



Wireless Solutions for Last Mile Access

Application Portfolio

Last Mile Access

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Proxim's broadband wireless solutions give wireless Internet Service Providers and DSL/cable providers today's fastest pathway to new markets and revenue. Whether well-established and looking to expand, or smaller and newly established – service providers of all types can immediately and cost-effectively create wireless networks or reach out from established points-of-presence to capture new customers. Without the delays and costs of leasing or building a wired infrastructure, Proxim's wireless networks allow secure and reliable access to high-speed data, voice and video services. And with Proxim's upcoming WiMAX solutions, service providers will soon be able to scale their networks even more easily and cost-effectively to address rising subscriber growth rates.

This Application Portfolio provides an overview of today's most common service provider applications for Wi-Fi and broadband wireless technologies.

Application Notes

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❖ Wireless As a Competitive Edge in Commercial Broadband Access

The challenge:

Customers want competitive prices and high speed Internet access; service providers want to be first in line to sell access. Now that competition has heated up, time-to-market – or more accurately, time-to-revenue – is a key concern. Established telecommunications providers seek to expand footprint and discover new sources of revenue. Market newcomers seek to differentiate themselves from the “old guard” by inventing new, faster avenues to service delivery. Trenching new cable into new geographies will take too much time for both groups, and incurs large expenses.

The solution:

For the established telecommunications provider with investments in existing T1 or E1 cabling, wireless networks allow expansion from a cabled point of presence. Very quickly and inexpensively, a company can leverage its brand strength into new service offerings and new locales. And because wireless connections are inherently scalable, the service can grow with customers’ needs – without additional infrastructure costs.

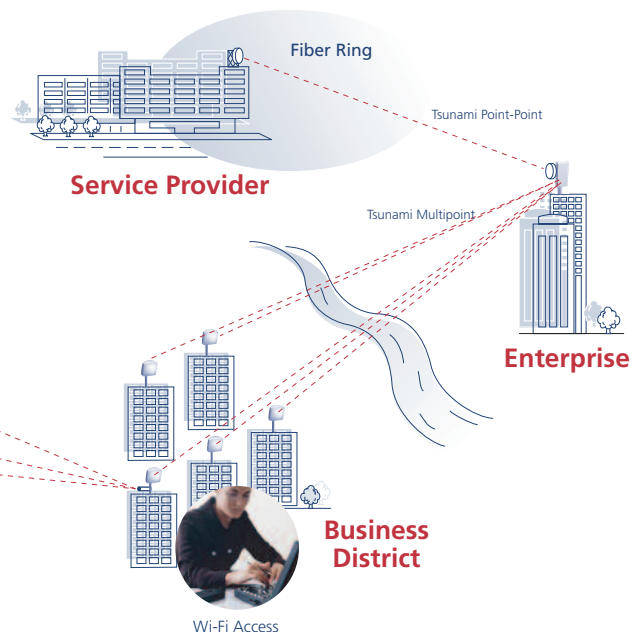
For the market newcomers – dubbed “WISPs” or Wireless Internet Service Providers by the press – competing with large incumbents can be challenging. Broadband wireless access gives WISPs a competitive edge in the market. Because the cost of equipment is more affordable than fiber or leased lines, a minimal investment can launch a broadband service offering competing with existing wired broadband. Wireless networks are fast to install, allowing quick ramp-up and reducing time-to-revenue.

As an added benefit for both new and established broadband providers, wireless enables valuable “up-sell” opportunities. Instead of a shared connection, commercial users can benefit from a dedicated link with a fixed Service Level Agreement – made affordable by wireless last mile technology. Also, wireless is an attractive option for network redundancy, which should be a critical part of the corporate contingency plan. For flexible service offerings, wireless last mile products from Proxim come in capacity variations to enable tiered subscriber plans to fit every customer’s budget and business needs.

