ST Engineering

EVOLUTION®

iDIRECT

The communications market has entered into a new era of innovation and possibility. Global mobile data traffic is projected to increase nearly tenfold in the coming years, driven by an explosion in demand for voice and data services stemming from billions of new connections across the globe.

Satellite will continue to play an integral role in this market transformation. The high-speed mobility capabilities of satellite, along with the reach and resiliency of the technology, make it a critical piece to the delivery of global IP services.

For satellite service providers, this means being in position to best capitalize on the opportunity that lies ahead. Add to this, the advent of High Throughput Satellite (HTS) introducing an influx of new capacity, as well as a new set of dynamics, and that means the ability to scale networks, provide faster speeds and expand globally.

ST Engineering iDirect Evolution is an IP-based satellite communications platform engineered to deliver the highest quality connectivity wherever and whenever it's needed. It's a platform that is open, efficient and easily scalable, lowering the total cost of ownership.

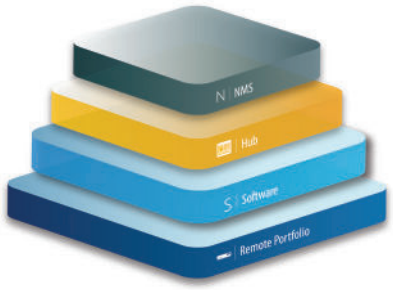
This positions service providers for long-term growth and success with the ability to access a wide range of markets, manage operational and capital costs effectively and create unique value for customers.

The fundamental value of Evolution lies in the extremely tight integration of the hardware and software architecture with a dynamic feature set that makes it highly flexible in its ability to handle diverse market needs. This enables everything from basic Internet and VoIP, to highly sophisticated application such as video conferencing and digital signage in fixed and mobile environments.

With Evolution, satellite service providers are positioned to make the best decisions related to bandwidth allocation, to differentiate service offerings and to customize service level agreements (SLAs). In all, it helps match the complex needs of hundreds of end users running thousands of applications across all parts of the globe.

Product Line Components

The Evolution product line is comprised of a hub and line card system, network management, operating software and a portfolio of both dedicated and universal modems. Service providers can build high-performing satellite networks that improve bandwidth efficiency and lower operating costs.



Network Management System

Manage complex, large-scale networks; run an efficient, reliable and high-quality operation; and continually improve customer satisfaction.

Hub and Line Card System

Modular design and flexibility allow customers to operate a shared bandwidth platform spanning multiple satellites, bands, transponders and topologies and grow networks one at a time as their business expands.

Operating Software

Delivers the latest technology innovations and features providing the most advanced IP routing capabilities, security and QoS prioritization with unmatched flexibility.

Modem Portfolio

Helps meet distinct end-user requirements and support a wide range of data speeds — from narrowband to extreme bit rates. Our family of modems features multiple form factors, including desktop, rackmount, and modem boards:

- Compact modems, such as iQ Desktop+, built to support large-scale networks.
- Modems designed for bandwidth-intensive applications with the capabilities to deliver high-end mobility features, such as the iQ 200 Series.
- Flexible modems for enterprise, cellular backhaul, maritime, broadcast, and government markets supporting a wide range of fixed IP, mobility, and multicasting services, such as the MDM3315.
- Board level varients suitable for both fixed and COTM terminal solutions such as the SMB3315.
- Powerful modems such as the 9 Series that meet military standards and support COTM and COTP.

Core Features

The Evolution Product line helps amplify the bandwidth efficiencies of DVB-S2/DVB-S2X, ACM and ATDMA.

Flexible, Efficient Core Architecture

The hub can connect to any frequency band on all satellite architectures. The Platform is built on DVB-S2/S2X ACM with Adaptive TDMA and multiple technologies to allocate bandwidth efficiently over distributed networks, while automatically adjusting to dynamic traffic demands and changing network conditions.

Modular Design for Scalability

The modular hub and line card system enables service providers to minimize initial capital costs, offer multiple service types from a central hub, and scale business one network at a time in a "pay as you grow" manner. It also allows them to operate across all business models, including VNO and managed service models and easily add new capabilities with over-the-air software upgrades.

Integration with Telecom Core Networks

Evolution mirrors the quality and reliability of terrestrial services, ensuring an enterprise-class user experience, and can operate seamlessly as part of an integrated global IP network. Features like our Layer 2 over Satellite (L2oS) use switching to pass Ethernet packets end-to-end over the network enabling a satellite network to behave like a mainstream access network.

