
FORSWAY
– SMART
CONNECTIVITY
FORSWAY™

FORSWAY™

Overview

Forsway has an innovative solution, providing satellite (C, Ku or Ka band) extension for accelerating terrestrial broadband networks. The hybrid system uses satellite for downstream data to end users, and terrestrial networks such as mobile networks for upstream data. The terrestrial networks does not need to cater for high data speeds, as the return information normally is limited in bandwidth. Furthermore, as the terrestrial return path has considerably lower latency than two-way satellite systems, the hybrid system provides less round-trip delay times.

Deployment of Forsway's solution opens up new business opportunities for communications and media service providers:

A service provider can use existing terrestrial infrastructure and launch broadband services without investing in upgrading the network. For example, a mobile operator can add residential broadband services without the risk of congesting the existing network for mobile data.

A satellite TV service provider can add broadband internet to the offering with minimal impact on the CPE.

An internet over satellite provider who uses two-way satellite systems can offer more cost effective services with lower latency (no upstream satellite bandwidth or transmitter HW required).

System components

Mimir™ Hub: Satellite gateway providing complete system, service and user management
Odin satellite router: Broadband router for satellite (DVB-S2) or TV-tower (DVB-T2)
Freya hybrid (IP and TV) terminal: Combination of Odin and TV receiver

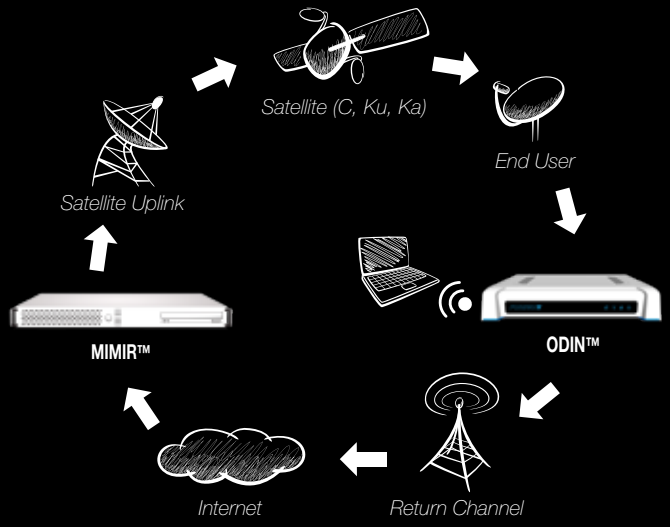
Characteristics

Works with: DVB-S, DVB-S2 and provides CCM, VCM and ACM
Return channels: 3G/GPRS, PSTN, Ethernet or Mobile USB dongle, WiMAX

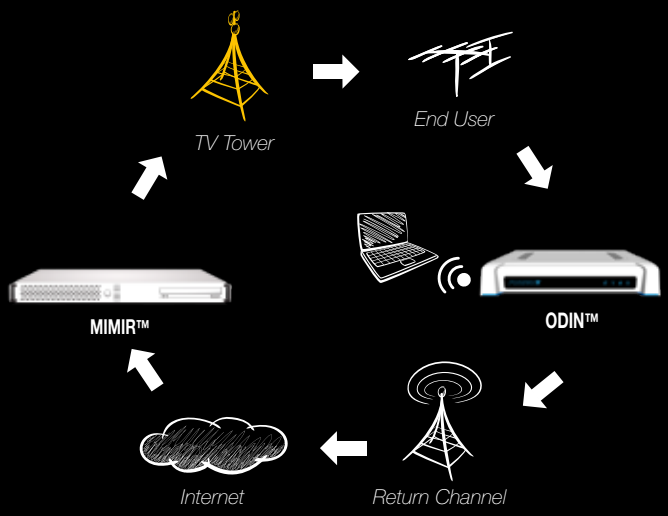
Main advantages

Cost: Forsway's solution can in many cases greatly reduce the cost of providing broadband access to rural areas and suburbs compared to upgrading mobile networks. Compared to two-way VSAT, the CPE and antenna cost for Forsway's hybrid system is substantially lower.
Speed: By using a terrestrial return channel to reach the ISP, the resulting latency reduction can be almost 50%, compared to VSAT.

