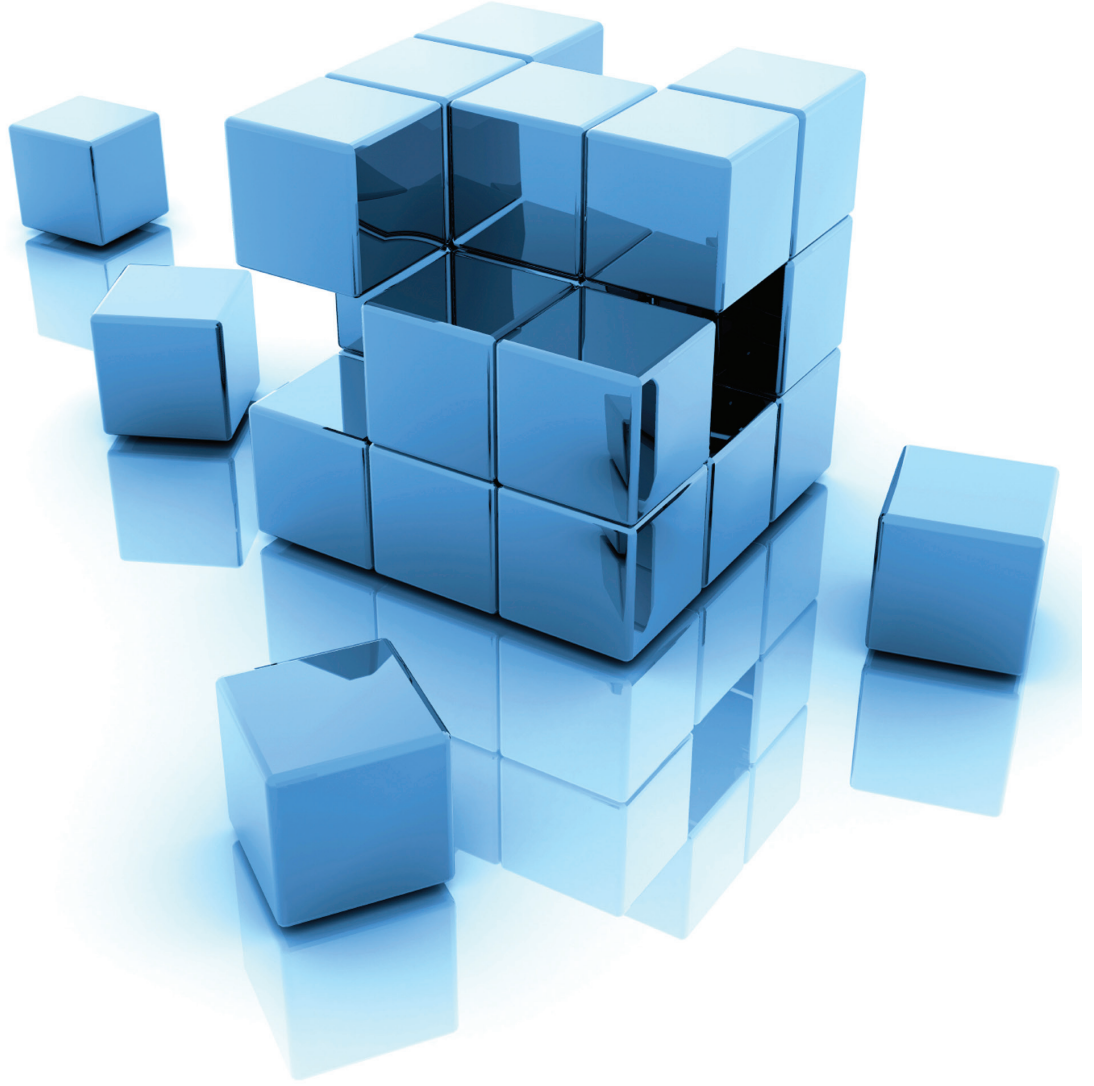


# NETWORK SERVICES

DESIGNING SOLUTIONS THAT FIT



**US SIGNAL**  
WE TAKE YOUR BUSINESS PERSONAL

US Signal's fiber optic network is one of the largest in the Midwest, providing a wide range of carrier-class telecommunication solutions to carrier, wholesale and enterprise customers.

