AT&T Managed Internet Service

Access Redundancy Options:
Building Reliable Network Connections

World-Class Dedicated Internet Access
If you’re doing business on the Internet with AT&T Managed Internet Service (MIS), you know you have dedicated access, world-class reliability, excellent performance, scalability and security. You have access to AT&T’s high speed OC48/OC192 IP Backbone, an industry-leading, multiple-ringed infrastructure protected by physical and logical security features. You receive 24x7 monitoring and management. And you can count on industry-leading Service Level Agreements (SLAs) that cover high availability along with low packet loss and delay.

Now, with AT&T Managed Internet Service Access Redundancy Options (MARO), you can scale up to even greater levels of reliability while leveraging your IP investment.

Your AT&T Managed Internet Access
How can you add security features to your AT&T Managed Internet Access (MIS)? AT&T’s Distributed Denial of Service (DDoS) Defense identification and mitigation takes place within AT&T’s IP backbone providing you with increased protection from malicious traffic before it reaches your network. DDoS Defense is an optional service that can be added to MIS and consists of a detection device that is designed to monitor your network traffic and examine your net flow data.

With DDoS Defense, if a denial of service attack is detected, the traffic will be appropriately routed based on your network configuration, where the identified malicious DDoS attack packets are identified and dropped, while the valid traffic is allowed to pass to you. Depending on your configuration, a shared or dedicated set of network mitigation devices are available to scrub your traffic if a denial of service attack is detected.

Redundancy in the Links
AT&T recognizes that your networks are maturing – and becoming even more mission-critical. You need maximum up-time for your websites and applications. AT&T MARO offers a number of ways to increase the resiliency of your network connections. This unique set of options is designed to optimize the performance of multiple, dedicated Internet circuits and to help eliminate single points of failure. You gain fast, automatic rerouting of traffic in the event of a link failure, an access router failure or failure of one of your routers.

As a result, AT&T MARO helps you confidently expand your IP connectivity – and your potential for increasing business revenues – in a modular, high-performing, fault-tolerant manner.

Therefore, redundancy means that there are repetitive elements in the links between your LAN and the AT&T IP Backbone. So that if one path fails, a redundant path picks up the traffic automatically.

BENEFITS

- Strengthens reliability and promotes high performance
- Helps eliminate most single points of failure
- Builds in automatic rerouting of traffic around a router or circuit failure
- Offloads the complex management of multiple IP connections
- Expands IP connectivity in a scalable, fault-tolerant manner
- Offers dual site solutions with 100% access diversity to help ensure business continuity
- Proactive protection of your network against identified malicious intruders and unauthorized activities by adding DDoS Defense

FEATURES

- Available at all AT&T MIS speeds (56 Kbps - 2.5 Gbps)*, AT&T MARO provides redundancy in these link components of your access path:
  - Backbone Node
  - Access Router
  - Customer Router
  - Local Access Circuit
- Some speeds may not be available in all areas
**AT&T – Your Single Provider for Your Redundant Solution**

With AT&T Managed Internet Service, you can purchase a redundant connection to the world-class AT&T IP Backbone. These solutions provide a variety of options where you determine the level of redundancy that you’d like to implement within your network. Redundant connections, even to a single ISP, are a complex proposition. AT&T technical support professionals will work with you to:

- Design your redundant solution
- Implement your traffic flow requirements
- Manage your routing

AT&T MIS offers options for multiple connections to the AT&T IP Backbone such as Backbone Node Redundancy, Access Router Redundancy and Automatic Load-Balancing.

**Backbone Node Redundancy**

Backbone Node Redundancy provides the most redundancy for your dedicated access connectivity to the AT&T IP Backbone. Here’s how it works: A group of circuits terminates on one or two different customer routers and two different access routers that are located within two geographically separate AT&T IP Backbone Nodes. You’re provided a redundant physical path, a redundant customer router connection (if two customer routers are utilized), a redundant access router connection and a redundant AT&T IP Backbone Node connection. These capabilities help you to eliminate single points of failure for the circuit, customer router, access router, and the Backbone Node.

