



# Think ADTRAN. Think Success.

## ADTRAN Internetworking Products Make Networking a Reality for Observatory

### The Challenge

Mount Washington Observatory needed a way to network its two remote locations with the research facility on the summit of the mountain. The solution had to be cost-effective and reduce monthly telecom costs, while being resilient enough to withstand some of the harshest weather conditions on the face of the Earth.

### The Solution

ADTRAN's TRACER wireless radios were used in conjunction with NetVanta routers and switches to create a private network for the Observatory connecting the mountain summit location with two remote facilities.

### The Benefit

ADTRAN's solution was able to meet the stringent requirements proposed by the harsh weather conditions on the summit of Mount Washington and reduce the original project cost by almost 75%. ADTRAN's solution not only reduced the initial equipment cost, but is also allowing the Observatory to enjoy savings on monthly telecom costs as well.

**T**he Mount Washington Observatory plays a key role in data collection and dissemination for weather monitoring and information. Mount Washington is quite unique in that it experiences some of the harshest weather on the face of the Earth. Its climate can rival that of Antarctica, with the average annual temperature on the summit at only 27.2°F, and records as low as -47°F. On average, 315 inches of snow falls each year, with the seasonal maximum being 566 inches. The annual mean wind speed is gale-force at 35.3 mph, and hurricane-force winds occur on average every third day in winter. Mount Washington has the distinction of recording the world's highest surface wind speed at 231 mph.

### Reliable Network Essential for Observatory

The Observatory operates three facilities in the North Conway, N.H. area: the summit building on Mount Washington, the Mount Washington Center in North Conway, and a research facility in Bartlett. Each of these facilities play a key role in the mission of the Observatory and have the need to share voice, data and video services. The ability to network the three locations is greatly hampered by the extreme weather conditions on the summit. Ken Rancourt, the Director of Summit Operations for Mount Washington Observatory explains that it took more than two years to find a robust and cost-effective network solution.

"We knew the solution we chose had to be robust and reliable against power surges. Anything that had to be installed outdoors on the summit also had to be able to withstand extremely low temperatures and winds in excess of 200 mph," Rancourt noted. "A number of systems were considered. The project was even shelved for a while because all of the proposed solutions were just too expensive."

Ken began working with Rob Casella at Northledge Technologies to try to devise a feasible network solution that was also cost effective. As a non-profit organization, the Mount Washington Observatory is dependent upon grants to fund its infrastructure, but relies on other sources of funding to maintain these projects. This means that improvements, like this network project, not only have to be cost-effective in terms of equipment expense, but also must not be cost prohibitive to maintain.

### ADTRAN Offers a Cost-effective Solution

Casella noted that a number of systems were considered. "We kept trying to find a workable solution that was cost-effective. Ken said we had to make this happen at about one-quarter of the cost," Casella noted. "That's when we began looking at ADTRAN. I had dealt with ADTRAN in the past. I remembered how easy it was to

integrate their products into a network and that is what made me start looking at their internetworking equipment. ADTRAN equipment is very cost-effective, both in terms of hardware and cost of operation."

Casella and Rancourt designed a multi-T1 network. In this network design, a PRI-T1 is terminated at the North Conway facility using ADTRAN's T1 CSU ACE. From it, two additional T1s are sent to an ADTRAN

NetVanta 3305 router. Traffic for the North Conway facility is then routed through a NetVanta 1224 switch and NetVanta 2100 VPN device. The network connection between North Conway and the Bartlett facility was established via a point-to-point T1 land line, with traffic at that facility being routed via a NetVanta 3200 router. The connection between North Conway

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*Ken Rancourt  
Director of Summit Operations  
Mount Washington Observatory*



**TRACER Series**

The TRACER Series is a family of license-free microwave radio systems. TRACER products deliver the functionality needed for high-speed, digital transport over a point-to-point fixed wireless connection, at distances up to 30 miles. These systems are extremely affordable solutions for wide area network voice, video, and data transport, backhaul networks, temporary or emergency communications, and disaster recovery. TRACER products eliminate monthly circuit costs, licensing and frequency coordination.



**NetVanta 3000 Series**

NetVanta 3000 Series access routers are designed for cost-effective branch office connectivity. These full-featured solutions support line rates ranging from 56 kbps to DS3, at cost that are significantly lower than other name brand routers.



**NetVanta 1000 Series**

NetVanta 1000 Series of managed Ethernet switches is a full-featured product line suitable for use in Local Area Networks (LAN) requiring LAN interconnectivity or network segmentation, including Fast Ethernet and Gigabit Ethernet applications.

and the summit facility required some ingenuity. The terrain and harsh weather conditions make a cost-effective landline impossible. Mount Washington decided to establish a point-to-point wireless link between the two facilities using ADTRAN's TRACER microwave radios. This network allows employees at all three locations to take advantage of three-digit dialing between locations, corporate voice mail, as well as Internet and data connectivity.