The products:

- Tsunami MP.11
- Tsunami Multipoint
- Tsunami Point-to-Point
- Tsunami QuickBridge

Residential Area



Tsunami 100BaseT/F vs. DS-3 Leased Line (45 Mbps)

	DS-3 Leased Line ¹	Tsunami 100BaseT/F	Tsunami Advantage
Acquisition Cost	\$19,000 ²	\$31,500 ³	1.5 month payback
Monthly Cost	\$9,000	\$0	No monthly recurring costs
Deployment Time	Up to 4 months	Today	No wait

(1) Leased line prices vary according to distance and geographic location.
 (2) Includes installation and 2 DS-3 router cards. New routers may be required.
 (3) Includes Tsunami 100BaseT/F 45 Mbps 5.8 GHz link, cable kit, 2 antennas, 2 Ethernet router cards and installation.

Tsunami 10BaseT vs. 6 T1 Leased Lines (10 Mbps)

	6 T1 Leased Lines ¹	Tsunami 10BaseT	Tsunami Advantage
Acquisition Cost	\$30,600 ²	\$23,500 ³	20% savings up front
Monthly Cost	\$3,000	\$0	No monthly recurring costs
Deployment Time	Up to 4 months	Today	No wait

(1) Leased line prices vary according to distance and geographic location.
 (2) Includes installation and 12 T1 router cards. New routers may be required.
 (3) Includes Tsunami 10BaseT 10 Mbps 5.8 GHz link, cable kit, 2 antennas, 2 Ethernet router cards and installation.

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❖ Better School Connectivity Using Broadband Wireless

The challenge:

As we enter the “Digital Age,” not only is Internet access from every school a social imperative, it’s a Federal mandate so that “no child left behind” can become a reality. Children benefit from the wealth of online data and worldwide communication, and school administrators benefit from sharing both student record information and educational materials with other schools in the district or state. Unfortunately, school budgets are at an all-time low because of economic conditions. Leasing lines to connect many schools to district centers is cost-prohibitive, yet connectivity is a clear mandate.

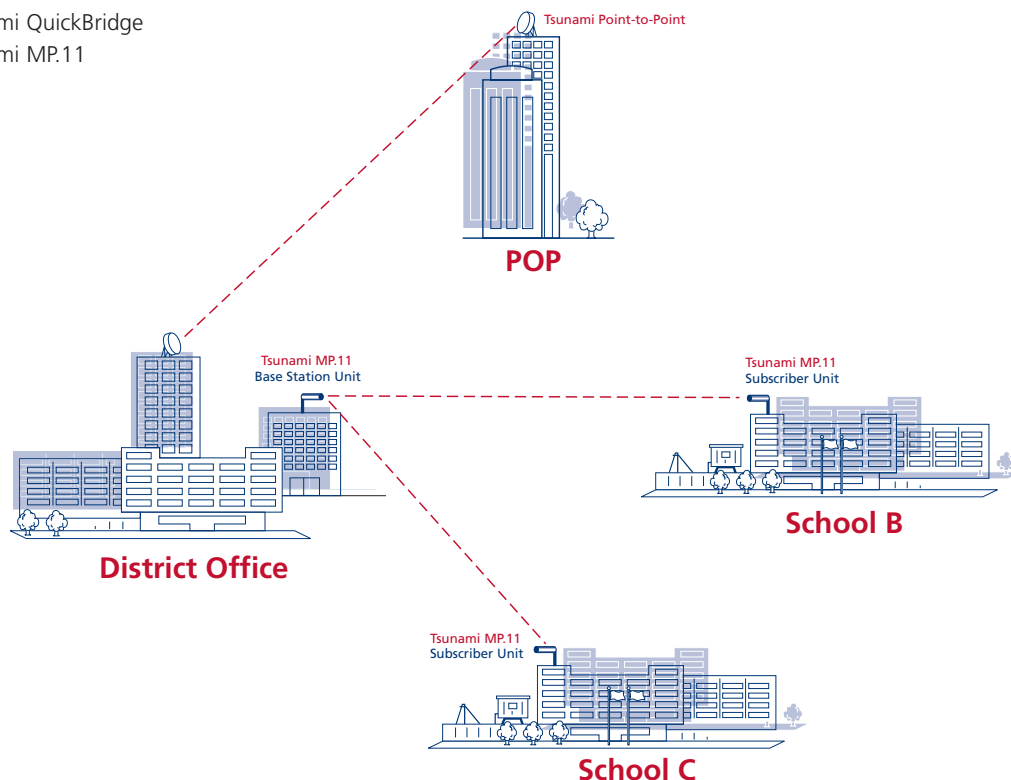
The solution:

By using broadband wireless solutions, Internet Service Providers can offer schools an elegant, affordable alternative to leased lines. Service providers in the U.S. may also qualify for additional discounts when offering services to schools. A wireless link (or leased line) can bring in broadband access to a single, central site. Then wireless bridges allow other schools to connect back to a main site and out to the Internet. This meets the need for Internet connectivity without the barrier of high cost.

As an added benefit, schools can use the wireless link to share other resources, stretching them further. Educational tools such as digital media can be purchased once and accessed at a central location by other schools – reducing media costs while enriching student learning. Similarly, a PBX at every school would be very expensive, but a PBX at a district site shared over a wireless link to remote schools allows the same functionality at a fraction of the cost.

The products:

- Tsunami Point-to-Point
- Tsunami QuickBridge
- Tsunami MP.11





❖ Reaching New Home Subscribers Using Wireless Networks

The challenge:

Though some lucky urban residents have come to take DSL or cable-Internet service for granted and penetration is high, many others – including rural residents – are having a much different experience. Because of the low population density, service providers have found the cost of bringing cabled broadband into rural communities difficult to justify. In more densely populated areas, existing broadband service might be unreliable or expensive – opening an opportunity for competition if a newcomer could afford the infrastructure.

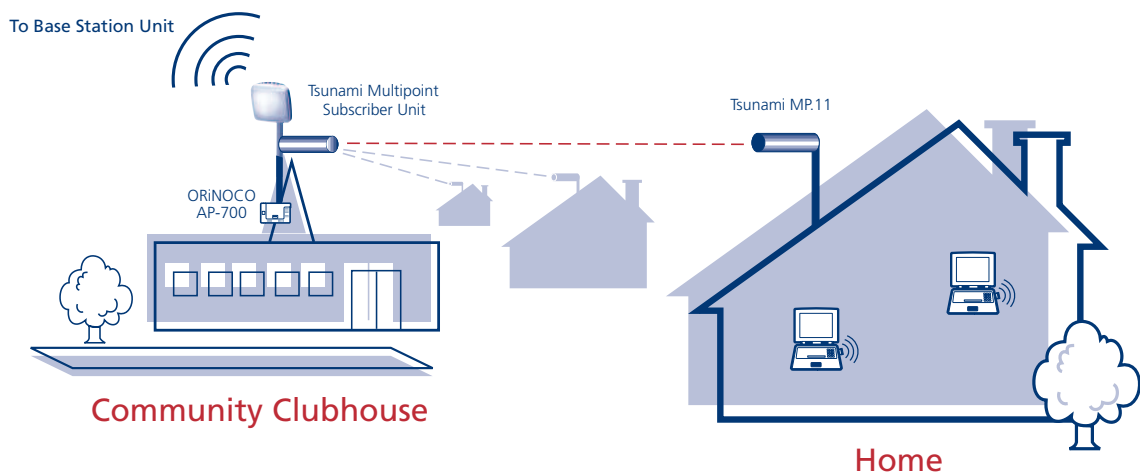
The solution:

With broadband wireless solutions, the setup time for establishing broadband service in new geographies is both fast and affordable. The solutions come with scalable bandwidth options and remote equipment maintenance features, and eliminate the need for trenching. Entering a rural community as the first to offer reliable broadband taps into pent-up customer demand. Or, entering into a market with new broadband service that is more reliable or more affordable than the existing DSL or cable provider creates a viable market opportunity. Especially when combined with Proxim's Wi-Fi equipment in the home, broadband wireless makes an attractive and differentiated service offering.

As an added benefit, Proxim equipment allows service differentiation for residential customers. For flexible service offerings, wireless last mile products from Proxim come in capacity variations to enable tiered subscriber plans to fit every customer's budget and needs.

