
XROADS NETWORKS – WHITE PAPER

The Edge Approach

When Connectivity Is Critical™
XRoads Redundancy

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When Connectivity Is Critical™ XRoads Redundancy

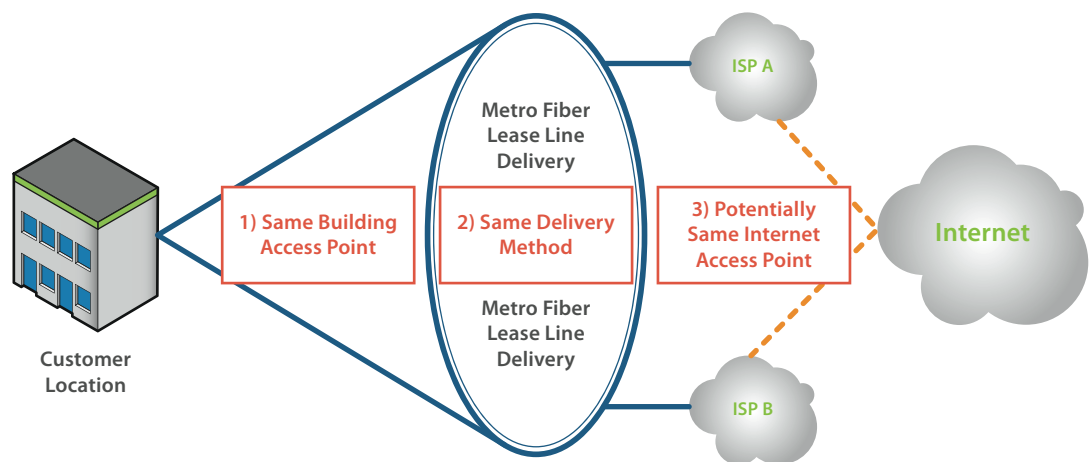
Redundancy is something that an increasing number of network administrators are building into their infrastructure. For organizations that rely on technology, redundant power, redundant servers, and redundant switches are all critical components of their infrastructure.

The problem with building redundancy into a network is that it is only as strong as its weakest link, and in most cases that is an organizations Internet connection. Using the XRoads, a sub-\$2500 network appliance and an inexpensive broadband connection, organizations can solve this problem without paying an arm and a leg.

Most redundancy solutions involve the use of two or more lease line connections (T1/DS1/DS3, frame relay) and a complex routing protocol (BGP). The fact is, that even though there are multiple connections to the Internet, each connection is using the same medium, and thus the same path. When something happens to that path, both connections are affected.

Non-Redundant Lease Line Service

Figure 1



As seen in the illustration above, multiple connections that travel over the same path are not truly redundant, and thus are not effective in preventing external network outages.

Lease Line + Broadband = XRoads Redundancy

The alternative to redundancy is the high cost of hourly downtime, comprised of both lost revenue and lost employee productivity. Typically, 60% of an organization's service outage is caused by external network connectivity problems. Using broadband to backup lease line (T1/DS1/DS3, frame relay) connections, provides diverse paths to the Internet, and thus insures external network access redundancy.

Key Features To XRoads Redundancy:

- Guaranteed diverse path redundancy without BGP
- Internet access aggregation
- Route optimization
- Stateful firewall
- Cost effective solution
- Rack mountable 1U form factor

More Customers, More Revenue

Why offer XRoads Redundancy? Redundancy is becoming a requirement for an increasing number of businesses. Many of those businesses would deploy network redundancy if not for the cost and complexity involved with such a deployment. By combing broadband redundancy with the XRoads network appliance, these obstacles are no longer an issue.

