

**iDirect Technologies  
Broadband VSAT System  
Summary**

**February 2008**

*Advancing a Connected World*



iDirect provides the most cost-effective and reliable broadband business-class IP solution over satellite.

### **Simplicity**

- ◆ One-Box Solution (Satellite Modem, IP Router, TCP Optimization, QoS, 3DES Link Encryption)
- ◆ Centralized Management (Software Upgrades, Configuration Changes)

### **Most Reliable Solution over Satellite**

- ◆ First to implement Turbo Product Code (TPC) Forward Error Correction
- ◆  $10^{-9}$  or Better Bit-Error-Rate Guarantee
- ◆ Uses 50% lower power ( $E_b/N_o$ ) when compared to RSV
- ◆ Auto Power Adjustment provides reliable connectivity even in bad weather conditions
- ◆ The ultimate result is more TCP throughput

### **Performance**

- ◆ Highest TCP/IP throughputs in the industry (20 Mbps downstream – 6.5 Mbps Upstream)
- ◆ Fast Frequency Hopping (MF-TDMA) combined with Rapid Bandwidth Allocation
- ◆ TCP/IP is very sensitive to BER. TPC Encoding ensures  $10^{-9}$  BER, providing fiber like reliability
- ◆ Technological Superiority Allows Use of Much Smaller Antenna Sizes

### **TCP Performance Improvements**

- ◆ Mitigates the effects of latency over satellite
- ◆ TCP Acceleration – Reduces overall bandwidth requirement, while enhancing performance
- ◆ Web Acceleration – Provides better HTTP performance
- ◆ Local DNS Caching – More User Satisfaction

### **Application Quality of Service**

- ◆ Application QoS based on multiple parameters (Source/Destination IP Address, Source/Destination Port Number, 802.1q, VLAN ID, IP DiffServ & TOS Bits, Protocol Type)
- ◆ Network QoS – Provides application QoS even across multiple remotes sites
- ◆ Class Based Queuing – Assign percentage of bandwidth to each class
- ◆ Rate Limiting – Allocate only bandwidth that is needed
- ◆ Committed Information Rate – Dedicate bandwidth as required (Static and Dynamic)
- ◆ Built-in Jitter Handling for Realtime traffic such as Voice and Video.

## Security

- ◆ Real Private Networks
- ◆ End-to-End VLANs (802.1q Based)
- ◆ AES Link Encryption (Only Remotes that Need it, even in a shared network)

## Scalability

- ◆ Upstream from 64 kbps to 6.5 Mbps (Antenna and Transmitter Size May Vary)
- ◆ Downstream from 128 kbps to 20 Mbps
- ◆ Carriers can be configured in 1 bps increments
- ◆ Can easily add new remotes without increasing satellite capacity
- ◆ Equipment will Work With C, Ku, or Ka Band Satellites

## Flexibility

- ◆ Star, Mesh and SCPC Topology
- ◆ TDMA Configuration
- ◆ Mobile Application

## Network Design Flexibility

- ◆ Support within one Hub for any satellite band C/Ku/Ka
- ◆ MF-TDMA allows for adding capacity to network without interrupting service
- ◆ Implement Multiple Real Private Networks within the same chassis
- ◆ Extensive Traffic Engineering Capability allows Better utilization and control
- ◆ Can create networks that range from high-oversubscription & latency to low-oversubscription & latency.
- ◆ Can support any TCP/IP application

## Best Hub Technology

- ◆ Carrier Class – Fully Redundant
- ◆ Scale as you grow
- ◆ Very small footprint – 12U 19" Rack-mountable
- ◆ Support for Multiple Outroutes or Real Private Networks within the same hub
- ◆ Support for Multi-Inroute Network Architectures
- ◆ Single Hub can support up to 5 satellites at the same time

## Highest Bandwidth Efficiency

- ◆ MF-TDMA (Fast) combines with D-TDMA ensures the most efficient use of satellite capacity
- ◆ Automatic Uplink Power, Frequency, and Timing Control ensure a very efficient TDMA Frame Structure
- ◆ Turbo Product Codes, on both downstream and upstream, allows for bandwidth limited carriers
- ◆ Size carriers in 1 bps granularity
- ◆ CIRs, with a granularity of 1 kbps, can be configured to meet the exact requirements
- ◆ D-TDMA provides a 98% payload efficiency

## Industry Leading NMS

- ◆ Completely Integrated NMS
- ◆ 3-Tier Architecture
- ◆ GUI Based for Ease of Management
- ◆ Scale to 1000's of Remotes and Multiple Hubs from one NMS
- ◆ Configuration, Monitoring, and Traffic Analysis
- ◆ SNMP Support
- ◆ IP and Satcom Statistics (Real-time and Historical)
- ◆ Central Management of all remote operations
- ◆ Multicast Software and Firmware Upgrades
- ◆ Remote Authentication
- ◆ Virtual Network Operator Support