Whether it's a fully meshed MPLS network, Virtual Ethernet Service, Dedicated Internet Access or Colocation space, US Signal has what you need.



## NETWORK SERVICES

DESIGNING SOLUTIONS THAT FIT

Your successful business has a great deal riding on its network. Speed is important, as well as responsiveness, efficiency and minimal downtime. As a full-service, fiber optic solutions provider, US Signal raises the bar in network dependability. We strive to design solutions that help you increase productivity, maximize performance, and reduce operational costs all while giving you the best customer experience possible. In a sea of endless providers, we may just be the greatest network you've never heard of.

We are committed to developing new products, continuing to expand our footprint and offering competitive price points. Do you simply need Internet access? Does your business need a fully meshed MPLS network, Ethernet Services or a SONET protected data center to store your mission-critical applications? Our products and services focus on your individual business needs ensuring resiliency, flexibility and scalability.

Contact us today at 866.2.SIGNAL to find out more. We look forward to partnering with you.

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“Through our partnership with US Signal, Advocate Health Care operates a carrier-grade private optical network that provides extreme cost efficiency while providing a robust mix of transport services. This flexibility allows Advocate to respond quickly to the ever changing needs of healthcare and patient care delivery. US Signal is a strong partner that Advocate can depend on for both short and long-term needs.”

Gary Horn  
 Director  
 Enterprise Architecture  
 and Network Security  
 Advocate Health Care,  
 Chicago, IL

# VIRTUAL ETHERNET SERVICE



“PLUG AND PLAY” TECHNOLOGY

Providing transparent any to any connectivity to geographically diverse locations using the ease and simplicity of Ethernet

US Signal Virtual Ethernet Service connects your locations across any distance. Based on the Virtual Private LAN Service (VPLS) standard, Virtual Ethernet Service enables Ethernet layer 2 traffic to be transported across an MPLS backbone.

## MUCH MORE THAN JUST A METRO ETHERNET PRODUCT

Based on the Virtual Private Local Area Network Service (VPLS) standard VES enables long haul Ethernet traffic to be transported across an MPLS backbone, bringing value to your Wide Area Networks (WAN) with flexible bandwidth options allowing you to purchase only the bandwidth you need. VES also reduces your equipment interface costs. You are able to control your layer 3 protocols with VES if you choose to do so; however no extensive knowledge of WAN technology is necessary. US Signal VES is a “plug and play” technology.

### BENEFITS

- Reduces complexity of your network configuration
- Reduces equipment interface costs
- Flexible bandwidth levels and access options allow you to connect all sites with varying requirements
- Allows greater value from bandwidth efficiency by allowing you to purchase only the bandwidth you need

### ADVANTAGES

- Available anywhere in the US Signal footprint
- Connectivity between your sites without fixed or permanent virtual circuits
- No need for knowledge of WAN technology or equipment

### FEATURES

- Numerous bandwidth options
- Multiple access types supporting any of your locations
- Supports your VLAN configurations
- Connect to the US Signal network over a variety of options including:
  - Ethernet over Copper (EoCu)
  - Ethernet over DS-1/DS-3 (EoTDM)
  - Ethernet over SONET
  - Native Ethernet connections delivered via copper or optical cabling

# MPLS VPN



MULTIPROTOCOL LABEL SWITCHING VIRTUAL PRIVATE NETWORK SERVICE

PRIVATE TRANSPORT OVER OUR PROTECTED INTERNET PROTOCOL (IP) BACKBONE.

## ANY TO ANY COMMUNICATION

MPLS VPN provides any to any communication between geographically diverse locations without fixed private lines or permanent virtual circuits. Today's businesses require reliable and scalable data networks that deliver guaranteed performance at an affordable cost. US Signal MPLS VPN meets those demands by providing private transport over our protected Internet Protocol (IP) backbone. IP packets are assigned labels determining how they are sent through the US Signal MPLS network. These predetermined routes improve your network efficiency and keep traffic isolated to ensure security.