Key Reasons To Offer XRoads Redundancy:

- New product offering for existing customers
- Access new markets, new customers
- Minimal support requirements
- Redundancy without BGP
- Fast and easy deployment

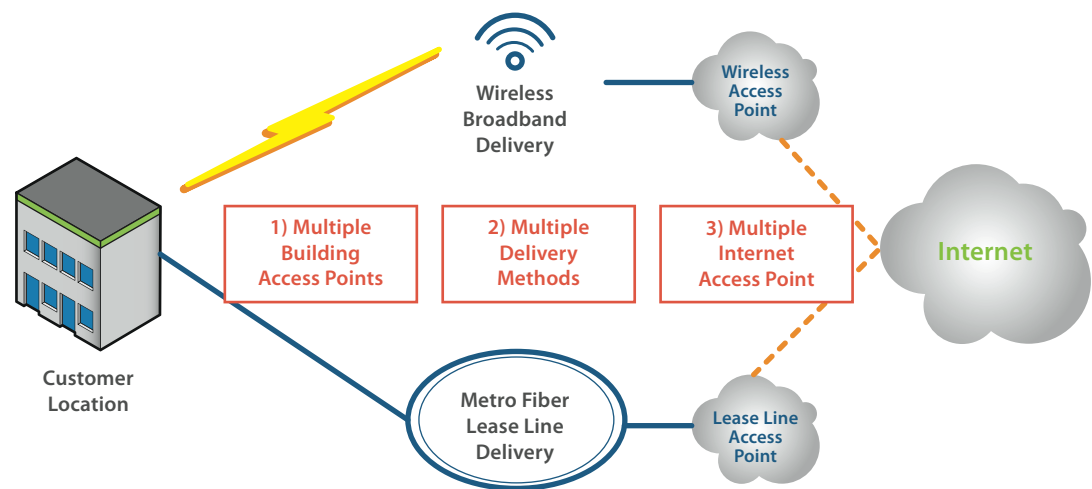
One of the key components inherent to a completely redundant network access solution is the use of multiple access paths, and in many cases, this can be used to justify the requirement of multiple service providers. By leveraging this inherent component, service providers can sell into their competitors lease line accounts, thus growing their customer base.

Wireless Broadband Redundancy

Wireless broadband is unique in that it completely bypasses a customer's wired infrastructure and thus ensures a diverse path to the Internet. By implementing this cost effective solution companies can achieve five nines (99.999%) Internet access availability.

Full Redundancy Via Wireless Broadband

Figure 2



As seen in the illustration above wireless broadband is able to provide three points of redundancy for Internet access connectivity. From building access to the final Internet hop, wireless broadband is one of the most reliable redundancy technologies available.

And since many companies require T1 or greater redundancy service, the XRoads network appliance is able to bond multiple wireless connections to form a 1.5Mbps or greater connection at those locations that are distance sensitive.

Wireless broadband and the XRoads router, a perfect solution, when connectivity is critical...

