

Customer Profile:

LiveAir Networks
it's the way we think.

LiveAir Networks is a regional technical services company that provides digital microwave Internet solutions in "sub-rural" central Texas. They also provide IT support, application and portal development and media production services.

LiveAir's Internet customers want faster Internet access without the hassles and exorbitant costs of satellite systems or other mediums.

"We haven't deployed anything other than D Link in the microwave network. We figured out that this is best of breed stuff. We built a network that we're really proud of."

- James W. Breeden
CEO, LiveAir Networks

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LiveAir Networks Delivers Low-Cost, High-Bandwidth Internet Connections to "Sub-Rural" Texas Communities with Rugged, Manageable D-Link Switches

The Challenge

LiveAir customers are way out in the boondocks. Most have their own septic systems, use well water since municipal water doesn't reach them, and receive spotty cell phone service. "My house is on the far edge of AT&T's network," said LiveAir Networks' CEO, James W. Breeden. "They are surprised I can even get phone service." Many of LiveAir's target markets are not census-recognized districts. Upton, Northrup, Winchester, Pin Oak and Serbin are not even classified as "rural" by the USDA. They're "sub-rural."

The terrain is fairly flat, but there are low lying areas, geographical holes in a sense, and large trees often attenuate radio waves and render transmissions useless. To bridge the gaps between communities, LiveAir designed an IP-enabled digital microwave tower system that would send IP traffic from hub to hub and eventually to user radios. As part of that design process, they needed a switch line that would allow them to run multiple VLANs while maintaining ease of manageability (SNMP) and remote log-in and manageability capabilities. They didn't want to have to deal with command line interfaces.

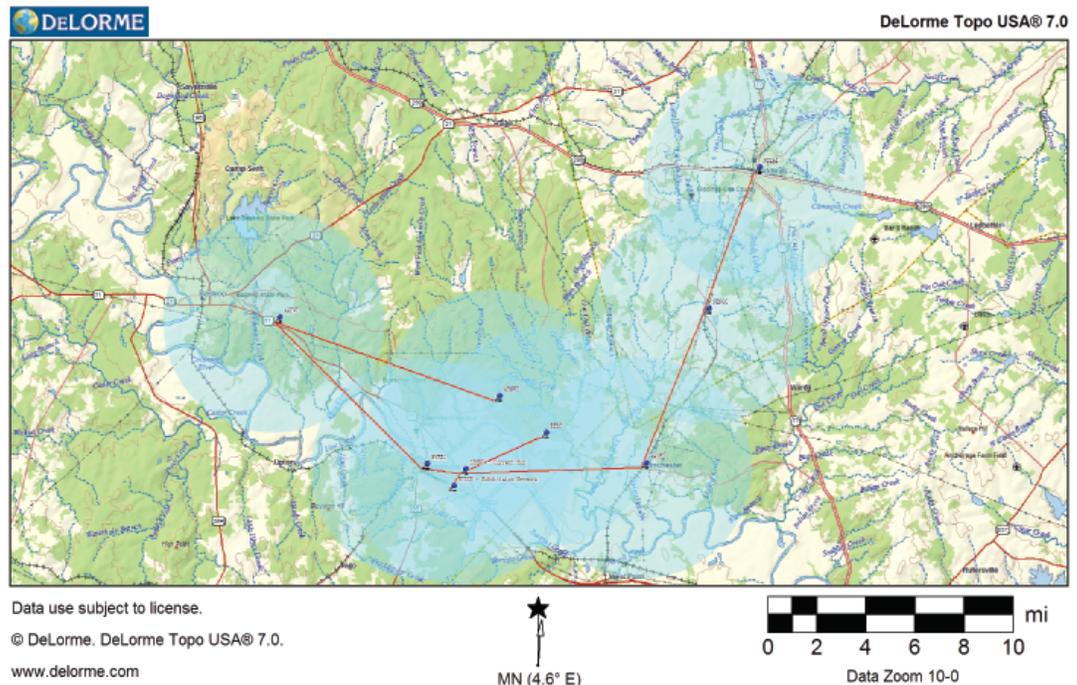
"Management is critical for us because we're an all remote shop," said Breeden. "I have to remotely

control two or three switches and their ports at a time. They're 20 or more miles away. I do this from my sub-rural home office. For example, one port supports about 10 businesses. I have got to be able to tell exactly what's on that port and manage it in terms of what MACs are on it, what IPs are behind it."