## BENEFITS

- Eases network traffic flow and management while providing enhanced security
- Private connections provide unparalleled security for mission critical applications
- Guaranteed bandwidth based on proven Cisco routing technology
- Flexible network architecture to support point-to-point and hub arrangements

## ADVANTAGES

- Connectivity between your sites without fixed or permanent virtual circuits
- MPLS packets are forwarded along predetermined paths, improving network efficiency
- Choose from US Signal provided routers or your existing compatible equipment

## FEATURES

- IP packets are assigned labels to determine how they are sent through the US Signal MPLS network allowing your traffic to be isolated and ensure security
- Supports static routes and Border Gateway Protocol
- Four classes of service available as part of the QoS option

Today's businesses require reliable and scalable data networks that deliver guaranteed performance at an affordable cost. US Signal MPLS VPN services provide private transport over US Signal's protected Internet Protocol (IP) backbone.

# INTERNET ACCESS



PERMANENT “ALWAYS ON” CONNECTION

US Signal delivers Dedicated Internet Access throughout the Midwest over its SONET protected fiber network. Our Internet Access speeds range from 1.5 Mbps to 1 Gbps or higher.

## SPEND MORE TIME MANAGING YOUR BUSINESS

Spend less time managing your Internet connection and more time managing your business with US Signal’s Dedicated Internet Access. Traffic is transported across the US Signal protected IP Backbone. In addition to terminating its own traffic the US Signal network has Tier 1 connections in multiple major markets to ensure connectivity. US Signal’s core routers provide distributed routing and lightning fast service. With flexible connection options and Service Level Agreements to support any application US Signal can design a solution that best fits your needs.

### BENEFITS

- Permanent, “always on” connection to the Internet
- Dedicated connection means bandwidth is not shared with other customers
- Provides the speed and stability to support multiple applications

### ADVANTAGES

- Transported across US Signal’s own protected IP backbone. (IPv6 Information Center)
- Wide variety of port options offered with aggressive pricing plans
- Web based monitoring page available for usage management
- Service Level Agreements to support any application

### FEATURES

- Dedicated, fixed and burstable speeds from 1.5 Mbps up to 1 Gbps or higher
- 24/7/365 network surveillance for quick trouble resolution
- Available with Quality of Service (QoS)

# COLOCATION



## AFFORDABLE OFFSITE HOUSING

### ADDITIONAL SECURITY FOR YOUR MACHINES

US Signal's facilities offer your business an affordable, offsite location to house your equipment or mission-critical application.

#### BENEFITS

- Convenient locations in strategic markets
- Customizable colocation architecture, including options for private cabinet, half cabinet and caged
- Simple, inexpensive access to the US Signal network

#### SECURITY AND ENVIRONMENTAL CONTROLS

- Secure, alarmed facilities
- 24/7/365 access for authorized customer representatives
- Integrated heat and smoke detection
- FM 200 fire suppression systems (sprinkler where required by code)
- Automated humidity and temperature controls

#### POWER OPTIONS

- 120/208 VAC (AC power) available in 10 Amp increments
- 48 VDC (DC power) available in 10 Amp increments
- Redundant DC battery back-up available
- Full generator back-up with auto start and auto transfer capabilities
- 24 hour generator run time fuel capacity

Peace of mind  
provided by  
backup power and  
environmental systems

# PRIVATE LINE

SUPPORTING YOUR NETWORK REQUIREMENTS

US Signal Private Line Services support a variety of interconnection options ensuring they can be configured to support your unique network requirements.

## **FLEXIBLE, YET PROTECTED**

Private Lines are delivered across the US Signal SONET protected network and offered with aggressive pricing and flexible contract terms. US Signal has partnered with Cisco to create a remarkably stable network providing Private Line services backed with 99.999% up time service level agreements. With over 150 on/off ramps, US Signal has multiple points of presence in strategic markets throughout the Midwest.

