turboVR Router with Acceleration

*turbo*VR™ Performance Enhancement Proxy (PEP)

TCP/IP CHALLENGES OVER SATELLITE

With convergence of voice, data and video over satellite becoming more common, some organizations are encountering TCP/IP performance limitations. Typical satellite links exhibit both high latency and bit error rates (impaired links), which can be challenging for the transmission of TCP. With this connection-oriented protocol, a number of factors contribute to its performance degradation over impaired links, including:

- The time required for an acknowledgement can severely limit the ramp up in transmission rate
- Sender's small window size reduces throughput
- Delay that is interpreted as network congestion versus propagation causes reduced transmission rates
- Packet loss that is interpreted as network congestion versus corruption causes reduced transmission rates

TRANSPARENT TCP ACCELERATION

Comtech EF Data's *turbo*VR™ router with acceleration was designed to combat the inherent challenges of transmitting TCP over satellite links. It provides transparent acceleration of TCP sessions, or the increase in throughput, over satellite links while requiring minimal topology changes. And, being standards-based, supporting the Space Communications Protocol Standard (SCPS) Transport Protocol (SCPS-TP), it can provide reliable connection-oriented, end-to-end data transfer for user applications. *turbo*VR can also overcome the deficiencies that exist with TCP, including slow start and congestion control. Since it interoperates with TCP/IP networks and devices, *turbo*VR can be seamlessly integrated into existing networks in a staged manner, avoiding the need for network-wide upgrades.

Available in a network appliance style platform, *turbo*VR was designed with the small-to-medium enterprise in mind, and is ideally suited for:

- Satellite broadband service providers
- Organizations utilizing satellite links for Internet backbone trunking services
- Government agencies
- Homeland security
- Educational institutions
- Oil, energy & mining
- Maritime
- Transportation and logistics
- Construction and engineering

FEATURES SUMMARY

Selective Acceleration	• Provides mechanism for bypassing user-specified TCP ports • Applies to IPv4 datagrams
Data and Header Compression	• Supported for accelerated TCP traffic • Enabled/disabled globally
Network Address Translation (NAT)	• Enables LAN to use one set of IP addresses for internal traffic and another set for external traffic • Translates internal local addresses to globally unique IP addresses before sending packets to outside network • Performs reverse for packets coming into network from outside
Dynamic Host Configuration Protocol (DHCP)	• WAN interface – provides DHCP client to automatically obtain configuration information from DHCP server • LAN Interface – provides DHCP Server for automatic distribution to LAN clients • Offers flexibility to use static IP addressing
Management Interfaces	• Serial Interface • Web interface

BENEFITS OF ACCELERATION

The feature set in *turbo*VR can deliver performance gains for your network, including:

- Increases network throughput for TCP sessions
- Restores network efficiency
- Overcomes the inherent limitations of TCP/IP traffic on impaired links
- Interoperates with TCP/IP networks and TCP devices
- Enables staged deployment
- Provides flexibility to bypass where applications cannot benefit

THROUGHPUT (Bi-Directional)

- Maximum single session ~ 2048 kbps
- Maximum aggregate throughput ~ 2048 kbps

PEP

turboVR

COMTECH EF DATA

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SPECIFICATIONS

Rear Connectors
- RJ-45, 10BaseT/100BaseTX Ethernet, Auto-sensing (WAN)
- RJ-45, 10BaseT/100BaseTX Ethernet, Auto-sensing (LAN1)
- RJ-45, 10BaseT/100BaseTX Ethernet, Auto-sensing (LAN2)
- EIA-232 (Console)
- Power