The products:

- Tsunami MP.11
- Tsunami Multipoint
- Tsunami Point-to-Point
- Tsunami QuickBridge



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❖ Fueling Wi-Fi Hot Spots with Broadband Wireless

The challenge:

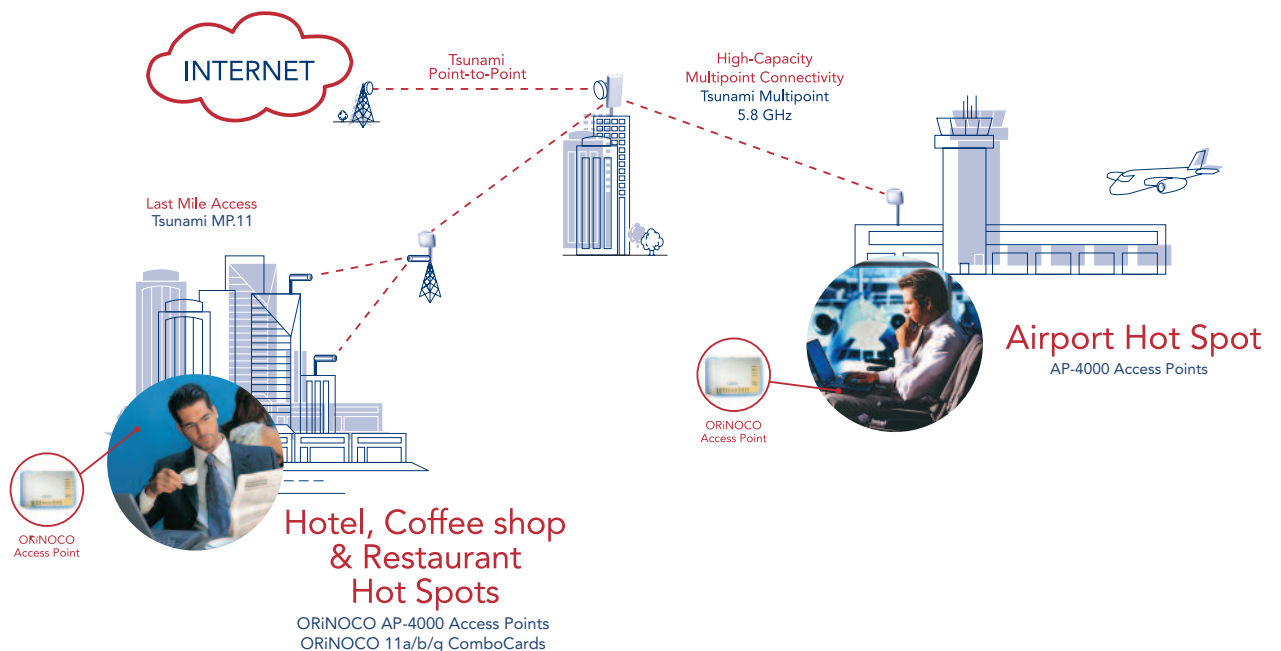
Public Internet access points – or, hot spots – are the “hottest” new customer attraction at retail outlets. This might be the thing to bridge the consumer/high-tech gap once and for all. Companies such as McDonald’s and Starbucks, along with airports and even new urban pedestrian malls, offer Wi-Fi in their stores nationwide. Setting up Wi-Fi itself is fast and lucrative – but that’s only half the equation. Sufficient high-bandwidth Internet connectivity to offer those in-store laptops is critical. Sort of like installing faucets inside a building, you also need the link to the city water supply outside the building. But leased lines are not necessarily available and affordable in all locations.

The solution:

To enable consistent Wi-Fi hot spot service at all franchise locations, a service provider can use broadband wireless solutions nationwide. Without the expense of installing new cable to every location, wireless point-to-point (or point-to-multipoint) devices can be installed at each store, with broadband connectivity from the nearest point-of-presence. The unique advantage of working with Proxim is a complete wireless hot spot solution: wireless last mile equipment and Wi-Fi access points.