## **BENEFITS**

- Private connections provide unparalleled security for mission critical applications
- Guaranteed bandwidth based on proven SONET technology
- Flexible network architecture to support point-to-point and hub arrangements

## **ADVANTAGES**

- End-to-end provisioning on US Signal's SONET protected, Cisco Powered Network
- Multiple points of presence in strategic markets throughout the Midwest
- Aggressive pricing and flexible contract terms
- Industry leading service delivery and installation

## **FEATURES**

- 24/7/365 network surveillance for quick trouble resolution
- Available with a wide range of bandwidth and hand-off options, from DS-1 to OC-192, Fast Ethernet and Gigabit Ethernet
- Ethernet services, subject to availability
- Support for a variety of interconnection options

# OPTICAL WAVE



## MEETING YOUR HIGH BANDWIDTH TRANSPORT NEEDS

### HIGH BANDWIDTH TRANSPORT WHEN YOU NEED IT

Optical Wave Service provides the flexibility and scalability to cost effectively meet your high bandwidth transport needs.

#### BENEFITS

- Guaranteed dedicated bandwidth based on Cisco DWDM technology
- Secure private connection with virtually no chance of being breached
- Cost-effective means of supporting high bandwidth capacity needs

#### ADVANTAGES

- Service supports a variety of interfaces including SONET (OC-48 or OC-192) and 10GigE
- Fully transparent service allows you to run switch protection across multiple waves
- Highly customizable

#### FEATURES

- 2.5 and 10 Gbps speeds available
- Metro and Long Haul Wave services offered
- Wide variety of data signals supported across waves
- Diverse routes available

Securely transport and store large amounts of data while keeping your applications performing at their best.

We offer a product portfolio focused on providing private data transportation, raw computing power, internet connectivity and the security services necessary to bring them all together.



## MANAGED SERVICES

CLEAR SOLUTIONS FOR YOUR ADVANCED BUSINESS NETWORK

When you're faced with the challenges of changing business conditions, keeping up with new technologies while still remaining profitable is a must. The need to outsource the management of your IT infrastructure to a service provider has become a consideration, but how do you decide? To remain competitive in a global market you need an infrastructure that is reliable, fast and secure. At US Signal, we work with you to become more than just a service provider, we're a business partner.

### MANAGED DATA CENTER

With US Signal Managed Data Center (MDC), you can create Virtual Private Clouds to boost or replace your legacy infrastructure and also run your business applications. MDC integrates seamlessly with MPLS VPN and Virtual Ethernet to deliver a variety of solutions including Virtual Private Servers, Dedicated Servers and Utility Storage. What's more, MDC is designed to provide scalable, managed solutions that drive down your costs, increase performance and never compromise your security.

## MANAGED SECURITY

Managed Security moves your firewall into the cloud allowing you to leverage US Signals security expertise. Managed Security improves the features of legacy security infrastructure by using carrier-grade firewalls maintained by security specialists and monitored 24/7/365 by the US Signal Network Operations Center.

US Signal offers Managed Security services with its Dedicated Internet Access service, creating a secure connection to the Internet and moving security to the perimeter of your trusted private network. Managed Security is available in two network based implementations: Cloud Based Managed Firewall and Cloud Based Advanced Security. Managed Security improves performance while reducing costs because it reduces demand on the most bandwidth constrained area of the network, the last mile. All locations have direct routes to the firewall reducing bandwidth needs at the head end.

## MANAGED ROUTER

Managed Router Service includes installation, configuration and maintenance of a router at your site. Managed Router service offers proactive fault resolution with four business hour replacement or repair of faulty equipment, as well as Service Level Agreements to support any application.

Ask your representative for more information about US Signal Managed Services.

US Signal's Cloud Based Advanced Security offering makes working in the cloud safe and secure, creating a trustworthy virtual infrastructure.

# NETWORK SERVICES SERVICE LEVEL AGREEMENTS

## TECHNICAL STANDARDS OF PERFORMANCE

US Signal stands behind its products and provides industry leading Service Level Agreements ensuring complete network performance. US Signal's Service Level Agreements provide you with the peace of mind knowing your network can support any application.

### **SERVICE AVAILABILITY**

Availability Performance is the percentage of time within a specified time interval during which the Frame Loss Ratio Performance is small. A circuit is considered unavailable when there is a complete loss of use.

