UDgateway Service Platform

Open and Flexible Platform

UDgateway® is the software running on the Central Site Service Platform (CSP) and Remote Service Platform (RSP).

UDgateway® baseline services include application acceleration and compression, data redundancy elimination with byte caching and security.

UDgateway® software can be used as a standalone product or in combination with optional licenses to deliver value added services for vertical markets such as oil & gas.

Description

Companies are looking to optimize their IT costs by consolidating servers and applications in data centers. This trend is being accelerated by server virtualization, remote desktop and cloud computing technologies. In this environment satisfactory end-user experience is critically dependent on excellent WAN performance. However, increasing WAN capacity can become expensive whithout significantly improving user satisfaction. When using satellite links in particular, pressure to optimize WAN traffic is even greater due to the harsh network conditions and limited bandwidth. UDgateway® greatly accelerates application performance, even in such highly constrained networks.

UDgateway® is a flexible platform consolidating WAN optimization features with routing/security/QoS and a set of value-added, optional services, in a single appliance, that can be tailored for vertical markets, such as –but not limited to- maritime, oil, gas & mining (optional services are documented in separate datasheets).

The open and flexible UDgateway® Service Platform helps SSPs turn ideas into new services that can be integrated into the UDgateway® Service Platform leveraging its core WAN optimization functionality to deliver competitive market flexibility.

FEATURES	BENEFITS
Security	A combination of stateful inspection firewall and VPN tunnel encryption enables protection of confidential data against intrusion and eavesdropping as well as accelerated VPN services.
Bandwidth Management	Satellite-specific QoS features enable bandwidth saving and better user experience.
Acceleration	Improves application responsiveness
Compression	Saves bandwidth costs extends the number of concurrent users on a single line.
Application Recognition	Application aware firewall, policy-based (least cost) routing and improved QoS. Enables realtime traffic to monitor traffic monitoring and management to provide enhanced performance of mission-critical traffic.

Acceleration & compression technology

TCP Acceleration

When network latency increases, applications may not fully utilize the available bandwidth. Standard TCP implementations include flow controls, which greatly affect application throughput when encountering high latencies and/or packet loss. UDgateway TCP acceleration mitigates the effect of network latencies and manages TCP flow control in such a way that the WAN bandwidth utilization is maximized. TCP sessions are intercepted transparently. The embedded TCP proxy does not change IP addresses or ports and is tightly integrated with the UDgateway QoS module to optimize flow control performance. TCP bandwidth is also optimized by reducing TCP chattiness.

HTTP Pre-Fetching and Caching

Protocols requiring many round-trip dialogs are highly impacted by network latencies, whereas they would behave well in a LAN-like environment. HTTP pre-fetching analyzes the content of HTML pages and anticipates the web browser requests for embedded objects in the web page, such as scripts, style sheets and images. The UDgateway receives and caches web objects before they are effectively requested by the web client and serves them when the client explicitly requests them, at LAN speed.

CIFS Enhancements

CIFS is the protocol underlying Microsoft networks. This protocol was originally developed for use over a LAN and is severely impacted when operated over WAN links due to the requirement for multiple round trips to perform relatively simple operations. UDgateway® anticipates LAN station requests by pre-fecthing requests to servers and to client responses.

Compression

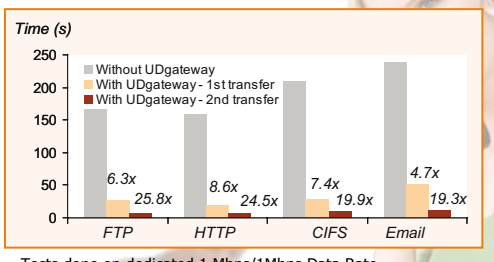
Packet payload and headers are compressed to reduce packet size. Within a TCP stream, connection-persistent GZIP compression greatly enhances the efficiency of compression. The compression technology makes sure that sent packets over the WAN are maximized in size to reduce the impact of overheads in application performance (ratio between application data and network bandwidth).

Data Deduplication

Users often send and receive repetitive traffic patterns. A common example relates to sending and receiving email. Many people include the orignial text in the reply with new text in addition to the existing mail body. Redundant data is also sent and received when a file is open, edited and saved on a remote server. forward emails, open/edit/save files on a server, etc... Why send and receive the same data over and over?

Leveraging a unique dictionary management algorithm, WANcompress data deduplication technology is transparent and independent from transmitted content. It is therefore efficient for all types of traffic including text, image and video intensive applications. WANcompress is particularly useful in enterprise networks where email traffic can be intensive. By ensuring that only new parts of the emails are transmitted over the network, this can result in very significant bandwidth savings.

Table 1 illustrates the combination of compression techniques used by UDcast on a file transfer example. The file is compressed when it is transmitted for the first time. It is simultaneously stored in the local and remote WANcompress dictionaries. The second time it is transferred, redundant bit streams are identified by WANcompress and replaced by lightweight labels enabling near LAN-like performance for end users.



