

## iDirect Broadband VSAT Hub Router Solutions

All the **IP communications**  
capabilities users need...

Using **high-speed** broadband  
service over satellite...

Supporting **business-critical** applications—  
**anywhere** in the world



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Now you can support all your users' bandwidth needs regardless of their location, topology, requirements or application. iDirect provides the most cost-effective and reliable broadband business-class IP solution over satellite. We integrate IP routing capability and application prioritization optimized for satellite transmission, with business-class reliability and performance. It's fast, flexible and can be deployed anywhere.



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Unleash the full power of the wireless world. Built from the ground up to support broadband over satellite, iDirect solutions deliver the next generation IP network right now.

Network Operators can lower their equipment and operating costs while increasing revenues and profits. With a rapid time-to-market, you achieve a compelling return on your investment that delivers the highest possible quality to your customers.

iDirect's unparalleled two-way, VSAT satellite solution matches the quality and performance of broadband terrestrial networks.

It enables you to:

- ◆ Support diverse needs of enterprise IP networks with effective infrastructure and technology tools
- ◆ Implement a full IP network with the lowest capital costs
- ◆ Interface with up to five different satellites through a single Hub —no other system can do this!
- ◆ Efficiently manage networks with an unequalled Network Management System (NMS)
- ◆ Use any satellite frequency, including C, Ku and emerging Ka-band
- ◆ Build multiple networks from a common hub platform
- ◆ Enter new markets more profitably
- ◆ Scale to support current and future applications

Superior technology provides new revenue opportunities. In addition to industry-leading technologies including Deterministic TDMA (D-TDMA), Turbo Product Codes, and TCP/HTTP Acceleration, iDirect offers unique capabilities that provide more revenue opportunities through highly efficient bandwidth usage, greater flexibility, and enhanced reliability and performance.

- ◆ Deliver a complete enterprise application suite
- ◆ Deliver near toll-quality voice with patent-pending technology

***Better utilization of bandwidth and transponder capacity.***

Capacity Optimization is inherent throughout the iDirect solution. By using a native IP solution, you'll save 10-50 % capacity versus an inefficient DVB MPEG Encapsulation scheme. The extremely rapid bandwidth-on-demand system ensures the highest efficiency of capacity utilization. MF-TDMA, D-TDMA is 98% payload efficient. In addition, with 1.2 Carrier Spacing we deliver 14% savings in bandwidth through more efficient use of your transponder capacity.

***Achieve a high degree of scalability.*** You can increase bandwidth as needed on-the-fly: upstream from 64 kbps to 4.2 Mbps; downstream from 128 kbps to 18 Mbps. You can also configure networks in 1 kbps increments, and add new remotes easily—without increasing satellite capacity.

***Carry more application and traffic over your available bandwidth.*** iDirect's D-TDMA allocates bandwidth among multiple remote sites, based on instantaneous conditions. Several times a second, our D-TDMA

feature allocates bandwidth dynamically based on criteria such as the queued depth at each remote site, the CIR (Committed Information Rate) configuration, Quality of Service and Prioritization requirements, as well as any Rate Limiting established at each remote site.

***Provide a host of flexible service and application options for customers.*** iDirect's System and Application Quality of Service (QoS) feature minimizes high-priority packet loss or delay, and allow you to deliver applications like video or Voice over IP.



**Get the most flexible hub enablement in the industry. The iDirect Technologies Hub solutions offer an expanding portfolio of configurations that allow you to support a broad range of requirements and applications. You won't find this much flexibility anywhere else.**

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HUB CHASSIS

UNIVERSAL LINE CARD

PRIVATE HUB

Flexibility is built in through the use of:

- ◆ Point-to-Point IP (SCPC) Configuration
- ◆ Star Topology
- ◆ Star-Mesh Topology (Future)
- ◆ Multi-Star Configurations
- ◆ Mobile Application

**Greater reliability from the industry's leading Network Management System.** iDirect's Network Management System (NMS) provides all essential monitoring and control operations from a centrally located network operations center. The system can scale to monitor multiple hubs and thousands of remote sites from a single NMS.

**Configuration, monitoring and analysis—all from one point.**

The iDirect NMS provides network operators with an unmatched tool to increase network efficiency, support individual site requirements, and maximize network reliability. From one easy to use GUI script, network operators can:

- ◆ Direct all configuration and control capacities, including the ability to send software and firmware updates over the air to remote locations.
- ◆ Access graphical views of the network layout and configure all system parameters
- ◆ Utilize tools for both active and passive investigation of network behavior

- ◆ Monitor graphical tools for querying and displaying network statistics

The iDirect NMS makes network anomalies easier to identify and correct, and it insures optimal bandwidth allocation across all elements of the network. The result is increased efficiency and network uptime.

**Equipment options include:**

**iDirect 20-Slot 51F Chassis** covers up to five regions without purchasing and operating multiple hubs. It's designed for network operators who offer service on multiple satellites, allowing access of up to 5 satellites from one location.

The Chassis supports C, Ku, and Ka band transponders with carrier class redundancy.

### **iDirect 20-slot 11F Chassis**

saves invaluable collocation space. It's designed for network operators with full teleport capabilities provided over a single satellite. Like the 51F Chassis, the 20-slot 11F allows up to 20 networks from a single hub.

### **iDirect Virtual Network**

**Operator (VNO)** is the ideal solution for non-facilities based providers of satellite services that want to operate their own network. It allows multiple VNOs to operate on the same chassis, but retain the ability, via partitioning, to manage and operate their own networks through separate network management capabilities. Each VNO's traffic is entirely segregated.

iDirect is the industry leader in satellite-based broadband access solutions delivering all the benefits of high-speed IP networking beyond

the constraints of traditional landline networks. Developed specifically to meet the communications needs of enterprise customers, iDirect-powered networks deliver the speed, performance and flexibility to fulfill the most demanding requirements of today's end users — anywhere.