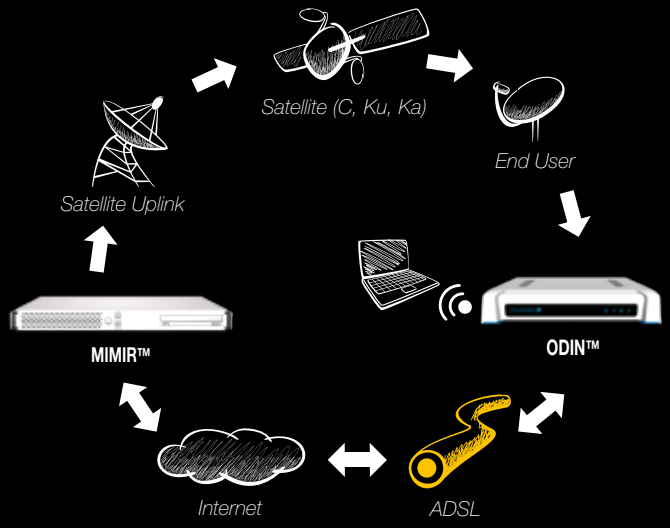
Hybrid Sat / Mobile



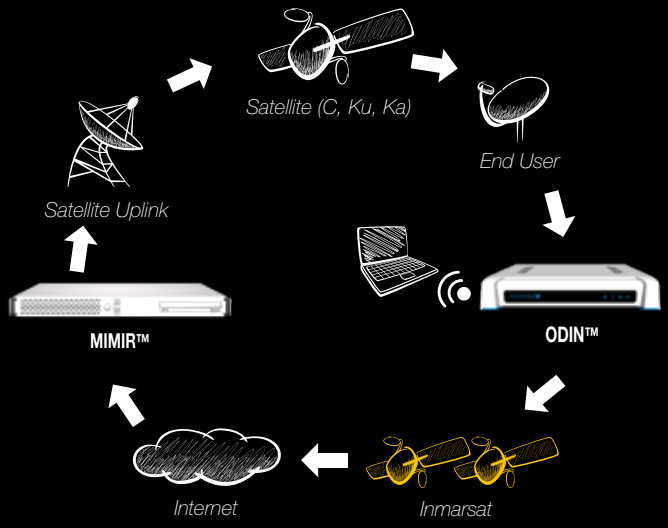
DVB-T2 / Mobile



Sat / ADSL



Sat / Inmarsat



END USER EQUIPMENT

Overview

Odin™ is a hybrid (one-way) satellite router that enables a subscriber to receive satellite based internet services. The router is connected to a small satellite dish that is easy for the subscriber to install. With the capacity to work at very high transmission speeds (up to 50 Mbps), it can be used to access the internet at broadband speeds.

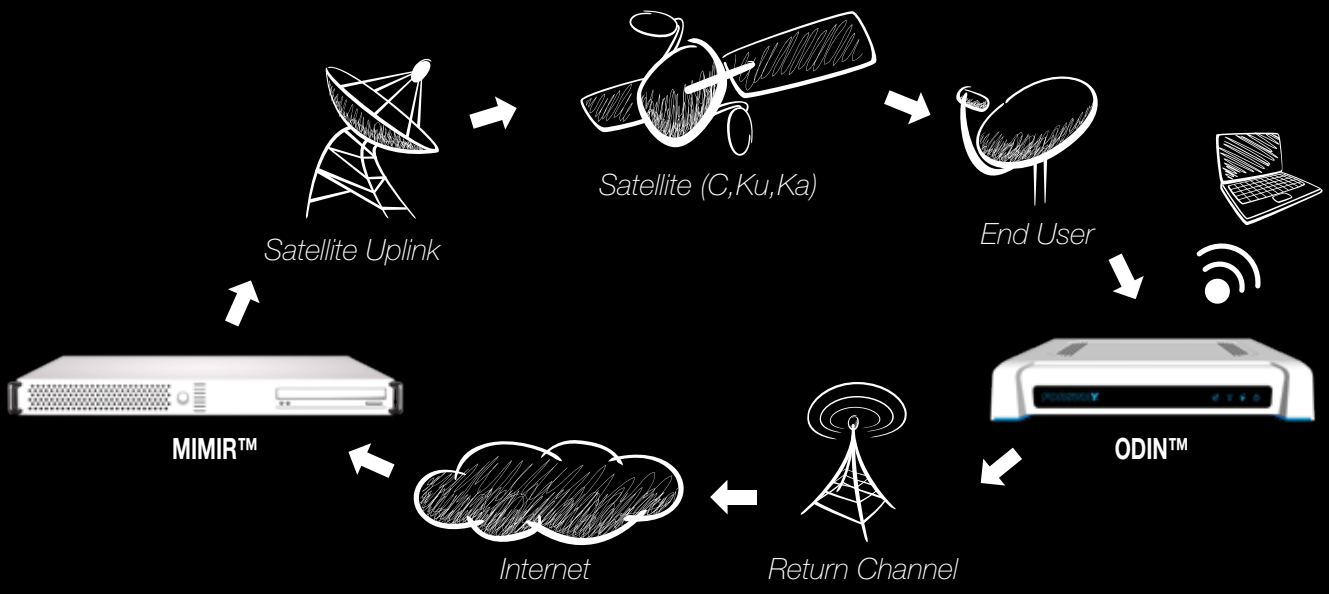
The incoming data is received from a satellite, whilst the outgoing data is sent through a terrestrial return channel. A variety of terrestrial return channels can be used.

