

ENTERPRISE CONNECTIVITY



IP Services for business, governmental & non-governmental organisations

The success of today's organisations and enterprises highly depends on reliable and secure connectivity. Enterprise connectivity exists between different branches, between a central office and geographically widespread points of activity and between an enterprise and the public internet. The connectivity enables faster, more secure transactions and improved productivity by sharing information between entities, no matter where they are.

By offering an extremely cost effective terminal as part of a scalable network solution, attractive IP services can be deployed complementary to terrestrial infrastructure:

- as a backup service for the terrestrial network providing business continuity
- as the main connectivity service in case no adequate terrestrial infrastructure is available providing a way to extend the operation to any location
- as a highly efficient multicasting data/video service for media-rich collaboration services, video conferencing, and financial trading applications

Applications

Typical enterprise applications can be served with different transport IP services. The service properties vary in the need for encryption, the need for acceleration and the sensitivity to latency and jitter.

Applications	Protocol	Transport Service Properties		
		Encryption	Acceleration	Prioritized
Main office applications	Http & e-mail	Yes	Yes	No
Private Telephony	VoIP	Yes	RTP compression	Yes
Secured traffic from remote to HQ	VPN	Yes	Yes /No depending on the used protocol	Yes
Transactions secured on application level	HTTPS	No	No	Yes
Data/Video Multicasting	IGMP	Yes	No	No

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Efficient Carrier Grade Infrastructure

Newtec's Broadband Solutions are based on the Sat3Play® platform. The platform provides the means to establish an "always-on" two-way IP connectivity completely independent from existing terrestrial networks.

The basic IP connectivity between hub and modem is extended with Quality of Service (QoS) in forward and return allowing the deployment of different services. The gateway contains management functionalities to monitor, configure and control all worldwide remote sites.

Bandwidth efficient technologies

To make satellite an attractive alternative for enterprise connectivity, Newtec's Broadband Solution implements the most bandwidth efficient technologies, such as

- DVB-S2 ACM forward link,
- Quaternary Continuous Phase Modulation (4CPM) adaptive return link
- and embedded IP traffic enhancement software.

The 4CPM modulation combines bandwidth efficiency of linear modulation, as in the DVB-RCS standard, with a lower cost terminal.

Hub redundancy

The hub provides redundancy on all layers (user, control, management) and equipment. It has redundant RF signal and mains supply inputs. The redundancy is conceived as two fully redundant chains. When there is a failure an automatic switch over to the other chain is performed. Even during service windows there is limited downtime since upgrades can be performed on one of the chains with the other chain active in a previous version. A failure in the satellite is resolved by switching to the alternative RF input.

Network Optimisation

Typically this IP traffic enhancement software brings up to 35% bandwidth reduction for file downloads, web surfing and content streaming.

Great reduction is possible on files, which can go up to 90% reduction.

Another important element is that e.g. Youtube content comes pre-compressed, so that type of traffic can only be reduced by 20%. This bandwidth reduction is mainly achieved through overhead reduction.

But from a user experience point of view, the load time of a webpage can be reduced up to 60%.

Newtec's broadband service solutions offer a **cost-effective** broadband connectivity for a wide variety of **professional applications** on a **single platform**.