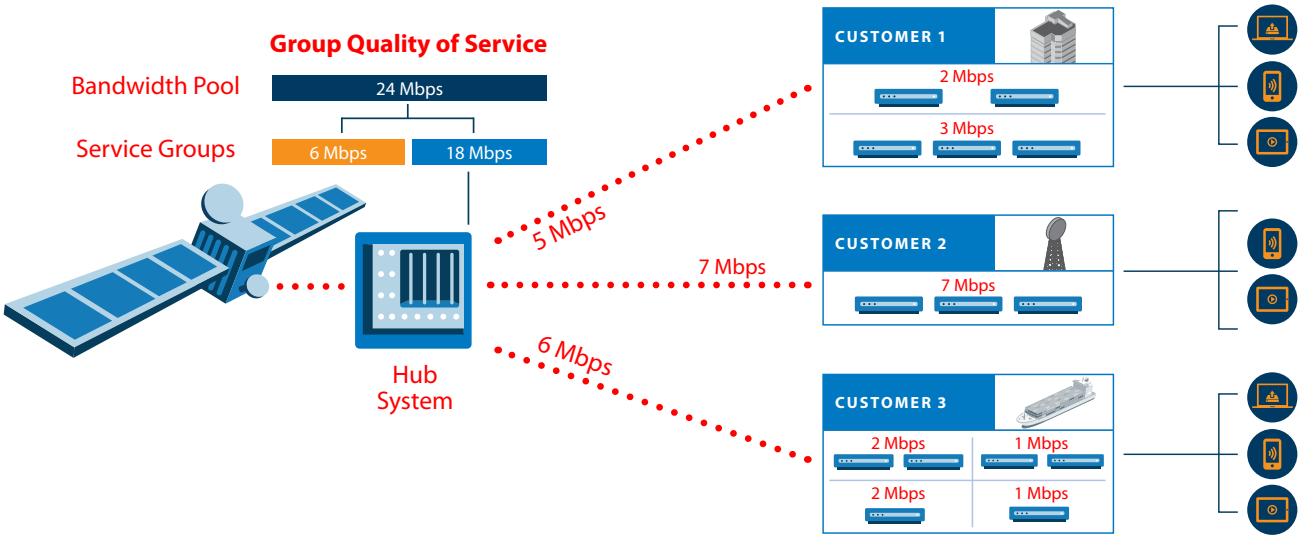
Data Security

Evolution supports Advanced Encryption Standard (AES) and X.509 Remote Authentication for commercial applications, as well as advanced military security standards, such as TRANSEC, FIPS140-2 and STANAG.

Advanced Quality of Service and Reliability

Quality of Service (QoS) technologies allow service providers to create application-level Service Level Agreements (SLA) within a customer's network and offer multi-tiered services. The platform's geographic hub redundancy and seamless network failover protects overall network integrity and delivers carrier class reliability.

Advanced Quality of Service and Reliability



Mobility Capabilities

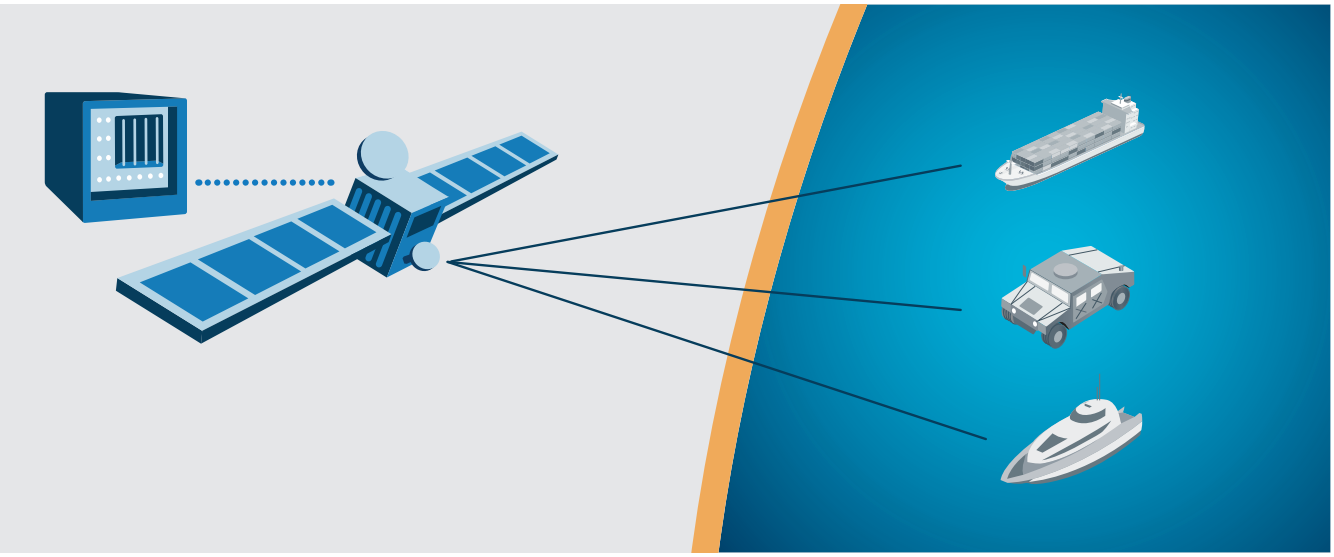
Industry-leading mobility functionality allows service providers to meet the rigorous demands of mobility markets, along with the capabilities to handle thousands of applications running across the network. Such features include:

- **Automatic Beam Selection (ABS):** Global connectivity with no manual intervention across multiple satellite footprints.
- **Global tracking:** Monitor and manage each traveling modem, ensuring a consistent connection as it passes from network to network around the world.
- **Spread Spectrum:** Waveform technology supports very small antennas on maritime and land-based vehicles.
- **Advanced Mobility:** Features include beam-switching, global network management, OpenAMIP standards and fast reacquisition after blockage.

Operational Efficiency

Integrating Evolution with the Network Management System (NMS) enables service providers to scale network sites, increase operational efficiency and provide customers visibility into critical network data.

Mobility Capabilities



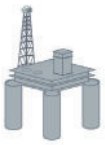
With Evolution, broadband capabilities can be expanded to vehicles, ships and even soldiers in the field.

Applications and Markets For Your Future

Users across a wide range of markets leverage the broad feature set of Evolution in order to meet the unique demands of their particular industry.

Cellular Backhaul

Satellite provides optimized, cost efficient backhaul solutions at remote and rural locations for 2G, 3G and 4G/LTE networks.



Energy and Oil & Gas

From exploration to transport satellite is used in offshore and onshore drilling, and production sites, along with enabling pipeline, smart grid and substation connectivity.

Enterprise

Satellite is integrated into corporate networks to create a truly global Virtual Private Network (VPN), which becomes increasingly important as enterprises look to support high-end and interactive applications.

Maritime

Vessel operators — including commercial shipping, cruise, fishing, offshore and super yachts — rely on satellite to stay in touch with operations on land, increase work productivity and improve the quality of life for seafarers.

Defense and Government

Satellite provides military solutions for command and control, communications on the move, man-portable, and troop morale and welfare, as well as other services such as government- sponsored education networks, first responder, security agencies and Ministry of Foreign Affairs (MoFA)/embassy connectivity.

Evolution For Your Future

Today, more than 350 satellite service providers around the globe run their business on Evolution. These service providers are leveraging the core capabilities of the platform in order to help lower operating costs, access new markets and forge competitive advantages to win new customers.

Evolution helps service providers capitalize on every opportunity with the ability to manage a blended portfolio of both HTS and wide beam satellite capacity.

With Evolution, service providers are best able to achieve market success with the flexibility to expand their network and increase their speed to market, while maintaining their focus on their core value.

Evolution in Action

Over 350k
Evolution Modems Deployed Globally

Over 1,600
Evolution Networks in Service

"Evolution is our award-winning ground infrastructure platform on which many leading satellite service providers have built their business today. Designed to meet a broad range of customer requirements, ranging from narrowband networks to high-bandwidth applications, Evolution will continually transform to meet the increased-performance, broader-scale and higher-efficiency needs of our customers going forward."
- Sean Yarborough, Vice President of Product Management, ST Engineering iDirect

"When enhancing our network, the Evolution platform was a natural fit — it ensures the service performance and reliability our customers require, while helping us maximize the efficiency of our service to capture new opportunities."
- InfoSat

"ST Engineering iDirect's technology is engineered to serve multiple markets and applications, while remaining flexible with the ability to maximize spectral efficiency and deliver the best network availability possible."
- Telefónica Grandes Empresas - Perú

"The installation and configuration of Evolution was completed within a short timeframe and the easy deployment and simple maintenance has enabled LiveCom to reduce our OPEX."
- LiveCom Ltd.

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