs — consumer and business, urban and rural — and a variety of companies ready to meet them.

Telecommunications today focuses on the delivery of voice, video and data services. These services can be delivered over copper lines, through coaxial lines (that is, cable television), through fiber optic networks or through microwave (i.e., wireless).

Copper wiring is available throughout most of the state, courtesy US West. It can handle voice communication, low-speed data transmission, and in some cases, high-speed data transmission. The current delivery of choice for high-speed data transmission over copper lines is DSL, which is relatively inexpensive but requires being within a few miles of a telco switch. Thus, it is less likely to be offered in low-density areas.

Coaxial cable lines deliver cable television (CATV). They work well delivering one-way, high-speed data, namely TV programming. Some cable companies also use these lines to deliver Internet service, although customers must use regular phone lines for outgoing communication. In order to offer high-speed service in both directions, cable companies are upgrading their networks by adding capacity through fiber optic lines. Once these networks are in place — which is happening

as we write — cable companies are likely to position themselves as full-service telecommunication providers.

Fiber optic networks are attractive because they can carry much more information than copper lines. But setting up a fiber optic network is expensive, so most companies only want to provide service in high-usage areas. To ensure that the entire state is adequately served, state government has actively encouraged public/private partnerships. Case in point: The Colorado Department of Transportation's agreement with Omaha-based MFS Network Technologies to run fiber optic lines along I-25, I-70, I-470, and in several other areas of the state. Utility groups (see sidebar) have been responsible for regional networks in the north central, southwest and southeast parts of the state.

Wireless is considered an attractive option in areas where it is either prohibitively expensive to lay fiber optic lines, or where people want mobile communication services. Wireless communication comes in two varieties: **fixed wireless** means sending signals to transmitters in permanent locations, such as buildings or satellite dishes; **mobile wireless** involves sending signals to receivers constantly on the move, such as cell phones, pagers and PDAs. Right now there is very little data being sent via mobile wireless networks, but that is expected to change as the technology improves.

BY SUZANNE LAINSON
ILLUSTRATIONS BY M. JÜRGEN MANTZKE

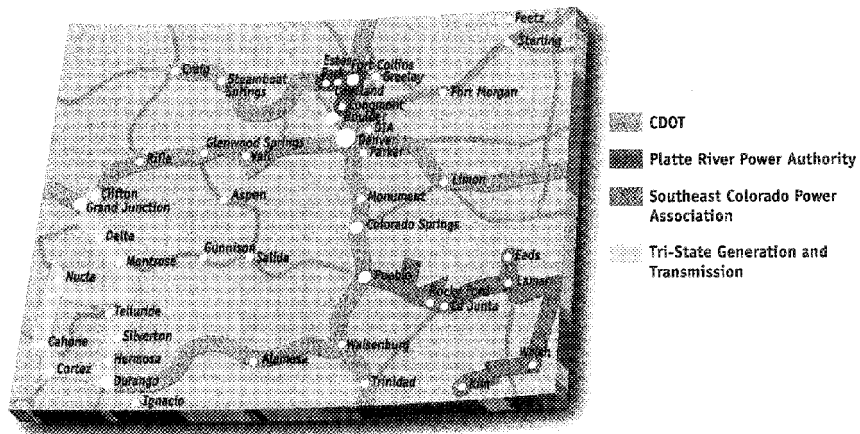
The Colorado Department of Transportation just kicked off its border-to-border fiber-optic network. The first segment runs along I-70 east to Kansas; the second phase will loop Denver. The entire project — spanning Colorado along I-70 and running north/south along I-25 — should be completed in two years, according to CDOT.

Platte River Power Authority's fiber optic lines are completed and wire the Longmont/Loveland/Fort Collins/Estes Park areas.

Southeast Colorado Power Association's lines connect the Southeastern Plains, including Pueblo, Fowler, Manzanola, Ordway, Rocky Ford, Swink, Cheraw, LaJunta, Las Animas, McClave, Lamar, Wiley, Eads, Granada, Holly, Walsh, Vilas, Springfield, Pritchett, Kim and Campo.