The products:

- Tsunami MP.11
- Tsunami Multipoint
- Tsunami Point-to-Point
- Tsunami QuickBridge





❖ Serving Multi-Dwelling Residences with Broadband Wireless

The challenge:

High-rise condominiums, townhomes, and suburban home developments have evolving Internet access needs comparable with corporate or university campuses. A large population of users in a single site requires individual connections to each person or office. New structures and communities are being built with Cat 5 cables in the higher-end homes, but units more than a decade old or in less affluent areas lack Internet connectivity altogether. Retrofitting each unit with cabling is much more expensive than fitting new structures with similar facilities. Yet these often urban dwellers represent an appropriate target market for broadband Internet service.

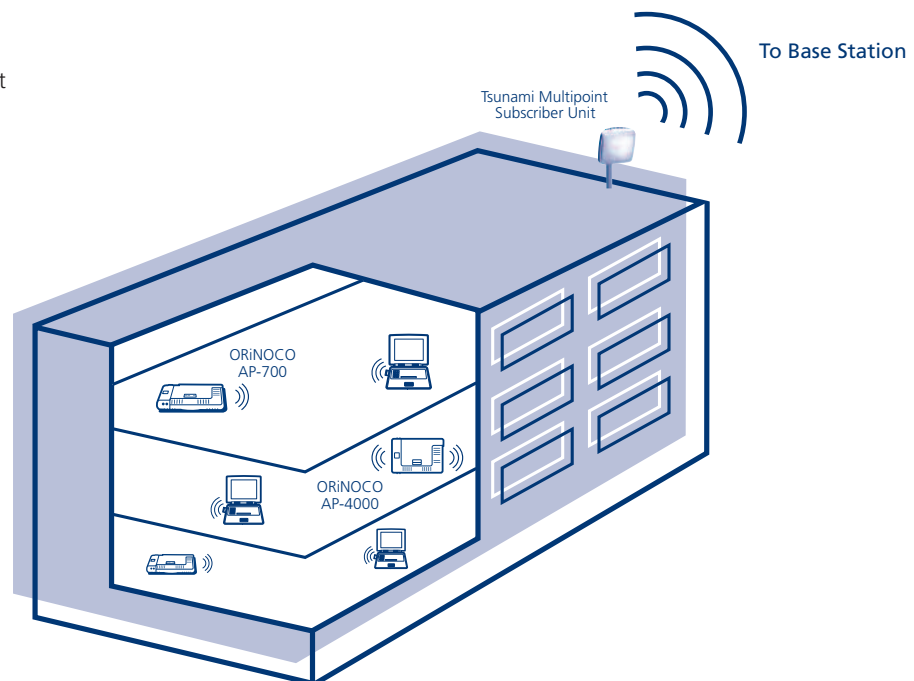
The solution:

Wireless bridges installed on building rooftops or on each floor as appropriate – especially when coupled with Proxim Wi-Fi access points – sidesteps the issue of complex cabling. Broadband wireless reduces the physical cost and time to market barriers associated with leased lines (business DSL, fractional or full T1/E1) and residential broadband service. Proxim offers a range of bandwidth options to scale with subscriber density, and can meet or exceed both the performance and the reliability of wired service.

As an added benefit, Proxim equipment allows service differentiation for residential customers. For flexible service offerings, wireless last mile products from Proxim come in capacity variations to enable tiered subscriber plans to fit every customer's budget and needs.

