

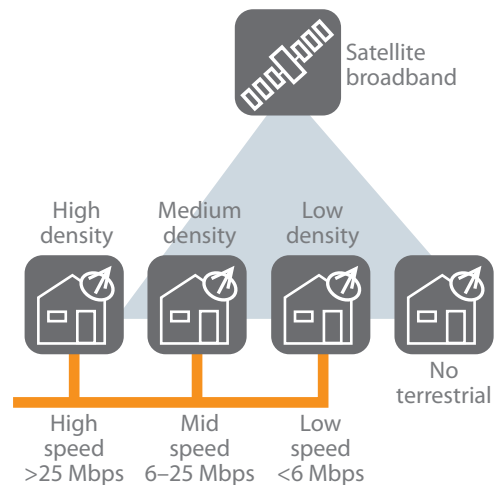
BROADBAND ACCESS OVER SATELLITE

For Consumer, SOHO And SME

Despite the increasing roll-out of broadband terrestrial services like DSL, a significant amount of households worldwide are deprived from fast broadband access services. Bridging this digital divide is high on the agenda of decision makers because broadband penetration has high economic impact on a country. The service cannot be limited to cities. This requirement is translated into 100% service obligations for Internet Service Providers (ISPs) covering the whole territory of a country or region. Running these services in an economically viable way is a major challenge.

ST Engineering iDirect provides affordable two-way satellite broadband platforms that have been designed for service providers wanting to offer broadband access in large geographical areas independent of the number of households per square kilometre. The key success factor for launching broadband services is a low customer acquisition cost and CAPEX aligned with network growth.

Our platforms deliver a true broadband experience in a cost-effective way.