### **MEAN ONE-WAY LATENCY (MEAN ONE-WAY FRAME/PACKET DELAY)**

The One-Way Frame Delay for an egress Service Frame at a given Interface in the EVC is defined as the perceived time elapsed from the reception at the ingress interface of the first bit of the corresponding ingress Service Frame until the transmission of the last bit of the Service Frame at the given interface for a particular Class of Service Identifier. To obtain the Mean One-Way Frame Delay, statistics are gathered and averaged over the period of 1 month.

### **MEAN JITTER (MEAN FRAME/PACKET DELAY VARIATION)**

Frame Delay Variation is the difference between the one-way delays of a pair of selected Service Frames for a particular Class of Service Identifier and an ordered pair of interfaces. To obtain the Mean Frame Delay Variation, statistics are gathered and averaged over the period of 1 month.

### **FRAME LOSS RATIO**

Frame loss is a measure of the number of lost service frames inside the network for a particular Class of Service Identifier. Frame loss ratio is;  $\% = \# \text{ frames lost} / \# \text{ frames sent}$  over a period 1 month.

### **SLA COVERAGE**

US Signal handles SLA's based on several different network/technology domains.

- Core Domain i.e. (Between Core PoP's across MPLS backbone)
- Edge Domain i.e. (Metro Ethernet Networks)
- Access Domain i.e. (Last Mile Access)

Latency, Frame Loss and Jitter metrics are measured and provided in the Core Domain. The Availability Metric is measured and provided in the Core and Edge Domains. SLA's do not extend to the Access Domain.

**DEDICATED INTERNET ACCESS**

Performance Metrics	
Availability	99.995%
Latency	15ms
Packet Loss	<=0.1%
Jitter	4ms

Traffic performance is measured using four parameters: availability; latency; packet loss; and jitter.

**DEDICATED INTERNET ACCESS WITH QOS**

Performance Metrics	Class D	Class C	Class B	Class A
Availability	99.5%	99.995%	99.995%	99.999%
Latency	N/A	15ms	15ms	10ms
Packet Loss	N/A	<=0.1%	<=0.05%	<=0.005%
Jitter	N/A	4ms	4ms	4ms

**VES POINT TO POINT**

Availability 99.995%

**VES POINT TO POINT WITH QOS**

Performance Metrics	Class D	Class C	Class B	Class A
Availability	99.5%	99.995%	99.995%	99.999%
Latency	N/A	15ms	15ms	10ms
Packet Loss	N/A	<=0.1%	<=0.05%	<=0.005%
Jitter	N/A	4ms	4ms	4ms

**VES MULTISITE**

Performance Metrics	
Availability	99.995%
Latency	15ms
Packet Loss	<=0.1%
Jitter	4ms

**VES MULTISITE WITH QOS**

Performance Metrics	Class D	Class C	Class B	Class A
Availability	99.5%	99.995%	99.995%	99.999%
Latency	N/A	15ms	15ms	10ms
Packet Loss	N/A	<=0.1%	<=0.05%	<=0.005%
Jitter	N/A	4ms	4ms	4ms

Traffic performance is measured using four parameters: availability; latency; packet loss; and jitter.

**MPLS VPN**

Performance Metrics	
Availability	99.995%
Latency	15ms
Packet Loss	<=0.1%
Jitter	4ms

**MPLS VPN WITH QoS**

Performance Metrics	Class D	Class C	Class B	Class A
Availability	99.5%	99.995%	99.995%	99.999%
Latency	N/A	15ms	15ms	10ms
Packet Loss	N/A	<=0.1%	<=0.05%	<=0.005%
Jitter	N/A	4ms	4ms	4ms

**PRIVATE LINE AND OPTICAL WAVE**

99.999% Availability

Availability Performance is the percentage of time within a specified time interval during which the Frame Loss Ratio Performance is small. A circuit is considered unavailable when there is a complete loss of use.

US Signal handles SLA’s based on several different network/technology domains.

- Core Domain i.e. (Between Core PoP’s across MPLS backbone)
- Edge Domain i.e. (Metro Ethernet Networks)
- Access Domain i.e. (Last Mile Access)

Latency, Frame Loss and Jitter metrics are measured and provided in the Core Domain. The Availability metric is measured and provided in the Core and Edge Domains. SLA’s do not extend to the Access Domain.