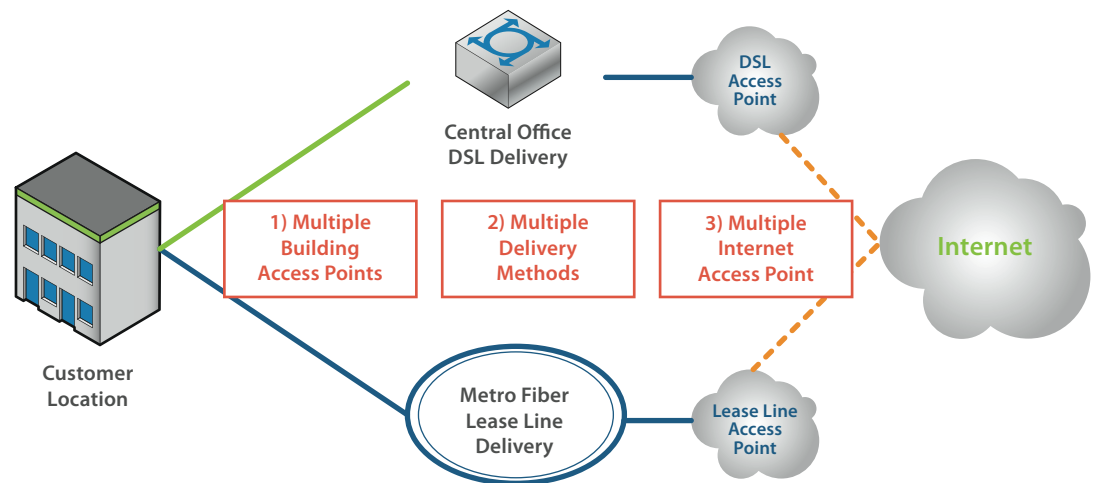
Digital Subscriber Line Option

DSL Broadband Redundancy

DSL broadband bypasses a customer's lease line infrastructure by using the telephone companies standard twisted-pair cabling and thus ensures a diverse path to the Internet. By implementing this cost effective solution companies can achieve five nines (99.999%) Internet access availability.

Full Redundancy Via DSL Broadband

Figure 3



As seen in the illustration above DSL broadband is able to provide three points of redundancy for Internet access connectivity. 1) Building access is achieved via the telephone company's standard twisted-pair wiring. 2) DSL terminates in the telephone company's central office, and is then usually carried by ATM to an Internet access point. 3) Redundant peering points are then used to access the Internet.

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DSL broadband and the XRoads router, a perfect solution, when connectivity is critical...

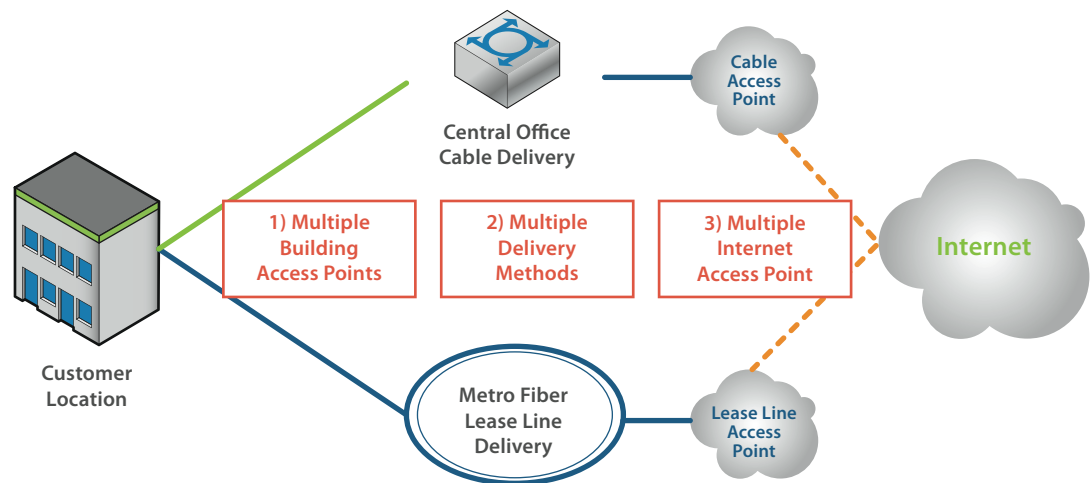
Cable's High-Speed Internet Option

Cable's HSI Broadband Redundancy

Cable's HSI broadband bypasses a customer's lease line infrastructure by its own fiber plant and thus ensures a diverse path to the Internet. By implementing this cost effective solution companies can achieve five nines (99.999%) Internet access availability.

Full Redundancy Via Cable HSI Broadband

Figure 4



As seen in the illustration above Cable's HSI broadband is able to provide three points of redundancy for Internet access connectivity. 1) Building access is achieved via its own fiber backbone, separate from telco metro fiber connections. 2) HSI terminates at the cable company's highly available headend. 3) Redundant peering points are then used to access the Internet.

Cable's HSI broadband and the XRoads router, a perfect solution, when connectivity is critical...