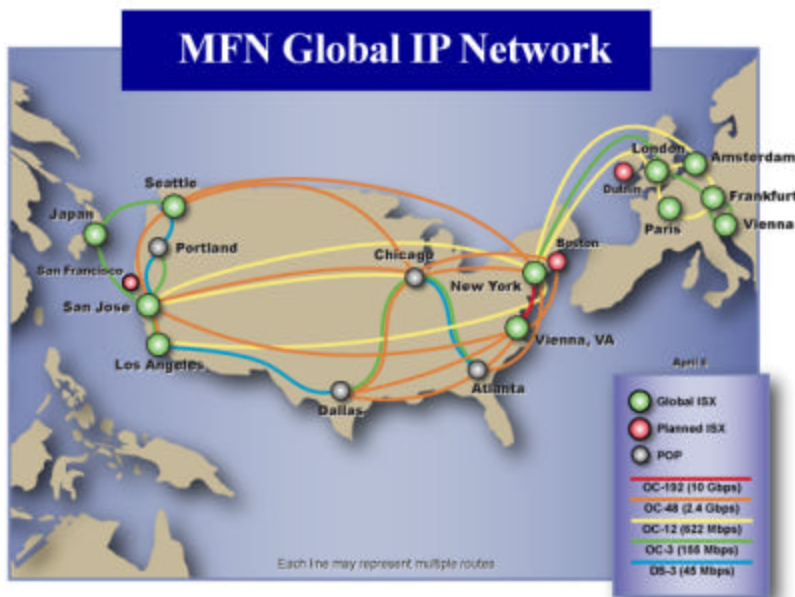


IP Backbone Architecture

The MFN backbone has been optimized for scalability, survivability, performance, efficiency and manageability. The current MFN network consists of a set of sites interconnected in a partial mesh and will be extended to accommodate a larger number of sites moving toward a two level hierarchy. This two level approach allows arbitrary scaling at either level according to various technological and business imperatives.

MFN hubs are connected via MFN fiber and DWDM equipment terminating the fiber. This allows MFN to scale the bandwidth as needed. Backbone trunks range from OC12 to OC192 and MFN uses Packet Over SONET IP(POSIP) on all trunks due to its increased efficiency over ATM. This infrastructure enables MFN to deliver a high level of availability and fast Internet response for both domestic and international traffic.



100% Dedicated IP Network

MFN's network was designed with a single focus, with our core competency, transporting IP packets reliably and efficiently to their final destinations. MFN delivers IP traffic rapidly because the number of network hops is reduced by strategically locating hubs throughout the world. Additionally MFN does not mix legacy telecom protocols on its network such as analog voice, ATM and frame relay.

Technology

Networking technology advances everyday. At MFN our world-class engineering staff is dedicated to building the Global IP Network to exceed customer expectations. Because MFN owns its own network, our engineering staff works with multiple vendors, allowing the implementation of the most advanced technologies into the network quickly. Diversifying the type of equipment utilized not only increases reliability and performance, but also the security of the network.

Rich Peering Connections

MFN is an industry leader in peering, with the most open, aggressive peering policy of any Internet network. Aggressive peering adds value for MFN's customers by increasing the number of networks to which MFN sends traffic directly, using its own global IP infrastructure for carriage. MFN employs the right mix of public and private peering connections to ensure congestion-free hand-off of MFN customer traffic to other networks.

