# Newtec

# SATLINK MANAGER (R2.2)
## NEWTEC DIALOG®


## Description

Today's satellite operators are confronted with the need to support combined Internet, data and video traffic within a single transmission. On top of that, their customers mandate flexible transmission workflows supporting reliable multi-service transmissions in a cost-effective manner. To achieve that, satellite operators are in a need for a system that supports upfront scheduling of satellite transmissions ensuring resources are allocated and reserved for the duration of the transmission, automate reliably the setup and teardown of satellite links, while at the same time optimizing the required satellite space segment. All of this functionality is to be offered within a single platform that can be tailored exactly to the needs of the customer.

Newtec's multi service solution, including Newtec's SATLink manager, Newtec's File Exchange Manager and Newtec's Integrated Management system provides an integrated solution tailored to meet these objectives. At its core, the SATLink Manager software module allows satellite operators to **efficiently manage the transmission resources and capacity, and at the same time guarantees error-free link setups** by fully automating the satellite ground equipment. The satellite resource management capabilities and equipment automation of the SATLink Manager ensures bandwidth optimized, cost effective, permanent and occasional use transmissions.

SATLink Manager is defined as an optional module on top of the Newtec Dialog® system. The layered architecture of a full multiservice Newtec Dialog solution, combining the Newtec Dialog platform with the SATLink Manager, File Exchange Manager, and optional 3rd party NMS and OSS/BSS, ensures a flexible solution that is tailored to the specific needs of satellite operators. SATLink Manager will, in combination with the Newtec Dialog system, support the scheduled setup of MF-TDMA, Mx-DMA™ or SCPC based terminal and hub links with specific QoS (CIR/PIR) settings.

Alternatively, the SATLink Manager can also be deployed in combination with a HUB6000 platform. This setup is typically used for the establishment of occasional high bitrate IP connectivity between remote locations and the central hub.

## Key Features

- Allocation and reservation of satellite ground equipment and space segment through booking principle
- Resource allocation based on session service characteristics
- Manual, slotted and optimized bandwidth allocation
- Multiple services supported on shared satellite capacity
- Full automation of link setups/teardowns
- Support for mesh and star based point-to-point and point-to-multipoint link topologies
- Support for high speed (up to 100 Mbps aggregated) bidirectional, accelerated IP links
- Support for per reservation QoS and SLA definitions
- Deployable separately or combined with 3rd party NMS system
- Virtual Network Operator (VNO) support
- Single hop and double hop session support

## Main Advantages

- Flexibility
  - Combined data + broadcast services support on single platform
  - Versatile modem portfolio support
  - Integrated Management System for support of flexible workflows and hybrid terrestrial + satellite connectivity
- Scalability
  - Scales from small to large networks
  - Support for capacity pools over multiple transponders, frequency bands and satellites
  - Scales with the number of supported services and throughputs
  - Low upfront CAPEX requirements, invest as your business grows
- Efficiency
  - Support for highly efficient modulation schemes, such as DVB-S2, S2 Extensions, DVB-S2X
  - Optimization of bandwidth allocation through optimal MODCOD selection and pooled capacity support
  - FlexACM® support

## Satellite Resource Management for Occasionaland Full Time Use Transmissions

Reservation based allocation of satellite resources guarantees all required satellite equipment and satellite capacity are available at the time of the transmission. The resource reservation is based on an upfront booking of a transmission.

The SATLink Manager is configured with a set of services, e.g. 'Live SNG Transmission', 'low bitrate file contribution', etc. The link characteristics of the transmission, i.e. air interface, modulation characteristics, QoS settings and ground equipment resources are fully determined by the type of service selected during the booking process. Services can be defined per Virtual Network (VN)

Ground equipment and space segment resources can be dedicated to multiple virtual networks. This allows a network operator (NO) to host multiple users on the same physical platform, still allowing them to operate independently from each other.