More than just a remote link, the iDirect solution was developed to be an extension of existing IP networks, delivering all the functionality and capability you expect from traditional broadband networks via satellite. Our unique technology allows our customers to:

- ◆ Provide fast bi-directional satellite connections to the internet with shared data throughput speeds up to 18 Mbps

- ◆ Easily build multiple outroutes from a single hub for an aggregate throughput of up to 360 Mbps per chassis
- ◆ Configure multiple chassis in the same hub
- ◆ Access 5 satellites from a single hub chassis
- ◆ Deliver real time services like VoIP and video
- ◆ Increase service offerings with new IP applications such as multicasting and distance learning
- ◆ Support star, mesh, SCPC or hybrid networks
- ◆ Attain the highest bandwidth efficiency in the industry



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## TECHNICAL SPECIFICATIONS FOR THE 11F-HUB CHASSIS

Slots	20
Slot Groups	Minimum Group Size 4 Slots Maximum Group Size 20 Slots
SatCom Interfaces	TxF: Type-F, 950 - 1700 MHz RxF: Type-F, 950 - 1700 MHz 20-to-1 L-Band Combiner/Divider for Tx 20-to-1 L-Band Combiner/Divider for Rx
Management Interfaces	RJ45, Console Port on NetModem Cards RJ45, 10/100 Ethernet on Chassis - Monitoring/Configuration
LEDs	Line Card Status, Power Status, Fan Status
Cable Management	20 Port - RJ45, Cat5e Patch Panel UTP/STP
Size	W 19" x D 22" x H 17.4" (W 48.26 cm x D 55.9 cm x H 44.2 cm)
Weight Empty	75 lbs (34.1 kg) Loaded 103 lbs (46.7 kg)
Operating Temperature	0° to 45°C (+32° to +113°F)
Power Supply	N+1 Redundant (N=2) Hot-Swappable 90-264 V~, 8A@110V, 47-63 Hz
Fan	N+1 Redundant (N=2) Hot-Swappable
Standards Compliance	UL 1950, EN 60950, FCC Part 15 – Class B, EN 55022 –Class B, EN 300673, EN 61000-6-2, ISO 7779



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## TECHNICAL SPECIFICATIONS FOR THE 51F-HUB CHASSIS

Slots	20
SatCom Interfaces	TxF: Type – F, 950 – 1700 MHz RxF: Type – F, 950 – 1700 MHz 5 Independent, 4-to-1 L-Band Combiner for Tx 5 Independent, 4-to-1 L-Band Divider for Rx
Management Interfaces	RJ45, Console Port on NetModem Cards RJ45, 10/100 Ethernet on Chassis – Monitoring /Configuration
LEDs	Line Card Status, Power Status, Fan Status
Cable Management	20 Port – RJ45, Cat5e Patch Panel
Size	W 19" x D 22" x H 17.4 " (W 48.26 cm x D 55.9 cm x H 44.2 cm)
Standards Compliance	UL 1950, EN 60950, FCC Part 15 – Class B 55022 - Class B, EN 300673, EN 61000-6-2, ISO 7779



## TECHNICAL SPECIFICATIONS FOR THE PRIVATE HUB

### NETWORK CONFIGURATION

Multiple Access	TDM (Downstream) D-TDMA (Deterministic TDMA) Multi-Frequency TDMA (Upstream) Configurable number of Upstream Carriers per Downstream Configurable frame length, (number of slots/frame)
Channel Rates	Outroute: 11.5 Mbps or 5.75 Msps Inroute: 5.75 Mbps or 2.875 Msps
Channel Spacing	1.2
Modulation	QPSK
IP Data Rates	Outroute: 64 Kbps – 9 Mbps Inroute: 64 Kbps – 4.2 Mbps (Max. of 1 Mbps @ 0.66 FEC and 4.2 Mbps @ 0.793 FEC)
FEC	Outroute: TPC Rate 0.793 or TPC Rate 0.495 Inroute: TPC Rate 0.793 or TPC Rate 0.66
$E_b/N_o$	4.0 $E_b/N_o$ for $10^{-9}$ Quasi Error Free @ 0.495 FEC 4.6 $E_b/N_o$ for $10^{-9}$ Quasi Error Free @ 0.793 FEC 5.4 $E_b/N_o$ for $10^{-9}$ Quasi Error Free @ 0.66 FEC



### INTERFACES

SatCom Interfaces	TxF: Type-F, 950 - 1700 MHz RxF: Type-F, 950 - 1700 MHz TVRO: Type-F, 950 - 1700 MHz
Data Interfaces	LAN: RJ45, 10/100 Ethernet RS-232: RJ45 (for GPS or Console connection)
Protocols Supported	TCP, UDP, ICMP, IGMP, RIP Ver2, Static Routes, NAT, DHCP, DNS Caching, cRTP
Security	3DES Link Encryption (optional)
Traffic Engineering	QoS (CBWFQ), CIR, Rate Limiting, Dynamic Allocation

### MECHANICAL/ENVIRONMENTAL

Size	W 11.75" x D 10.50" x H 1.75" (W 29.9 cm x D 26.7 cm x H 4.5 cm)
Weight	7 lbs (3.18 kg)
Operating Temperature	0° to 45°C (+32° to +122°F)
Input Voltage	100-250 VAC Universal Input, 2A Max @ 100 VAC



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