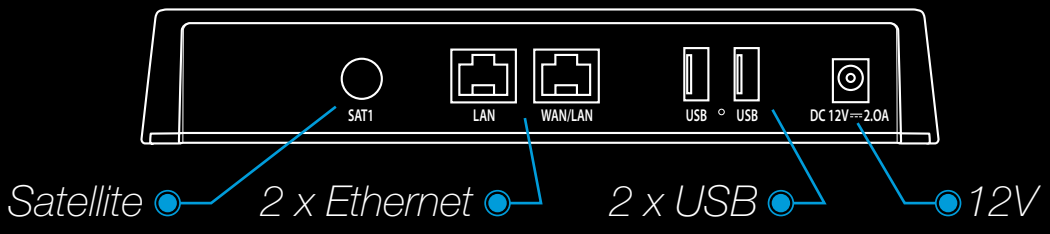
Freya™ enables home users to simultaneously access the internet and watch TV. DTH providers can provide end users with one single box for the complete service offering. Freya is designed for easy integration with VOD systems.

Features and characteristics

- Just connect to a computer - no drivers or other software to install
- Works with Windows, MacOS, Unix / Linux
- Web based user interface
- Built-in Wi-Fi access point
- Return channels: Mobile USB dongles (2G - 5G) and Ethernet
- USB functionality for mass storage
- Automated online software updates