**MANAGED ROUTER**

US Signal notifies you within thirty (30) minutes of detecting the loss of connectivity lasting longer than six (6) minutes. In the event that we fail to meet this notification timeline, you qualify for a response credit equal to one hundred (100%) percent of the monthly recurring fee associated with the Managed Router Service. The credit cannot exceed one month’s service fee for any individual site.

NETWORK

The US Signal debt-free, fiber optic network is one of the largest, fully deployed networks in the Midwest, covering Illinois, Indiana, Michigan, Ohio, Wisconsin and Missouri.



With over 12,000 miles of long-haul fiber and over 1,200 miles of fiber optic metro rings in strategic tier-one, tier-two and tier-three markets, the US Signal optical backbone features Cisco Systems Dense Wave Division Multiplexing (DWDM) technology and is designed with a SONET, redundant architecture.

All of US Signal's services are delivered over this protected network to ensure resiliency, flexibility and scalability.

ILLINOIS

- Bloomington
- Centralia
- Champaign
- Chicago
- Des Plaines
- Elk Grove Village
- Hoffman Estates
- La Grange
- Mattoon
- Northbrook
- Oak Brook
- Peoria
- Rockford
- Schaumburg
- Springfield

INDIANA

- Anderson
- Bloomington
- Columbus
- Crown Point
- Elkhart
- Fort Wayne
- Gary
- Greenwood
- Hammond
- Indianapolis
- Kokomo
- Lafayette
- Marion
- Merrillville
- Muncie
- Portage
- Shelbyville
- South Bend
- Terre Haute
- Warsaw

MICHIGAN

- Ann Arbor
- Auburn Heights
- Battle Creek
- Birmingham
- Detroit
- Flint
- Grand Rapids
- Jackson
- Kalamazoo
- Lansing
- Livonia
- Midland
- Mt. Pleasant
- Muskegon
- Niles
- Northville
- Pontiac
- Saginaw
- Southfield
- Three Rivers
- Traverse City
- Troy
- Wayne
- West Bloomfield

MISSOURI

- St. Louis

OHIO

- Akron
- Cincinnati
- Cleveland
- Columbus
- Dayton
- Lima-Mansfield
- Toledo

WISCONSIN

- Appleton
- Green Bay
- Oshkosh
- Madison
- Milwaukee

## WE TAKE YOUR BUSINESS PERSONAL

### COMMITMENT TO OUR CUSTOMERS

We do the right thing. Period. At US Signal we are committed to creating a better customer experience, providing solutions that are right for you. Making you look good is our top priority. That is why we are continually developing new products, expanding our footprint and offering competitive price points to help you get closer to your business opportunities. Our tenured and knowledgeable staff is dedicated to our brand: We take your business personal.

### BECAUSE WE CARE ABOUT YOUR NETWORK

We may just be the greatest network you've never heard of. With technology changing at speeds that can be hard to keep up with, we support you through these changes with a network that is dependable and secure. With US Signal's capacity services, IP data services, flexible colocation solutions, and the unmatched density of over 150 on/off sites throughout the Midwest, you have access to solid, reliable fiber optic connectivity.

### SERVICE DELIVERY

Doing business with us is easy. As a customer of US Signal you have one point of contact from the time your order is submitted through installation. Dedicated project managers provide you with updates through each phase of the installation process and assist with any questions you may have. Better yet, you can count on us being here - we're 100% debt free and not for sale.

### NETWORK OPERATION CENTER

The same things that are important to you are important to us. Being able to get the help you need, when you need it is critical to running your business. Our NOC Surveillance Center provides network monitoring 24 hours a day, 7 days a week. When you call the US Signal NOC, your call is answered within 30 seconds by a fully qualified maintenance technician who immediately starts troubleshooting your issue.

Connect with us. We host NOC tours at our Grand Rapids, MI office. Call to schedule yours today or visit us at our website: [www.ussignalcom.com](http://www.ussignalcom.com).