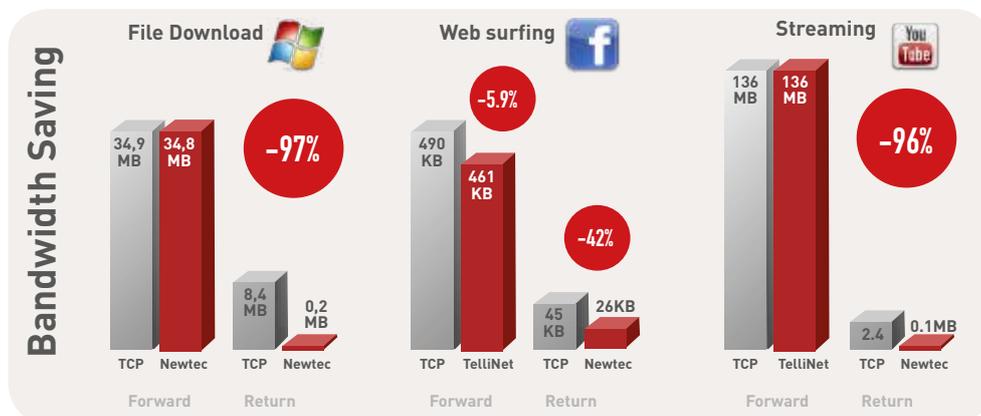


Figure 2 - Bandwidth Saving

PC with Win Vista SP1, Internet Explorer 8.0, SLA: 10 Mbps FWD / 1 Mbps RET

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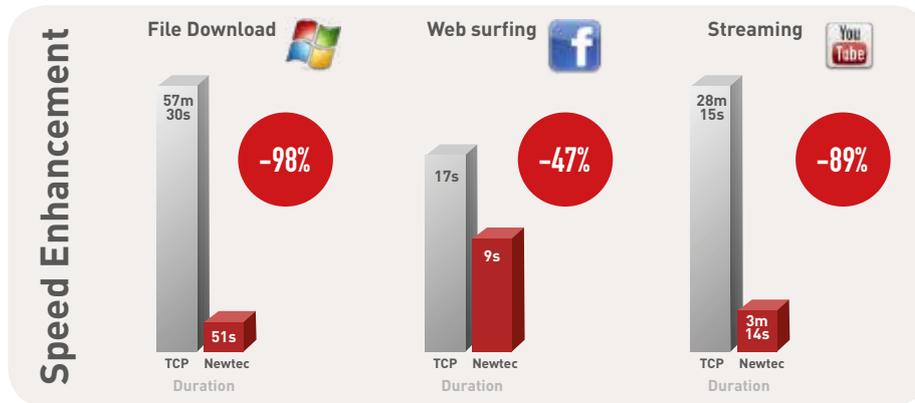


Figure 2 - Improved User Experience

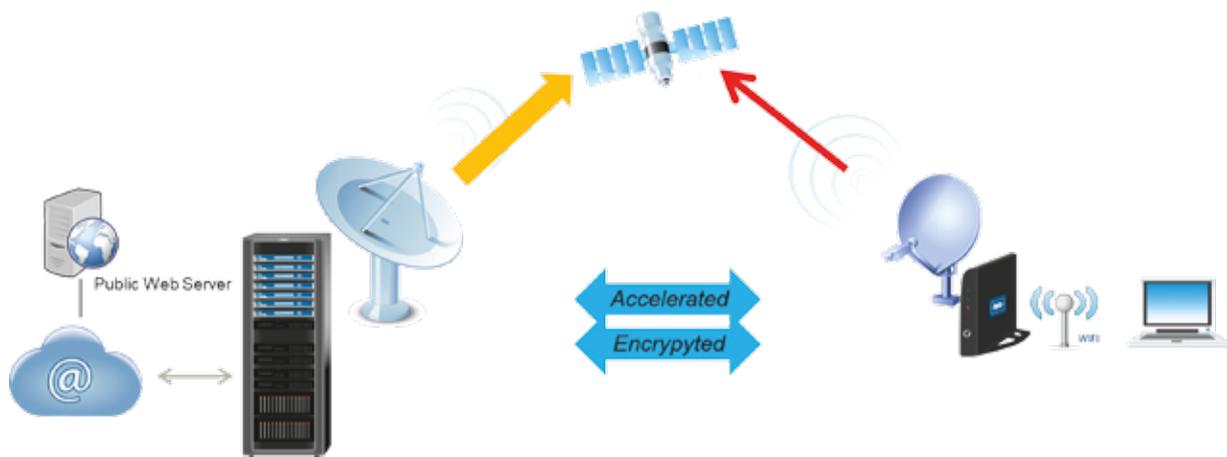
PC with Win Vista SP1, Internet Explorer 8.0, SLA: 10 Mbps FWD / 1 Mbps RET

Offering Business to Business Services

Service Providers, corporations and organisations are all faced with different security and scalability needs. Some organisations will have such high needs for security that they will fully take care of it themselves. Others will have enough trust and confidence that they will leverage the services offered by the service provider. On a Sat3Play® platform different network architectures can coexist on the same platform, providing service diversification. Service Providers can optimise CAPEX and OPEX by offering enterprise connectivity services for multiple entities in a shared platform. This helps service providers struggling to strike a balance among their biggest business concerns - capacity, scalability, customer satisfaction and cost.