ODIN™ F-50 SATELLITE ROUTER

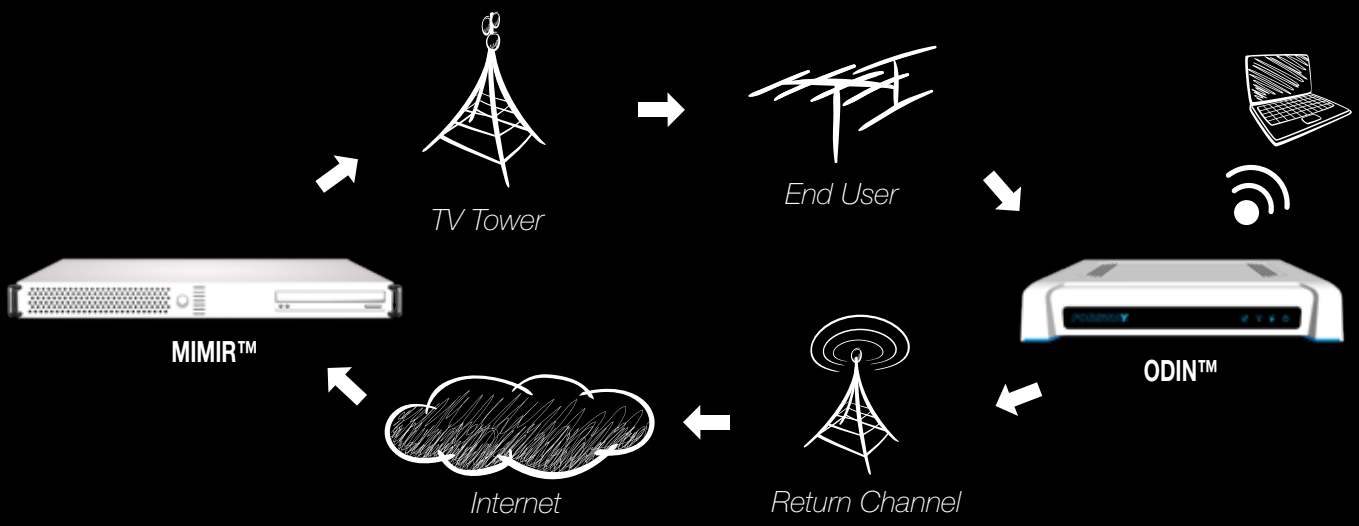


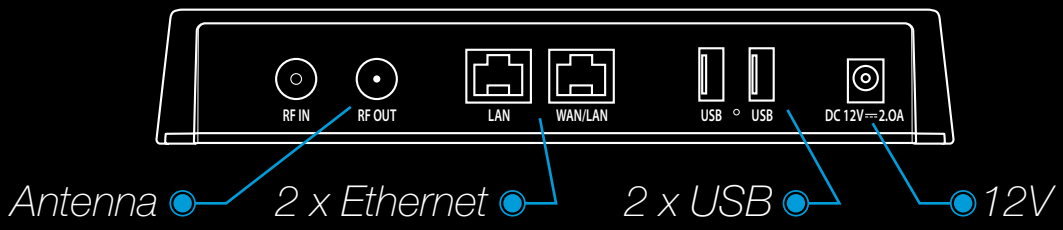


Features and characteristics

- Odin manages internet access, reception of multicast content and streaming of video
- Supported standards include DVB-S and DVB-S2 from satellites operating in the C, Ku and Ka bands

ODIN™ F-52 TERRESTRIAL ROUTER

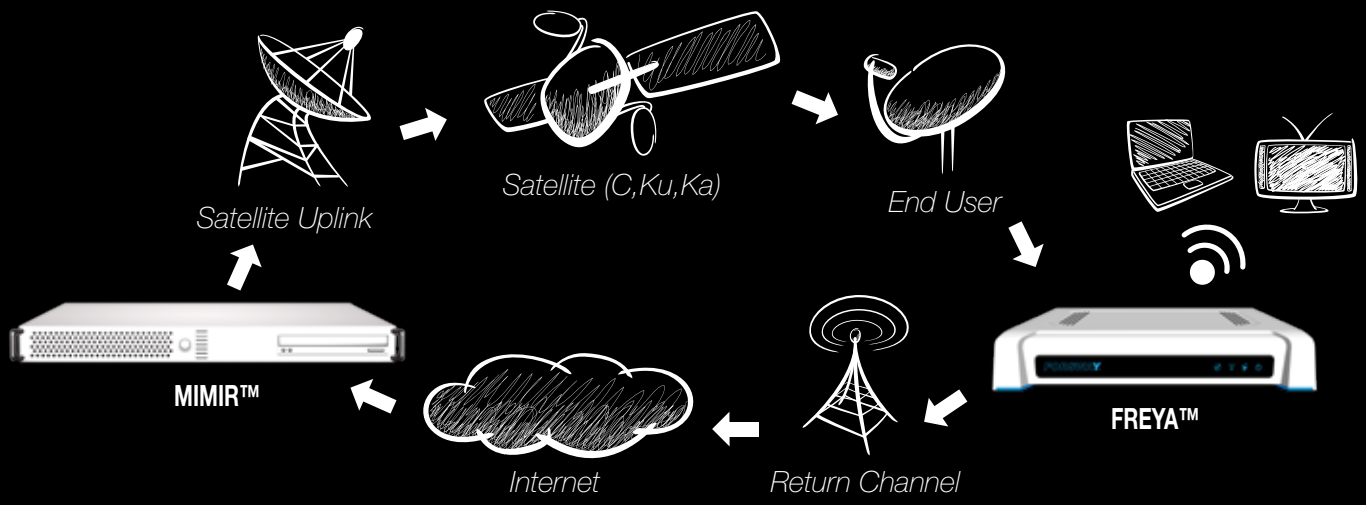


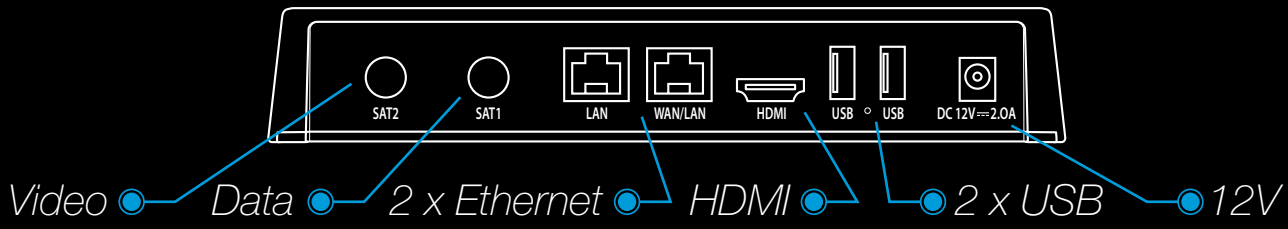


Features and characteristics

- Odin™ manages internet access, reception of multicast content and streaming of video
- Ideal for terrestrial networks with unused capacity
- Incoming data received from a DVB-T/DVB-T2 terrestrial network