The diagrams to the right depict the most common standard MARO configurations. AT&T will help you select an appropriate configuration based upon your traffic flow and redundancy needs.

**Access Router Redundancy**

Access Router Redundancy addresses the fact that most failures are in the access portion of the network, either at the local facilities or in the access routers. In this option, a group of circuits terminates on one or two different customer routers and two different access routers within the same AT&T IP Backbone Node. The redundant elements include a redundant physical path, a redundant customer router connection (if two customer routers are utilized) and a redundant access router connection in the same IP Backbone Node, helping to eliminate single points of failure for the circuit, customer router and access router.
Automatic Load-Balancing
With Automatic Load Balancing a group of circuits is used to balance the traffic across two circuits. This option provides an extra level of redundancy for the circuit only (primary and/or redundant), and is normally used in addition to Backbone Node Redundancy or Access Router Redundancy.

For all of the options, you can choose link usage configurations based upon your traffic flow needs. In fact, you can use one or both links for inbound and outbound traffic.

Management Ease and Design Expertise
AT&T MARO makes your management job easier. You don’t need to maintain extensive – and expensive – in-house IT staff, because you can rely on the expertise of our professionals.

• We provide 24x7 customer support, technical assistance and proactive monitoring
• We include and maintain full management and operational control of the necessary equipment, significantly lessening your network management burden. Or, if you prefer, you may supply and manage your own CPE
• We offer you the option of a fully managed, outsourced security solution – AT&T Managed Firewall Service – Network-Based and Premises-Based for cost effective, end-to-end security management
• We coordinate with you to implement your desired traffic flow, and manage your BGP4 (Border Gateway Protocol) routing
• For multiple connections to the AT&T IP network we extend a private Autonomous System (AS) Number for BGP4 routing, so you won’t have to go through the complex process of applying to the American Registry of Internet Numbers (ARIN) for your own

Access Router Redundancy – Single Site

Capabilities Behind the Reliability
AT&T MARO adds robust reliability to your AT&T Managed Internet Service, which already carries with it the strength of the AT&T IP Backbone. As a Tier 1 provider, AT&T offers powerful capabilities that enhance the reliability and further development of options such as AT&T MARO.

We build our own infrastructure – imposing rigorous performance standards along the way – so that we can confidently provide end-to-end management and control. AT&T’s IP Backbone has been designed with multiple “rings” which provide alternate routes between Backbone Nodes for enhanced service reliability. At the present time, the AT&T IP Backbone consists of 18 major nodes interconnected by OC48s/OC192s, as well as 16 additional smaller nodes connected with OC48s, and about 100 locations (called remote access routers or RARs) connected with protected OC3 links.

Underlying the AT&T IP Backbone is AT&T’s highly reliable and extensive transport network. Supporting all AT&T services, the AT&T transport network is 100% digital, currently with more than 77,000 route miles of fiber optic cable in the U.S.

Riding on the transport network is the enormous AT&T Frame Relay Network, the AT&T ATM Network and the massive AT&T IP network. Separate but interconnected, these networks enable you to mix-and-match AT&T services seamlessly. And their discrete natures mean that a failure in one network doesn’t affect the others. So, you can purchase connections from multiple AT&T networks, gain the breadth of services you need and still achieve full redundancy.

All of these advantages make it possible for you to choose AT&T as your sole communications provider – and reap the benefits of our multitude of offerings.
AT&T Global IP Network – U.S. Region

Legend
- N X DS3
- N X OC3
- N X OC12
- N C OC48
- N X OC192
- Backbone Node with Peering
- Backbone Node
- Remote GSR Access Router
- Remote Access Router
- Carrier Hotel Site

For more information contact your AT&T Representative or visit us at www.att.com/business.