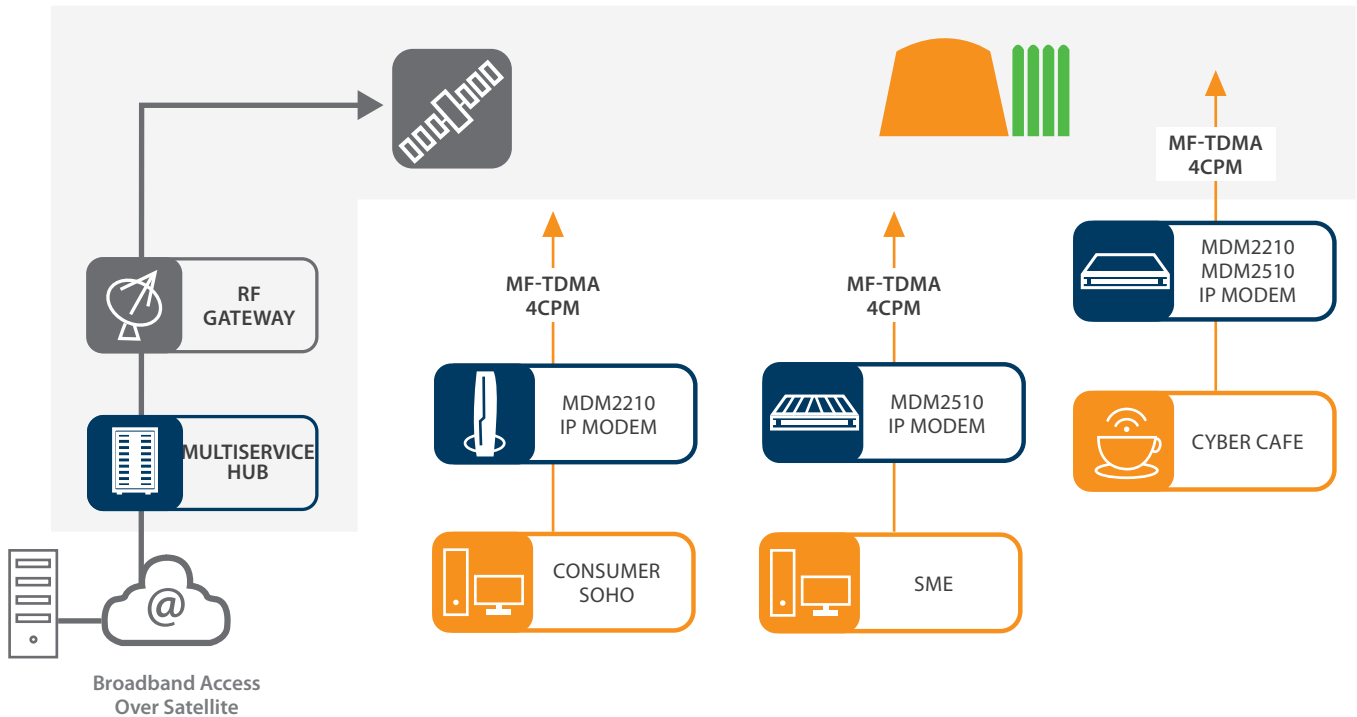
DIALOG

powered by

Newtec 

Carrier Grade Hub and Terminal Concept

ST Engineering iDirect's hubs provide all necessary infrastructure to receive and transmit IP data from and to the terminals. It has redundancy on all layers (user, control, management), equipment, RF signal and main supply inputs. Thanks to the unique design of the compact modem and the lightweight, low power outdoor equipment (iLNB), the cost and "look- and-feel" of the terminal is in line with the consumer market requirements.



Lowest Customer Acquisition Cost

With the lowest terminal cost on the market and a unique do-it-yourself installation capability, the total customer acquisition cost is not a deterrent factor for capturing new subscribers.

Self-Installation at Zero Cost

Point&Play® is an innovative self-installation tool available for MDM terminals. The system merely consists of a small antenna pointing tool that communicates with the modem. Point&Play allows the installer to easily and correctly point the antenna through an automatic satellite identification tool while an auditive signal provides feedback for optimal signal quality. Point&Play provides automatic certification for correct pointing to both the user and to the network operator.

Another Point&Play tool is the terminal installation app. This smartphone app connects to the modem through a WiFi access point, or through the embedded WiFi on the MDM2210. It supports installation site acceptance based on a graphical overlay of the satellite orbital position on the smartphone screen. Furthermore, it supports accurate finetuning of the antenna orientation by showing the received signal level as a function of time, also showing the highest signal level found.



Broadband Access Over Satellite for Consumer, SOHO and SME



Value Added Logistics

Our value added logistics include delivery, including all terminal components, which streamlines the logistics for ISPs.

Terminal Customisation

The IP Modem can be delivered with local language graphical user interface and documentation and with the service provider logo branding. The IP modem is pre-configured with a number of dedicated network settings allowing automatic installation, while using Point&Play.

New Business Models

Because the terminals are pre-configured for plug-and-play usage, new business models become possible reducing the costs for ISPs and extending the access to distribution channels. For example, end user terminals can be distributed using retail outlet channels. Users buying the terminal can install, go online, subscribe to the service of their choice, and immediately enjoy the service.

Our platform functionality also supports an e-commerce business model. Users subscribe on-line to the service. The terminal is then shipped to the end user, after which it is installed and ready for service.

Pay as You Grow

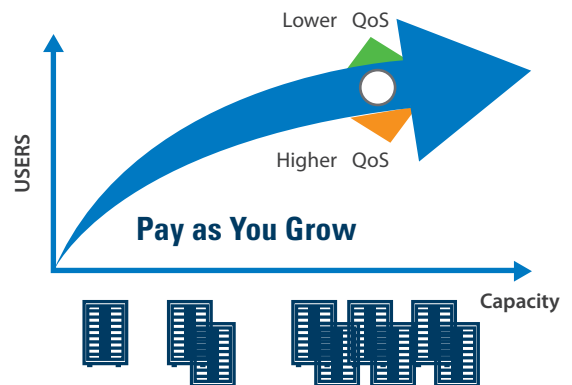
The ST Engineering iDirect hub platform modularity and associated pay as you grow pricing scheme, allows an operator to fully align growth of its network with customer uptake.

Zero CAPEX Internet Service Providers

The platform can be operated as a single or multiservice provider platform. On a multiservice provider platform new ISPs can start with zero CAPEX and the ability to rollout services immediately. Different service providers share the same hardware and capacity while they are capable of managing their own customer base and service configurations.

Unlimited Scalability

The total number of users on the system scales without system limitations. Increasing capacity in order to accommodate more users or offer better QoS comes with an incremental investment.



Delivering the Broadband Promise While Optimizing Profitability

The end customer's expectations for satellite broadband are:

- Monthly rates on par with terrestrial broadband services
- Volumes as needed
- True broadband experience

On the other hand, satellite capacity represents the largest cost element in the Total Cost of Ownership. Efficient usage of satellite capacity is therefore mandatory.