FREYA™ F-55 HYBRID TERMINAL





Features and characteristics

- Freya™ manages TV (IPTV and HDTV), internet access, reception of multicast content and streaming of video
- Supported standards include DVB-S and DVB-S2 from satellites operating in the C, Ku and Ka bands (Dual DVB-S2 tuners)
- Just connect to a computer and a TV - no drivers or other software to install
- Web based GUI for access from PC
- TV UI with remote control operation

The combination of satellite and terrestrial networks can be the most efficient way to enhance broadband services in regions with limited communications infrastructure.

FORSWAY™


INTERNET ACCESS
EVERYWHERE
- FOR EVERYONE

MIMIR™ SATELLITE HUB

Overview

The Mimir™ Hub provides access to the internet for hybrid satellite service. It manages the asymmetric routing required for using a terrestrial return channel in combination with a high bandwidth satellite data channel. Mimir™ includes all functionality required by commercial operators: Authentication and accounting for connecting users, a performance enhancing proxy for protocol acceleration, bandwidth management, encrypted communication, and a selection of other technologies necessary for creating a hybrid internet service with an excellent experience for the end user and good commercial opportunities for the operator.

Mimir™ NMS is the network management system for the Mimir™ Hub that creates a central control point for the server and routers where each entity can be individually configured and monitored. This gives the operators a good overview of the status and utilization of all parts of the system.

Mimir™ NMS makes it possible to create multi-transponder deployments with automatic load balancing and ”location aware” functionality, where users can be grouped in populations to be assigned to different services based on their location.

Features and characteristics

- Simple and secure terminal management through factory installed certificates used to identify unique terminals.
- High grade encryption (AES256) is supported for securing communication.
- A performance enhancing proxy (PEP) accelerates the protocols that are sensitive to the long latency associated with satellite communication.
- Configurable Fair Access Policies and service plans makes it possible to offer tailored services for different user groups.
- Scalability and robustness of the system is provided by the Mimir NMS, that can manage a large number of active and backup Mimir Gateways, with automatic load balancing between services.
- We recommend using the pre-integrated billing system from CRM.com. Other third-party billing systems can be integrated through APIs.

FEATURES

Multicast, send data simultaneously to multiple receivers on a network. The solution allows for transmission of files over satellite in a secure and reliable way with the files being stored on a connected storage device. Use with or without return channel, combined with internet access it will be powerful and affordable.

- Forsway's multicast solution includes templates for client web applications that makes it possible to build new highly customized applications in a short time.
- Selective acknowledgement or carousel mode with added FEC.
- Files in transit can be encrypted.

On-demand satellite acceleration. Save precious satellite bandwidth by accelerating medium bandwidth data links with satellite when needed. The on-demand acceleration uses the existing link as starting point, but can add extra bandwidth from satellites on top to increase performance. Suitable for xDSL networks with long cables, Non HSPDA 3G networks, WiMAX, and similar types of networks.

- Large user populations can be upgraded to high bandwidth without high-CAPEX investments, e.g. fiber and 4G
- Low latency services such as on-line gaming can be supported through policy based routing
- Up to 80% of satellite cost can be saved
- Example usage: A 2 Mbit/s ADSL link with on-demand acceleration to 10 Mbit/s

Link aggregation, bond multiple links such as mobile, xDSL, Ethernet, VSAT etc. to achieve higher speed, lower latency and a more reliable transmission. The solution can be used for staying constantly connected with seamless transition.

- Link agnostic - send data across any combination of links
- Uplink connectivity and redundancy - automatic switching between links
- Ratio based load balancing - adaption to quality of link (higher capacity transmits larger fraction of data)
- Policy based routing - prioritised types of transmission over different pre-determined links
- Parallell transport - same transport over different links (lowest latency is used)
- Solution easily integrated with other HW

Our solutions are designed as an extension of terrestrial broadband networks from the sky, using broadcasting satellites for the delivery of broadband to subscribers. Terrestrial networks (mobile, dial-up or others) carries the return channel.

Read more about us at
www.forsway.com

FORSWAY™

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