The Solution

In order to pump IP signals across desolate landscape, LiveAir designed a point to point, wireless link system which connects microwave antennae on water towers (and other tall structures). This provides anywhere from 12 to 36 mbps, depending on the length of the link between towers. Ethernet interfaces on each side connect to D-Link xStack switches to form what LiveAir has dubbed their "eccentric ring." Tower heights range from 150 feet to 89 feet above ground.

On the client site, LiveAir installs panel antennae that bridge a broadcast 802.11b signal from the nearest tower to Ethernet ports on each local client router. "In most cases, we use a D-Link router just because we like the D-Link products," said Breeden. LiveAir's backbone connects to gigabit fiber that trunks back to Austin, which is 50 miles to the west of their Smithville, Texas location. The digital microwave



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Business Class Switching



DES-3828P - xStack Managed 24-Port 10/100 Stackable L3 PoE Switch, 4 Gigabit Ports, 2 Combo SFP

- 24 Full Power 802.3af PoE ports
- Stack Up to 32 Units Per Stack using SIM
- Jumbo Frames up to 9K



DES-3828 - Managed 24-Port 10/100 Stackable L3 Switch, 4 Gigabit Copper Ports, 2 Combo SFP

- Stack Up to 32 Units Per Stack using SIM
- Jumbo Frames up to 9K
- Optional Redundant Power Support

network delivers low-cost Internet to businesses and residents across portions of three counties.

After evaluating several switch vendors, the company chose to install D-Link xStack DES-3828p switches. "We didn't like any of the interfaces on the competitive products," said Breeden. "We didn't like the management features. After thoroughly evaluating several different factors, we thought the D-Link switches would be the best bang for our buck."

For an initial exposure to D-Link products, LiveAir's IT support arm installed three D-Link routers. "We've been very happy with their performance and reliability," said Breeden. "They take a licking and keep on ticking." LiveAir has been impressed with D-Link reliability ever since they got a service call from one of their service level agreement (SLA) customers – the Smithville Chamber of Commerce. Their router, an old D-Link DI-824VUP Wireless Cable/DSL Router, stopped working and the offices couldn't get online.

"I went to the office, opened the wiring closet and saw a flooded shelf," explained Breeden. "A water bottle broke on the shelf above the unit, and the router had a centimeter of water inside it."

They shut it off, pulled it out, put in a replacement and then blew the D-Link dry with a hair dryer and box fan. A couple days later they put it back in. "That thing is still working today and that was over two years ago," said Breeden.

The D-Link xStack DES-3828p switches are installed in some of the harshest environments in the region. They're in water towers, communication shelters and similar structures.

Since their initial deployment, LiveAir has added six more towers and D-Link switches. "We haven't deployed anything other than D-Link in the microwave network," said Breeden. "We figured out that this is best of breed stuff. We built a network that we're really proud of."

"We're able to manage point to point links and the spanning tree," continued Breeden. "We can manage all of the VLAN interfaces. You name it – we are running it on D-Link right now. We verify that each switch is up every 60 seconds. We ping the switch.



LiveAir POPs contain at least two backbone panel antennae and a broadcasting 802.11b antenna. This POP serves the small community of Northrup, TX.

That is our metric for measuring uptime. And we maintain close to five 9's uptime."

Security Advantages

Another reason LiveAir chose D-Link was because of detailed remote configurable syslog functionality. Since some of their POPs are located inside of businesses, they're not necessarily secure. "With syslogging, if somebody goes to any switch and plugs in or unplugs something, we know within 60 seconds," said Breeden. "About three people on my team get an email and/or a page that says, 'Hey, this port was activated. Something is going on.'"

Beating the Big Boys

LiveAir competes head-to-head with AT&T, Verizon and Colorado Valley Internet providers in their three-county region. One of these providers, for example, offers 384K DSL for about \$50 per month. LiveAir offers symmetric 3MB connections for \$21.95 a month. "We don't throttle the upload or download speeds," said Breeden. "Nowhere in the network is there any latency over about 40 or 50 milliseconds total. It is incredibly low latency. Gamers love us."

LiveAir is able to deliver this robust, reasonably priced service to people out in the "middle of nowhere" thanks to a clever digital microwave network design and reliable, rugged D-Link switches.