Tests done on dedicated 1 Mbps/1Mbps Data Rate, Delay 600 ms and word files (3.4 MB)

Technical

UDgateway Service Platform

Optional License:
. Link Management
. Web Compression
. User Bandwidth Management
(Details in separate datasheet)

Options

Functional Specifications

3 Modes of Operation
· Bridge with "Zero Configuration"
· Routed
· VPN

IP Routing
· Complete IPv4 stack and IP routing
· DHCP server or relay
· DHCP on WAN interface for remote installation

IP Optimization
· **Two-way TCP accelerator**
- ACK suppression, return path optimization
- Selective Acknowledgment (SACK) mechanism (RFC 2018)
- Large TCP window
- Ramp up & congestion avoidance
- Persistent connection
- Compression (GZIP, header)

· **Redundancy elimination and compression**
- IP level compression (Gzip)
- Network redundancy elimination (WANcompress)

· **Application performance enhancements**
- HTTP (pre-fetching, pipelining, caching)
- DNS caching
- SMTP relay
- Windows File Exchange (SMB/CIFS) enhancement

· **IP performance enhancements**
- QoS: weighted fair queuing - Diffserv compliant

Internet Access
· NAT with protocol & port forwarding
· Kernel based stateful inspection firewall

VPN Security
· IPsec - ESP tunnel mode
· AES up to 256 bits or 3 DES media encryption
· Split tunnelling (VPN with direct Internet access)
· NAT Traversal
· IP compression within tunnels

Administration features
· Secured web-based management
· Configuration management
· Setup wizard with auto configuration
. SNMP/MIB support
. Extensive diagnostic tools
. NOC access control
. WAN link monitoring
. NTP synchronization
. Out-of-band management via serial port (external modem)

High Availability
To ensure operational continuity in case of hardware/software failure:
· VRRP in routed mode
· Ethernet-bypass in bridge mode

Local & Remote Management
· Secure Web interface (HTTPS)
. Secure Command Line Interface (CLI)
. SNMP and/or KVM

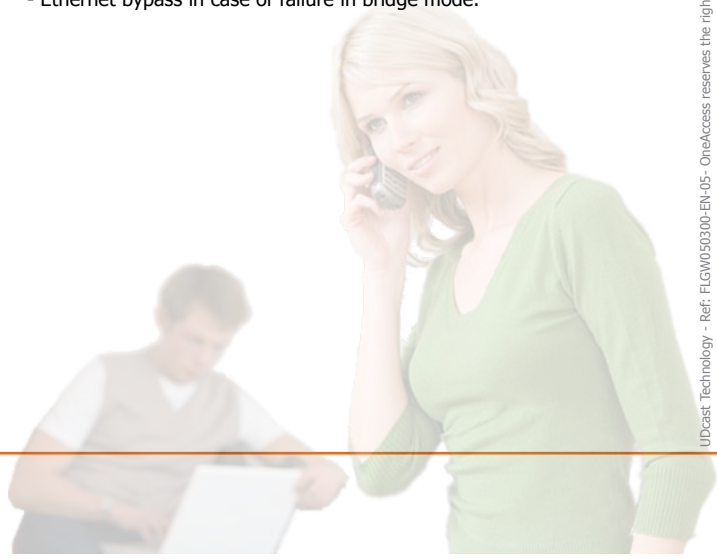
Hardware Specifications

UDgateway Central Site

UDgateway - Central Site
· 1U - 19" rack mounting
· Baseline Hardware: HP ProLiant DL360 G7 Server
. Location: Central Site
. Dimensions: 43 mm (H) x 426 mm (W) x 692 mm (L)
. Weight: 17,9 kg (39.46 lb)
. Power supply: Redundant Hot-Swap Internal Dual Supply 100-240 VAC 2 x 460W
. Data Storage: Hot-Swap RAID & mirroring
. Operating Temperature: +10°C to 35°C
- MTBF at 25°C: 228492 H
- RoHS and CE conformity
. 2 x Gigabit Ethernet bypass ports (bridge mode)
. 2 x additional Gigabit Ethernet ports (routed mode)
. Out of band management and remote console (HP iLO option):
- 1 x dedicated Ethernet port for remote console rediction via IP
- Remote power control (On/Off)
. High Availability:
- VRRP redundancy in routed mode
- Ethernet bypass in case of failure in bridge mode.

UDgateway Remote Site

UDgateway - Remote Site
· 1U - 19" rack mounting
. Location: Remote Site
. Dimensions: 43 mm (H) x 426 mm (W) x 356 mm (L)
. Weight: 7 kg (15.43 lb)
. Power supply: Internal 100-240 VAC 260W max
. Operating Temperature: +10°C to 40°C
- MTBF at 25°C: 40642 H
- RoHS and CE conformity
. 2 x Gigabit Ethernet bypass ports (bridge mode)
. 2 x additional Gigabit Ethernet ports (routed mode)
. High Availability:
- VRRP redundancy in routed mode
- Ethernet bypass in case of failure in bridge mode.



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