Tri-State Generation and Transmission, a co-op of rural electrical utilities, will complete its Southwest-area wiring by 2000. The network will serve Durango, Cortez, Cahone, Nucla, Montrose, Delta and Clifton. The La Plata Electric and Empire Electric associations also are investing in the project.

FIBER-OPTICS



DSL AND COPPER

Copper wire (DSL Service) — Most metropolitan areas along the Front Range and on the Western Slope have DSL service provided by either US West or other companies. Because DSL requires proximity to a telephone switching station, however, many potential clients in these communities are unable to receive the service.

Qwest Communications' network operates east-west and south using railroad rights of way roughly parallel to I-25 and I-70. It passes through Denver, Colorado Springs, Pueblo and Grand Junction.

Level 3's lines go north/south and east using railroad rights of way, and lie roughly parallel to I-25 until Pueblo, then go south-east to the Texas panhandle, and then lie roughly parallel to Hwy. 76 to the Nebraska border. The system currently serves Denver, and will include Pueblo and Colorado Springs.

Touch America/NCE lines stretch northeast/northwest and north central/southeast. It's connected to a Denver loop, running around Denver, including the Tech Center, Golden, Waterton Canyon, Downtown Denver and DIA. Colorado Springs will be added later.

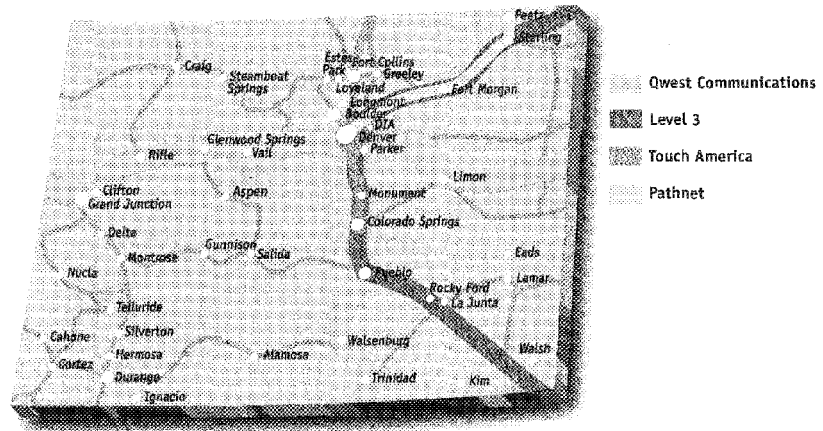
Pathnet goes northeast, passing through Lakewood, FL Wiggins, Fort Morgan, Sterling and Peetz.

AT&T/TCI's coaxial cable serves Arvada, Aurora, Denver, Edgewater, Evans, Golden, Greeley, Lakewood, Littleton, Pueblo, Wheat Ridge and Windsor. Plans include expanding to Boulder, Fort Collins, Grand Junction, Parker and Pueblo West.

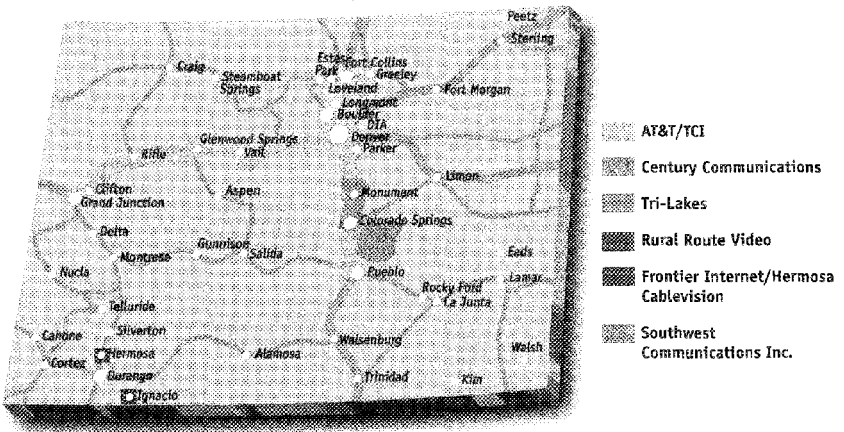
Century Communications is in Colorado Springs, including Stratmoor.