"This network allows us to connect all three facilities efficiently and economically," said Rancourt. He also noted that one of the added benefits of the TRACER link to the summit is the added ability for videoconferencing.

**Videoconferencing Brings Added Benefits to Observatory Programs**

"The videoconferencing link is especially important to us. We have partnered with L.L.Bean to provide live educational programming to the Mount Washington Center museum in North Conway from the summit facility. This will allow visitors and school children to learn what it is like to be on the summit, especially during the winter months, when normal travel to the summit is not possible. This also gives

us the capability to provide direct video feeds to any commercial television station as well as provide streaming video from the summit to the Mount Washington Observatory website."

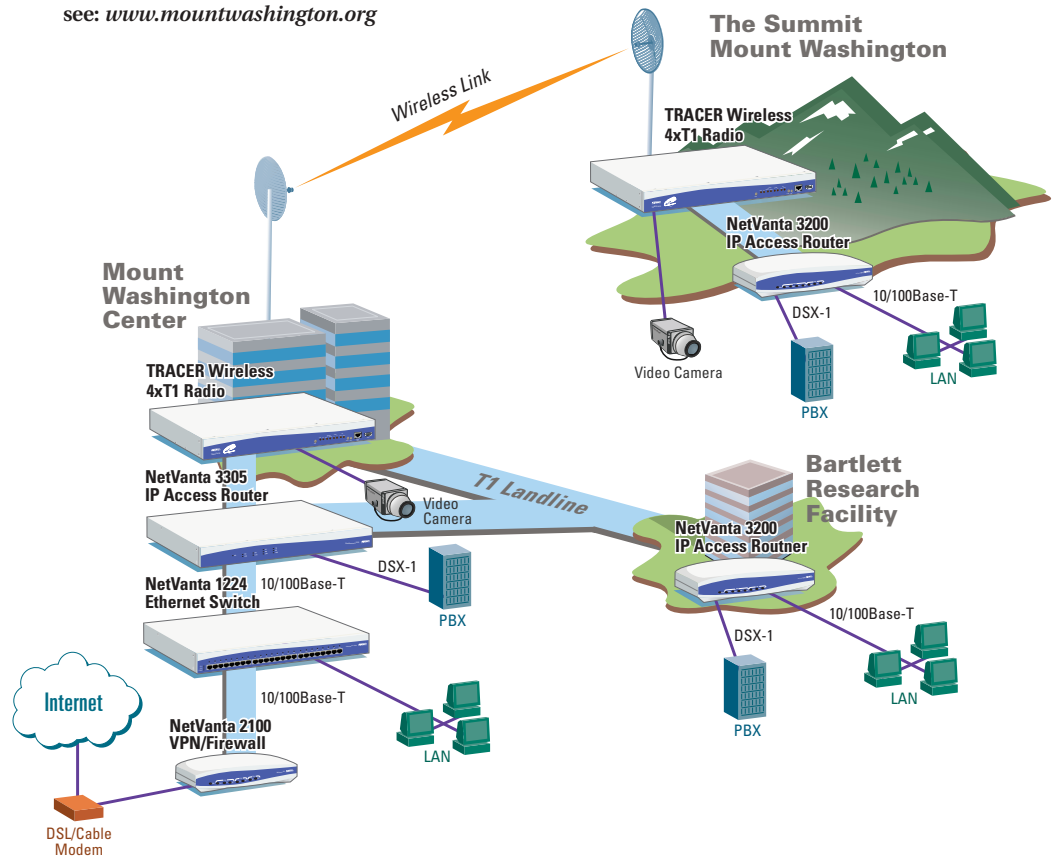
**ADTRAN Solution Simplifies Installation**

"The installation was very easy from a core networking perspective," said Casella. "The NetVanta equipment was especially easy to install. A good deal of guidance was provided for us so we did not have to determine every single parameter along the way. The GUI interface simplifies the installation making it even easier."

"The pieces all fit together—it was great to be able to turn to one vendor for the complete solution," Rancourt noted. "We were having a hard time designing a cost-effective solution with the required features. ADTRAN not only met that challenge, but did so at a fraction of the cost of the competition and with a ROI of less than 24 months."

"We couldn't be happier with our network," said Rancourt. "The quality of voice to the summit is crystal clear. It is just like you are sitting next door. The videoconferencing system is working great and we are saving money in the process."

For more information about the Observatory see: [www.mountwashington.org](http://www.mountwashington.org)



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