Fair Usage Policy

Implementing a Fair Usage Policy (FUP) assures that all broadband customers enjoy the same experience and have access to a quick and reliable service at all times. Our FUP-server supports policies that incentivizes users towards low average to peak ratios in their traffic profile. This results in high broadband user experience.

The small percentage of heavy users having high average to peak ratio can heavily impact the experience of other users. The server can monitor and adapt the service to the consumed accumulated volume over a period.

Table 1 gives an example of a typical consumer broadband access Service Level Agreement (SLA) and serves as input for the business case results of Table 2.

By limiting the monthly volume during busy hours the number of users can be increased while maintaining the broadband experience.

Business Profiles

The business market can also be addressed sharing the same satellite capacity. Business profiles require higher SLAs that have lower contention ratios as described in Table 3.

Imagine 75% consumer and 25% business profiles. This results in a business case targeting both consumer and business profiles as described in Table 4.

Table 1 - Example Consumer Broadband Access SLA

Monthly volume	1 GB
Busy hours/day	25%
Peak rate	1 Mbps

Table 2 - Example ISP Business Case

Forward capacity	100 Mbps
Number of users	8100
Average rate - during busy hours	12 kbps
Average/Peak ratio	1:81

Table 3 - Example Business Broadband Access SLA

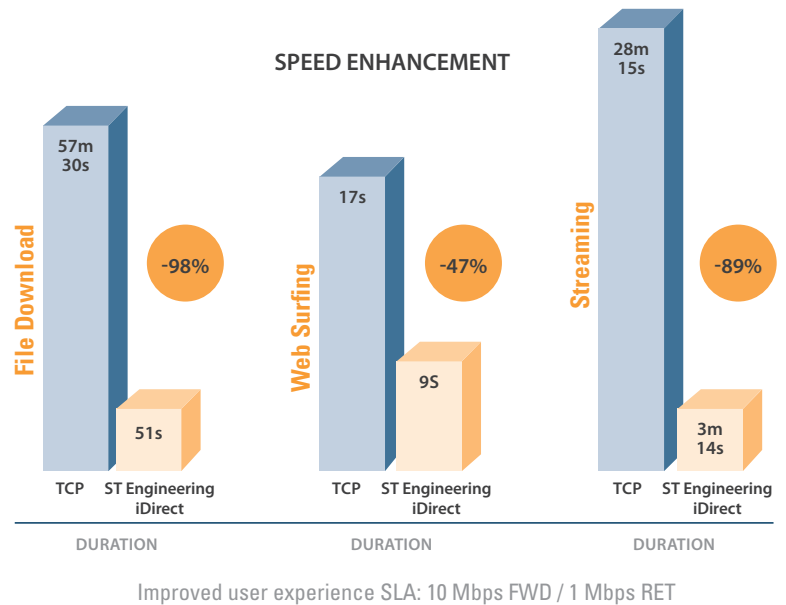
Monthly volume	4 GB
Busy hours/day	25%
Peak rate	1 Mbps

Table 4 - Example ISP Business Case

	Consumer	Business
Forward capacity	100 Mbps	
Number of users	6075	506
Average rate - during busy hours	12 kbps	49 kbps
Average/peak ratio	1:81	1:20

Efficient Use of Space Segment

For a true broadband experience, the terminal implements the most efficient technologies, such as DVB-S2X with low roll-off, 4CPM adaptive return link and embedded IP traffic enhancement software such as TCP acceleration, pre-fetching, compression and encryption.