The products:

- ORiNOCO AP-4000
- ORiNOCO AP-700
- Tsunami MP.11
- Tsunami Multipoint
- Tsunami Point-to-Point
- Tsunami QuickBridge



Last Mile Access

❖ Enter Underserved Geographies With a Viable Solution

The challenge:

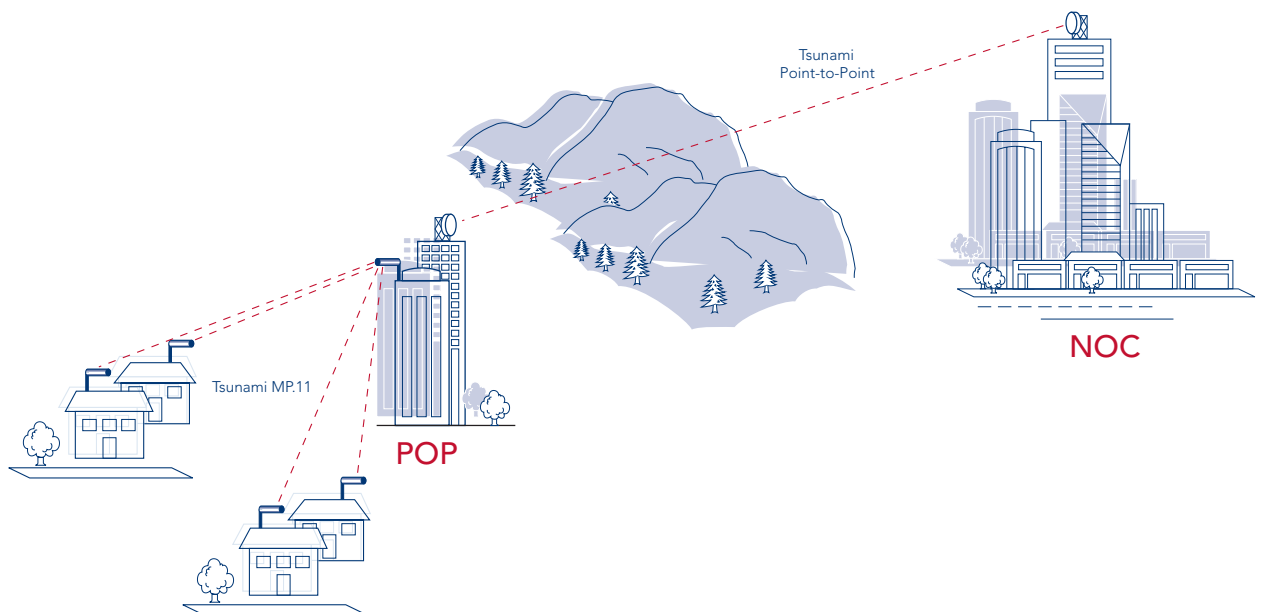
One interesting strategy for acquiring market share in the competitive cellular and data service provider markets is to be the first to enter a new geography. While the major metropolitan areas around the world have been addressed, many harder-to-reach or less-densely populated areas remain under-served. However, the challenge is how to cost-effectively install the required infrastructure. The cost of installing points of presence and backhaul equipment to a NOC both must be offset very quickly by bringing in enough revenue to begin to recoup CapEx costs. But enough leased line capacity may not be available in the very geographies that also lack sufficient cellular and broadband services – or may be available only with a premium price tag.

The solution:

The best business model for building out a robust infrastructure for service in a new region is with wireless backhaul products (and broadband wireless Last Mile products). Wired and wireless backhaul both entail an initial equipment investment for each side of the link – yet wireless backhaul, unlike leased line backhaul – incurs zero additional monthly costs. And wireless backhaul can be installed far more quickly and easily than wires – traversing uninhabited areas to get to target populations. Wireless backhaul equipment is the difference between viability and impossibility.

The products:

- Tsunami Point-to-Point
- Tsunami MP.11





❖ Extend Service from Fiber Downlinks

The challenge:

Research has shown that in metropolitan areas, a fiber optic network loops the city with fiber spurs terminating in only approximately 40,000 of the 750,000 major office buildings in the US. Despite comparable needs, the remaining 710,000 urban office buildings cannot access the equivalent fiber bandwidth. There are not enough downlinks. A highly reliable, affordable extension to those fiber spurs is needed.