Tri-Lakes networks Gleneagle, Monument, Palmer Lake and Woodmoor. **Rural Route Video** connects Ignacio and **Frontier Internet/Hermosa Cablevision** networks the Hermosa area near Durango. Finally, **Southwest Communications Inc.'s** network, once developed, will cover King's Deer in El Paso County and portions of the Tri-Lakes area.

NATIONAL FIBER-OPTIC NETWORKS CROSSING COLORADO



CATV



Eight wireless companies serve the state, most with extensive reach. **Teligent**, **Winstar Communications** and **UltimateCom** serve Denver.

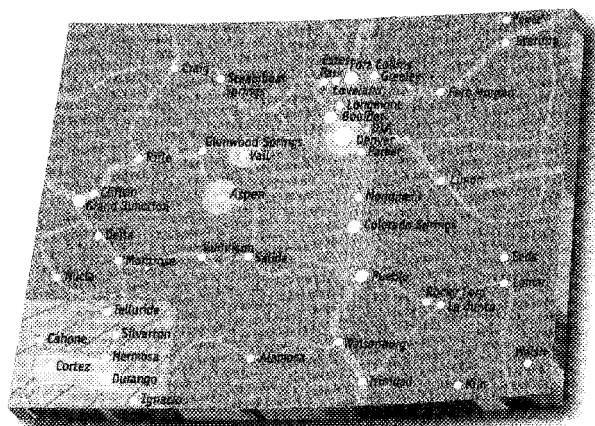
American Telecasting Inc.'s wireless cable services extend through the Front Range, from Pueblo to Fort Collins and adjacent communities. It has high-speed Internet services in the Denver and Colorado Springs areas.

DirectPC operates throughout the state. At some point, so will **HighSpeed.Com/BTA**, except for the Four Corners area.

Tri-Corners Telecommunications Inc. will finish its Durango/Cortez coverage by the end of next year.

Finally, **World Wide Wireless Communications Inc.** plans to serve Aspen and Vail at an undetermined date.

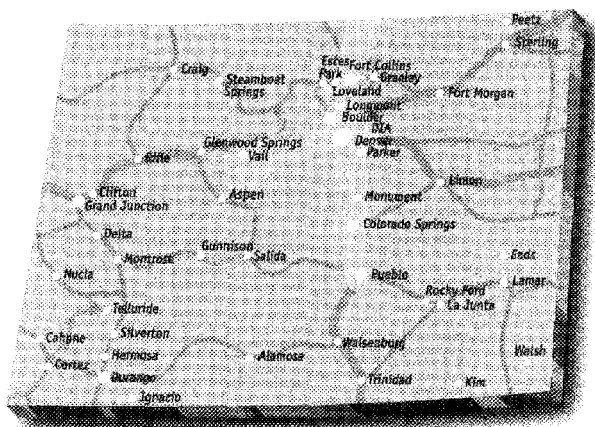
WIRELESS



- Teligent
- Winstar Communications
- UltimateCom
- American Telecasting
- Direct PC
- Tri-Corners Telecommunications Inc.
- World Wide Wireless Communications
- HighSpeed.Com/BTA

This segment of the telecom services includes digital cellular companies, such as **Sprint**, **US West**, **AT&T**, **VoiceStream**, **AirTouch** and **Nextel**. Most cover I-25 from Cheyenne to Pueblo and I-70 to Vail, but some extend coverage farther west and south.

MOBILE WIRELESS



- Sprint, US West, AT&T, VoiceStream, AirTouch, Nextel