Front Panel Status LEDs
- Link and activity for WAN, LAN1, LAN2
- Power
- Status

CE Mark EMC Safety

Temperature
- Operating: 5° to 45° C
- Storage: 0° to 75° C

Humidity
- Operating: 5 to 95% @40° C, non-condensing

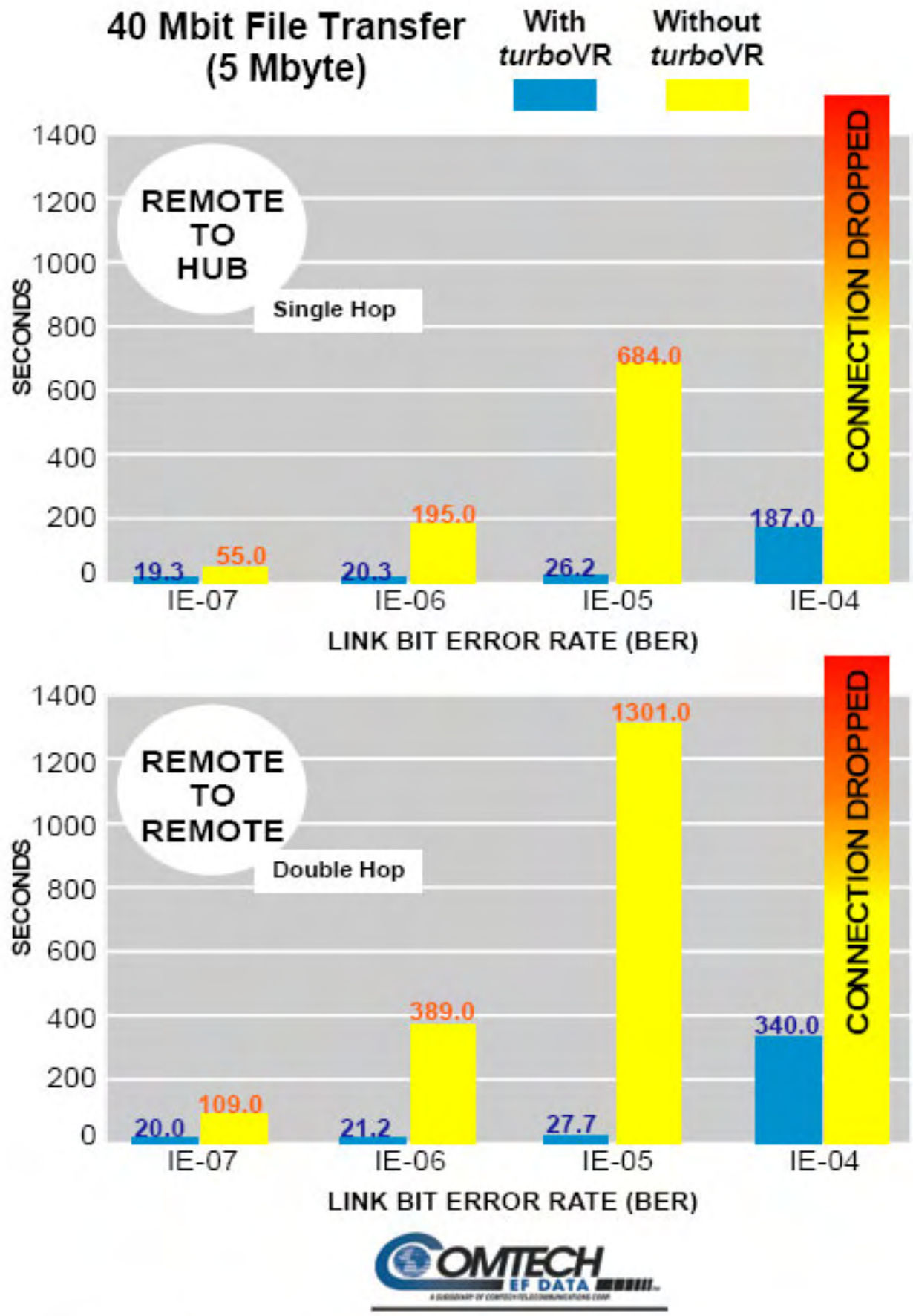
FCC

Chassis
- Dimensions 8.3W x 1.25H x 6.14D in
  21.08W x 4.44H x 15.6D cm
- Weight 2.2lbs 1 kg

Power supply
- External, 5VDC, 3A

The charts below illustrate the advantage of using *turbo*VR to accelerate TCP performance.

Results charted are for a single session file transfer over a 2 Mbps full duplex link on a Microsoft Windows 2000™ Professional FTP server and client with factory default settings for TCP.



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