## Reduced OPEX through Optimized Satellite Capacity Management

The SATLink Manager optimizes the satellite capacity required for occasional use transmissions through the support of pooled capacity. The satellite capacity used for the transmission is taken from a pre-configured pool of satellite bandwidth which can be shared by multiple remotes and by multiple services. The admission control features of SATLink Manager ensures the pooled capacity is not overbooked, thereby guaranteeing the bandwidth for a transmission once it is reserved. Configured satellite capacity can be dynamically added, removed or updated.

The SATLink Manager provides flexible ways of space segment allocation. Allocation of space segment for a transmission can be through:

- manual capacity allocation of capacity by manual entry of start and stop frequency
- slotted based capacity allocation, whereby capacity is divided into specific slots
- optimized capacity allocation, whereby the SATLink Manager optimizes the space segment usage by determining a free space segment with a bandwidth based on the requested info rate. Optimized capacity allocation ensures the most efficient use of satellite space segment, minimizing OPEX.

## Support for a Variety of Link Topologies

The SATLink Manager configures the allocated ground equipment resources with the appropriate settings matching the service characteristics of the transmission.

A variety of link topologies, including single channel per carrier (SCPC) and multiple channel per carrier (MCPC) links, mesh and star links, unidirectional and bidirectional unicast or multicast traffic, etc. are supported by the SATLink Manager.

A special link topology mode, called "mesh overlay" is also supported. A mesh overlay link is a multichannel link set up by a MDM3300 modem, whereby the unicast IP channel is received by the Newtec Dialog Hub and the multicast IP channel is received by a remote MDM6000 modem. This allows the setup of a terminal to hub star link for unicast IP traffic and a mesh terminal to terminal link for multicast IP traffic within a single carrier. A single session booking can span multiple transmission links, combining e.g. multibeam satellite contribution or distribution links with fiber links. Transmission sessions spanning multiple satellite and terrestrial networks can therefore easily be supported with a single booking workflow.

The support for flexible link topologies offers the user the choice between bandwidth efficient, low delay mesh unicast / multicast links at the expense of high powered and therefore more costly ODU, versus star based transmissions with cost-effective terminals, at the expense of extra transmission delay and satellite bandwidth.

### Supported Link Topologies

- Star and mesh based link topologies
- Support for single hop and double hop links
- Support for Newtec Dialog "Mesh Overlay" links
- Unidirectional and bidirectional Layer 3 accelerated IP links
- Point-to-point and point-to-multipoint links
- Single channel per carrier (SCPC) and multiple channel per carrier (MCPC) links
- Newtec Dialog unicast and multicast terminal and hub circuits
- Ad-hoc and booked occasional use or permanent satellite links