Internet Access for SOHO and SME

Small offices are typically looking for pure broadband access with main office applications like web surfing, VOIP and e-mail.

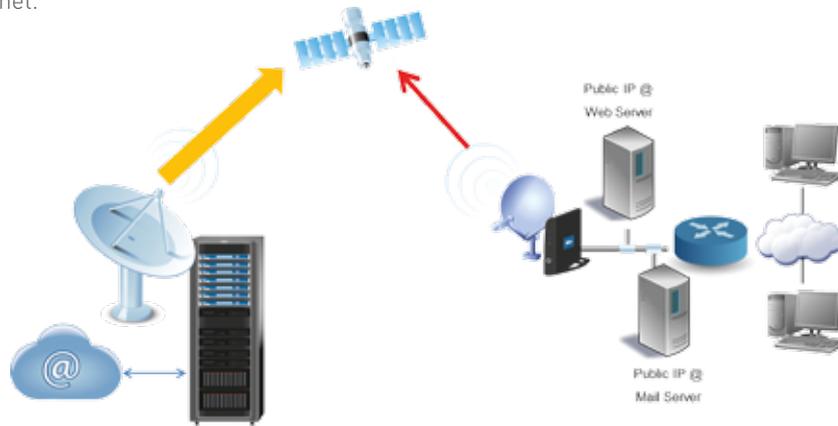


An architecture where all terminals belong to the same network is ideal to offer internet access services for Small Office Home Office or Small & Medium Enterprises. In this configuration Sat3Play terminals consume only one public IPv4 address and IP address management is simple. All payload traffic is encrypted and fully accelerated.

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Broadband Access for Enterprises

Enterprises or larger organisations have typically different needs for their communication infrastructure. First of all they need more public IP addresses in order to connect their own servers to the internet.



This Sat3Play configuration allows offering a full subnet of IP addresses behind the terminal. A DHCP server is integrated in the modem assigning the addresses to the devices connected to the modem.

Private Networks for Large Enterprises and Organisations

A network that connects the numerous sites of a distributed enterprise using a shared communication platform is a Virtual Private Network (VPN). These Virtual Private Networks provide the benefits of dedicated networks but not the associated cost. Administrators can easily create and modify the Virtual Network (VN) environment. In a Virtual Network context, a key requirement is network isolation. This means routing and forwarding tables used by one Virtual Network Operator (VNO) should be able to be isolated from those of other VNOs. The Virtual Routing Function (VRF) creates multiple virtual routers in a Sat3Play Hub to realise multiple VPNs.