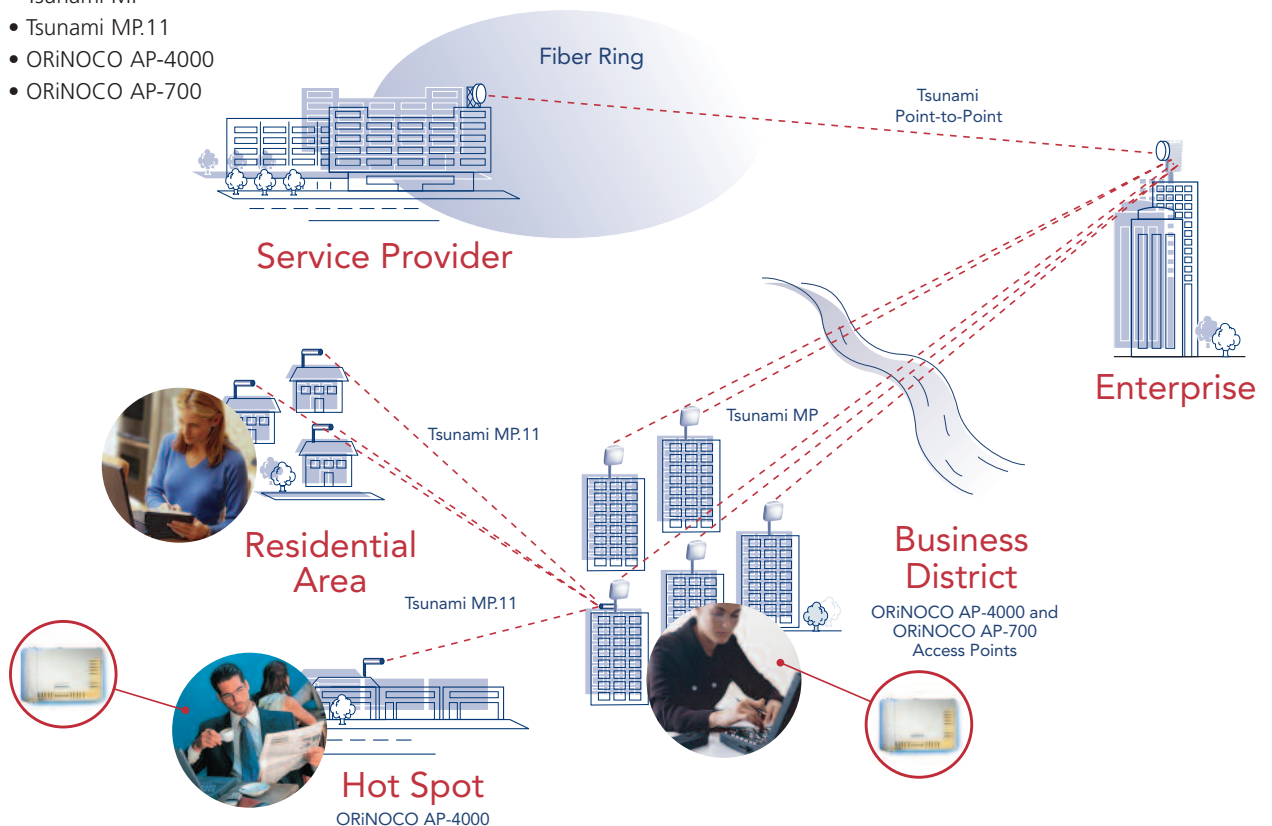
The solution:

Proxim wireless point-to-point and multipoint equipment provides the highest reliability and bandwidth for creating a metro-area network extending from an existing fiber spur. Service providers or large corporations install Proxim wireless equipment on buildings with fiber downlinks and fan out broadband connectivity to surrounding buildings. Proxim offers a broad product line to ensure sufficient capacity for major office buildings in a wireless MAN.

Once that wireless MAN is in place, local Internet access can be sold into the community or extended to other company offices in the area. With Proxim's ORiNOCO Wi-Fi gear, wireless Internet service extends the MAN into the community with Wi-Fi hotspots.

The products:

- Tsunami Point-to-Point
- Tsunami MP
- Tsunami MP.11
- ORiNOCO AP-4000
- ORiNOCO AP-700



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❖ Create a Wireless Loop in a New Geography

The challenge:

When a fiber optic loop isn't available, it's tremendously expensive and difficult to install one around an existing urban area – or into rural communities. Service providers investigating new markets and sources of income face business justification hurdles in order to authorize new projects, and once approved, it could take years to secure right-of-way for trenching fiber through streets and forests – which costs millions of dollars.