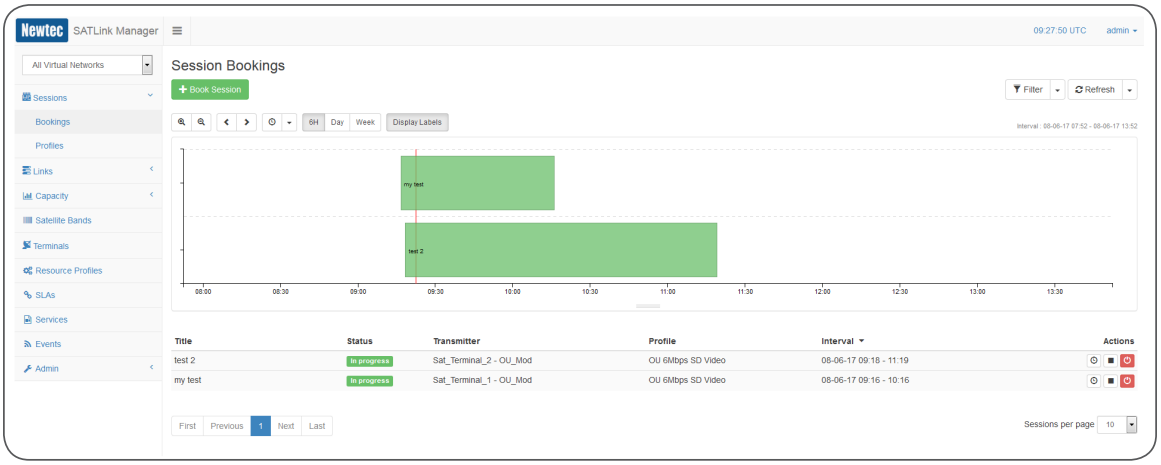


Fig.1 SATLink Manager booking GUI

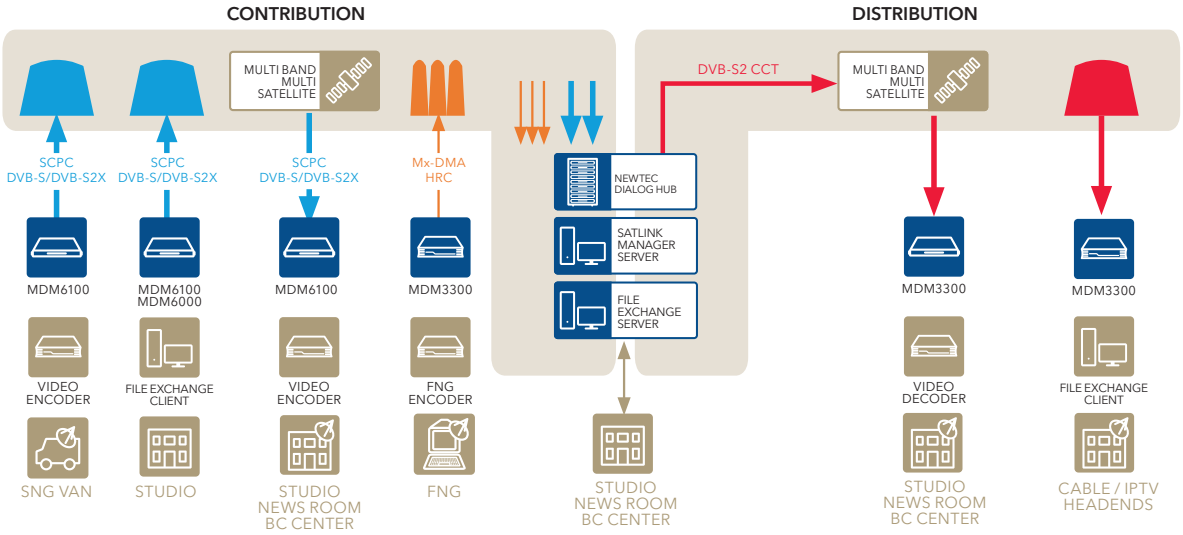


Figure 2: Supported contribution and distribution use cases

## Flexible Workflow Support Through Integrated Management System

The SATLink Manager offers various operational interfaces, giving the user a lot of flexibility when integrating the SATLink Manager with a content management system, media asset management system or external scheduler

The SATLink Manager comes standard with a REST based API for provisioning purposes and for the reservation and setup of SCPC or MCPC links. Additionally, it supports a GUI for booking purposes, for monitoring capacity occupancy and for link monitoring (see Fig. 1). A Newtec Dialog solution with the SATLink Manager module included enables a cost effective broadcast solution for small scale networks with easy operational workflows.

Alternatively, the SATLink Manager software module can be offered in combination with Newtec's Integrated Management System (IMS) (See Fig. 2). Newtec's Integrated Management System additionally provides support for more elaborate Fault, Configuration & Performance management allowing full management of both Newtec modems and 3rd party equipment (e.g. video encoders/decoders) and/or network equipment (switches, routers).