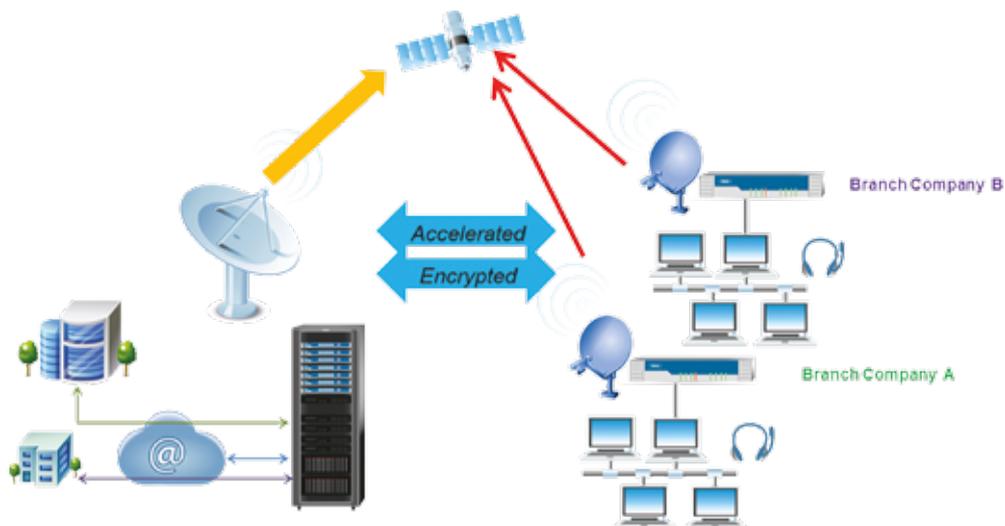


Figure 3 - Two virtual networks over a Sat3Play Hub

Network Isolation

Service Providers can optimize CAPEX and OPEX by offering enterprise connectivity services for multiple entities in a shared platform. Figure 3 depicts two isolated enterprise networks connecting a headquarters with its branch offices. The hub functions as a router with multiple Virtual Routing and Forwarding (VRF) functions creating fully isolated virtual networks. Service OPEX is reduced because all forward traffic is shared on the same forward link.

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Full IP address flexibility

A VNO has full IP address flexibility within its VN. This means IP addresses can be used multiple times across different VN's.

MPLS integration

Multiprotocol Label Switching (MPLS) is the underlining technology that enables service providers to offer customers high-speed private networks.

Service providers can easily integrate their MPLS networks with the Sat3Play® platform. This way, a customer's remote location can be integrated with the rest of their sites to an MPLS backbone. A network in this configuration can eliminate the need for encrypted VPNs and multiple-hops between remote locations and headquarters. This configuration also allows latency sensitive applications such as video conferencing and VoIP to be used between multiple sites.

An MPLS Label Edge Router that is connected to the Hub can be configured to classify and push MPLS labels onto the packets. This classification can happen either on Source or Destination IP address or 802.1Q VLAN tags coming from the Hub.

IPv6 Support for Business Continuity

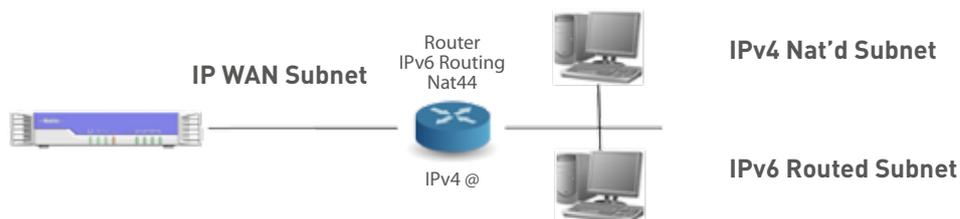
The single biggest argument for IPv6 today is "business continuity". The networks that most organisations use today have nearly run out of unique numbers. Depending on the region you live in, this has already happened. To preserve the capabilities and value we enjoy today, we have to adopt the new protocol.

IPv6 Remote Networks

With the larger address space inherent to IPv6, addresses within a network can be allocated more effectively in a hierarchical fashion. The IPv6 routing functionality is extended with IPv6 prefix delegation support as a way to centralize and delegate IP address assignment.

Migration scenario using dual stack IPv4/v6

The system also supports networks where both IPv4 and IPv6 access is needed. In such cases, an IPv6 network can be merged with an IPv4 network to create a single, logical dual-stack IPv4/IPv6 network. Hosts behind a terminal in that dual-stack network can have both IPv4 and IPv6 access.



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Encrypted VPN Solutions

In most cases, VPN services are sold without encryption, typically relying on the fact that each customer is isolated from the others on his own private network. But for those customers that require it, encryption schemes such as IPsec can be added on top of the VPN configuration.