The solution:

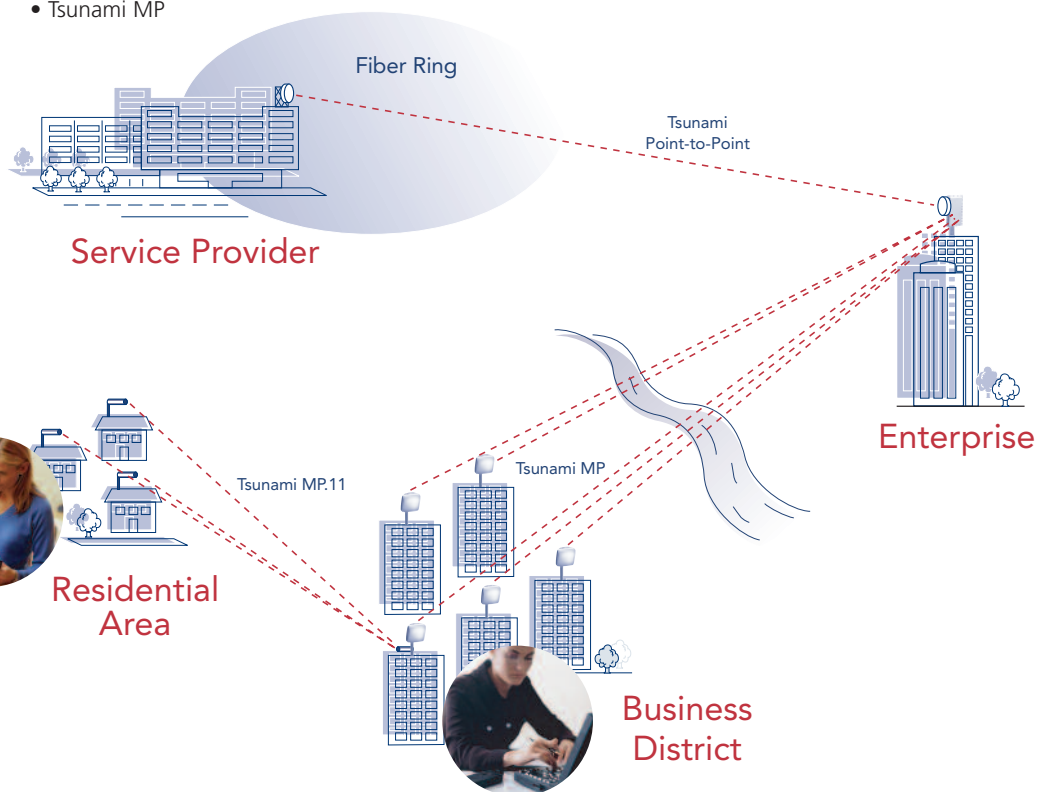
Building a new network loop and creating a Metropolitan Area Network doesn't have to be done with fiber optics. High-speed, carrier-class Proxim wireless equipment builds regional broadband connectivity in a fraction of the time at a fraction of the cost. Service providers secure access rights for several tower sites rather than miles of fiber optic cable. Equipment costs are lower, and easier to repair, upgrade, and maintain. Wireless connections also give service providers the flexibility to offer many different service plans on a single MAN. Once established, Proxim last-mile solutions link the MAN to enterprise, government and home customers.

The products:

- Tsunami Point-to-Point
- Tsunami MP.11
- Tsunami MP

About Proxim

Proxim Corporation is a global leader in wireless networking equipment for Wi-Fi and broadband wireless networks. Proxim provides solutions for mobile enterprise applications, security and surveillance, last mile access, voice and data backhaul, public hot spots, and metropolitan area networks. Product families include ORINOCO Wi-Fi products, Tsunami Ethernet bridges, and Lynx point-to-point digital radios.



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