Multiple ways to access MFN's Global IP Network

- Connect in MFN data centers
- Connect in common facilities
- Connect to MFN from your premises

Major U.S. IP Hubs

Atlanta, GA
Boston, MA
Washington, DC
Dallas, TX
Napa, CA
Vienna, VA
Reston, VA
Los Angeles, CA
El Segundo, CA
New York, NY
Chicago, IL
Palo Alto, CA
Seattle, WA
Tukwila, WA
San Francisco, CA
San Jose, CA

Major International IP Hubs

Amsterdam, Netherlands
Schiphol-Rijk, Netherlands
Courbevoie, France
Paris, France
Frankfurt, Germany
London, United Kingdom
Tokyo, Japan
Vienna, Austria

Major U.S. Peer Interconnect Points

Ameritech NAP - Chicago, IL
AMES - Mountain View, CA
MAE Dallas - Dallas, TX
MAE East - Vienna, VA
MAE-LA - Los Angeles, CA
NYIIX - New York, NY
PAIX - Palo Alto, CA
SIX - Seattle, WA
PAC Bell NAP - San Jose, CA
Oregon Internet Exchange (OIX) - Portland, OR
Sprint NAP - Pennsauken, NJ

Major International Peer Interconnect Points

AMS-IX - Amsterdam, Netherlands
LINX - London, United Kingdom
JPIX - Tokyo, Japan
NSPIX 2 - Tokyo, Japan
SFINX - Paris, France
VIX - Vienna, Austria

Access the MFN IP Network

MFNs IP transit products provide connection to the MFN Global IP Network, domestically and internationally. The service delivery methods for MFNs IP transit products are based on the following interconnection options.

Interconnection Options

- Connect in MFN Data Centers (ISX Facilities) - The customer router is collocated in the MFN data center (ISX) and the standard facilities interconnection method is used.
- Connect within a Common Facility – In addition to MFN data centers, IP hubs are located in various collocations and exchange facilities. Examples of such facilities are PAIX, MFN POPs, Telehaus, and LINX etc. A potential IP customer will be required to collocate in these facilities and then utilize the standard interconnection method to attach to the MFN router.
- Connect to MFN from your Premises – IP transit is provided using a MFN managed network, such as Virtual ISX, or other access methods directly from the customer premises. The customer router is not collocated in the same facilities as the MFN router.

All MFN IP transit products are based on the following basic service features and supplementary services.

Basic Service Features

IP Port

This is characterized by the interface type and capacity (in Mbit/s)

IP Capacity

This component is characterized by IP capacity, based on usage. The maximum IP capacity is limited by the port-capacity.

Interconnection Option

This is characterized by the physical interconnection between the customer premises equipment (CPE) and the MFN router.

Supplementary Services

Domain Name Registration

For e-mail or web hosting, customers need a domain name. MFN provides DNS services for customers who do not already have a registered domain name.

IP Addressing

To communicate with the Internet the customer must have a registered IP address(es). Customer can obtain IP address space from MFN. Customers must justify all IP address space, using 60% "at the time of the allocation" and 80% within 3 months. Customers needing a /20 or larger block of addresses should obtain them directly from a registry.

Network Time Protocol (NTP)

MFN supports the Network Time Protocol (NTP) and the pass through of NTP packets. NTP allow synchronization of the customer network to an atomic clock.

Monitoring (APS)

All MFN customers can have access to MFNs automated Proactive System. APS monitors customer devices and sends the customer email when the device goes down.

IP Routing

Once the physical handoff has been accomplished, the IP interconnection shall be established via the following methods:

Static Routing - A static route will be installed for the customers' blocks that the customer wishes to be routed to the customer. The customer should point a default upstream to MFN from the customer router. In certain situations, the customer default router to MFN can refer to an HSRP or VRRP protected IP address for reliability.

Dynamic Routing – External BGP (EBGP4) will be the **only** dynamic routing protocol run with a customer. There will be no exceptions to this rule. The session will be filtered by prefix.

For BGP speaking customers, either single homed or multi-homed, Customer must have an Autonomous System Number (ASN). MFN can announce their AS number to its peers (transit the customer). The announcement can contain any number of customer's networks, with as much aggregation done as possible.

If the customer is only connected to the MFN network, and no other service provider, MFN can provide an ASN for the customer to use. In all other cases, the customer must get an ASN from a general Registry (ARIN, RIPE, or APNIC).