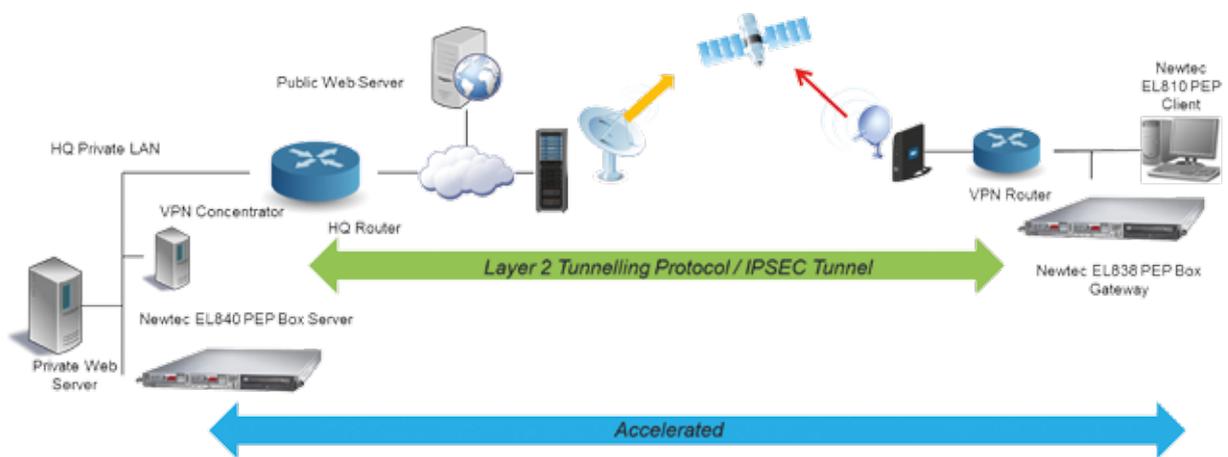
IPsec has emerged as the modern standard for data security used for Virtual Private Networks (VPN). IPsec supports key-based authentication and encrypts the complete data packet — both data and headers — and adds its own header. Different organisations have adopted different VPN technologies and prefer to use their selected technology.

Data security solutions, like IPsec which encrypt the TCP header along with the data, interfere with the satellite link acceleration technology. The impact on the performance of the network depends on the scenario. Two scenarios are considered:

- A regional office: The VPN traffic is considered high, meaning that acceleration of VPN traffic is required in order to reduce bandwidth needs.
- A Point of Sale: The VPN traffic is low volume traffic, cost of the equipment is main driver.

Regional office

TCP Acceleration takes place outside the IPsec VPN tunnel, intercepting and enhancing the unencrypted packets. Newtec EL810 PEP clients are installed on the remote office PC's and communicate with the Newtec EL840 Acceleration Server with a specific configuration for VPN at the headquarter side. The VPN router performs subsequently the industry-standard IPsec encryption protocol for the highest level of security, providing end-to-end encryption.



POS terminal

A low cost VPN router add-on sets up the IPSEC tunnel with the headquarters. No TCP acceleration is performed at the virtue of a low cost remote site implementation.

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Matching Terminal Equipment with Remote Application Needs

The Sat3Play® IP Satellite Modem portfolio is designed to serve a wide range of applications at competitive price points in different markets. Different terminal configurations can be used on the same platform sharing the forward carrier. Management of the modems is done by a single management system.

Depending on the application requirements, the amount of users or the geographical location, different capabilities are expected from a terminal. Selecting the right mix of modem types and terminal configurations will minimize the total cost of ownership while fulfilling all requirements.

The modems are based on flexible hardware platforms, assuring long life time of the installed base. Modems can be upgraded over the air when new features are introduced.

	Newtec MDM2200 IP Satellite Modem	Newtec MDM3100 IP Satellite Modem
# LAN ports	1	4
Max TCP Download Rate	16 Mbps	40 Mbps
Max TCP Upload Rate	3.5 Mbps	5 Mbps
Terminal Configurations	75cm, 1m, 1.2m 2W Ka - 0.5/0.8W Ku	Any off the shelf BUC/Antenna



The MDM2200 has a compact design with high rate capabilities. Thanks to a unique design of both the modem and the interactive LNB (iLNB), the cost of the terminal is kept minimal.



The robust design of the MDM3100 affords flexible integration in the enterprise infrastructure. Compared to the MDM2200, it offers even higher IP rates and multiple LAN ports. The MDM3100 offers full flexibility in the use of different antenna sizes, frequency bands and output power. It can be operated using off the shelf ODU's or by the reuse of existing Out-Door Unit (ODU) infrastructure.

For further in depth information

MDM2200 Leaflet

MDM3100 Leaflet

IP Broadband Hub

Broadband Access Solution Guide

SCADA Application Notes

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