Offering Triple Play Bundled Solutions

Different QoS Classes

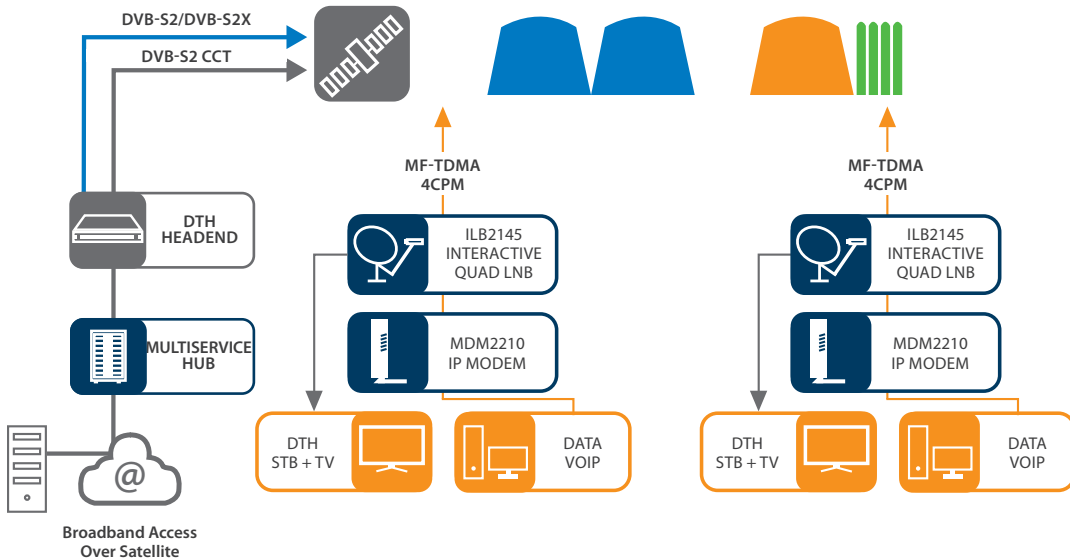
Our platforms support multiple end-to-end traffic classes in both the forward and the return channel. For the priority traffic classes, our implementation gives a fully dynamic guaranteed forward and return bandwidth per single or group of terminals in a very efficient way. Real time and high priority classes are delivered with small delay and excellent jitter values, resulting in crystal clear VoIP and reliable real time applications (e.g. video conferencing). The dynamic bandwidth allocation allows multiple concurrent applications at the same remote site (e.g. multiple VoIP calls from a single terminal).

Multicasting Video Content

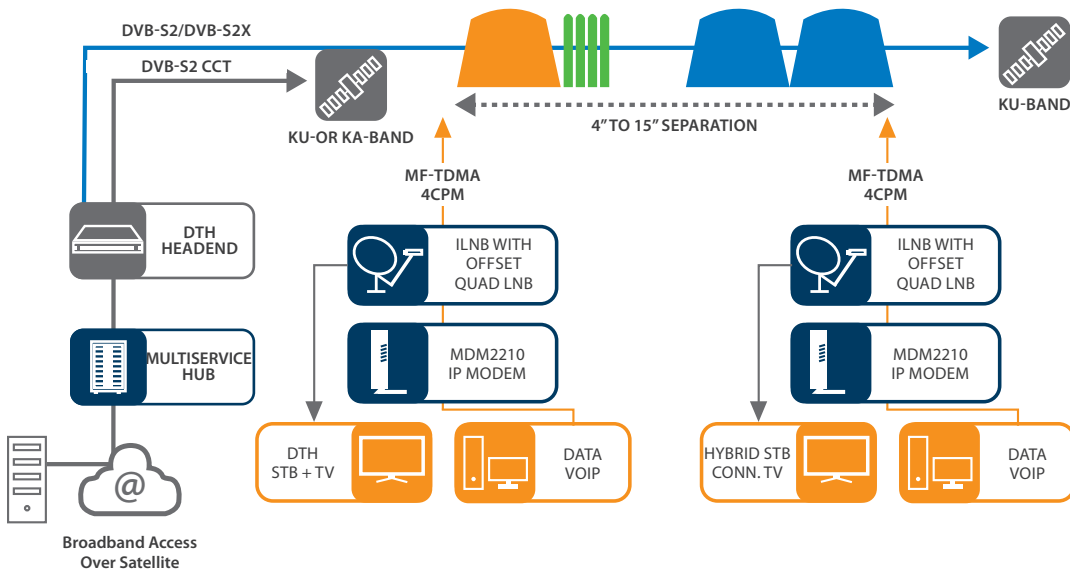
The system allows management of multicast traffic over the forward link. The multicast services are forwarded using dedicated bandwidth but remaining bandwidth is re-used by the other traffic. The terminal forwards the required multicast streams either statically by using GUI configuration, or dynamically using IGMP subscriptions.

Extension of DTH Offering

Our terminals can combine the broadband with DTH on the same satellite antenna enabling triple play service offerings. Two configurations are supported: Ku-broadband and Ku-DTH on the same orbital position or alternative Ku- or Ka-broadband with DTH on an orbital position separated 4–15°.



Ku-broadband and DTH on same orbital position using our interactive Quad LNB



Broadband and DTH bundled solution on offset orbital position using LNB0110