## Typical Applications

- Broadcast market
  - Broadcast contribution and distribution
  - Satellite news gathering
  - Fast news gathering
  - Communication on the Pause (COTP)
- Trunking market
  - Fiber restoration
- Government and defense
  - Border control
  - Video conferencing
- Cellular backhaul
  - Disaster recovery
- Enterprise VSAT
  - Business continuity
  - Occasional Enterprise VPN Links

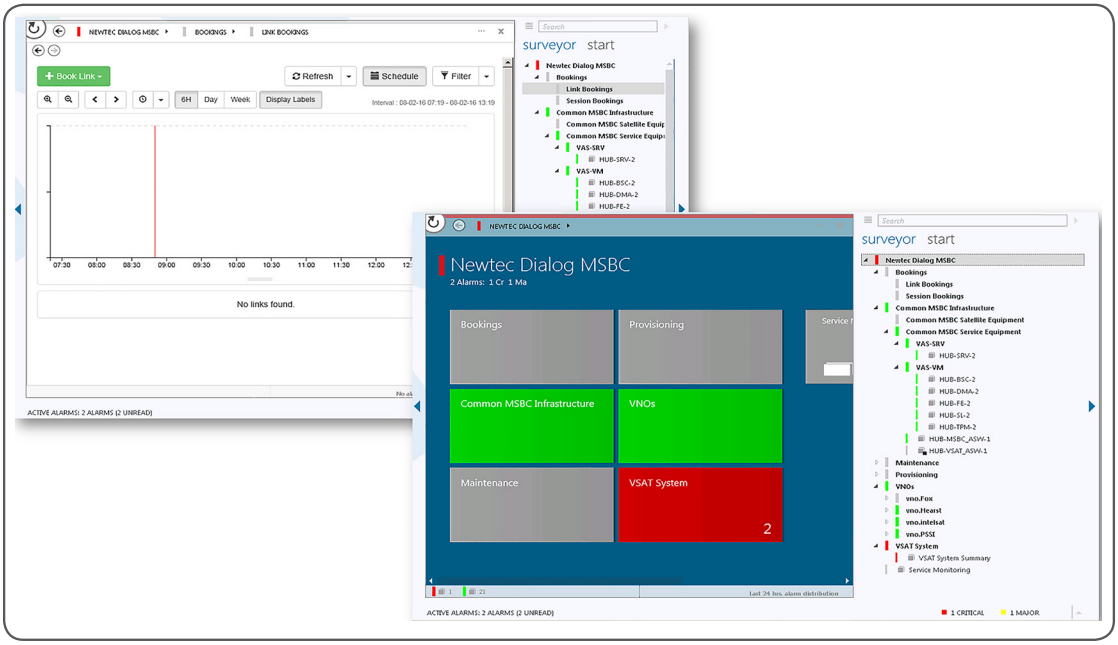


Figure 3: Example of SATLink Manager integration with Newtec's IMS

## Resource Allocation and Reservation

- Booked and ad-hoc reservation based satellite ground equipment and space segment resource allocation for occasional use (OU) transmissions
- Reservation manipulations, including reservation cancel, reservation move, reservation extension
- Admission control, guaranteeing resources for a reservation
- Resource allocation based on session service characteristics
- Manual, slotted and optimized bandwidth allocation
- Multiservice support on shared satellite capacity
- Support for capacity pools over multiple transponders, frequency bands and satellites
- Dynamic addition, removal and updates of capacity pools
- Support for QoS and SLA definitions per service

## Equipment Automation

- Automation of link setups/teardowns through automated configuration of Newtec satellite ground equipment
- Optimization of space segment allocation through automatic selection of available space segment
- Service specific equipment configuration
- Flexible, versatile equipment configuration through equipment configuration templates

## Supported Technologies

- Modulation schemes: DVB-S2, S2 Extensions, DVB-S2X, HRC™, 4CPM
- Access technologies: MF-TDMA, Mx-DMA, SCPC
- Air interfaces: Transport Streams, GSE
- Clean Channel Technology®
- FlexACM®

## Management and Control

### SATLink Manager Management and Control

- Web API for link and session booking
- Web API for link and session setup / teardown
- Web API for terminal provisioning and reservation 'accounting'
- Web API for setup of transmission sessions spanning multiple satellite/fiber transmission links
- Session status monitoring
- Link status monitoring
- Centralized or distributed operations
- Software Management (incl over-the-air multicast upgrades)
- Configuration Management
- Built-in web-based GUI for session booking, fault & status monitoring

### Integrated Management System capabilities

- Support for user specific workflows and GUIs
- Integration possibilities with 3rd party schedulers, ERP systems, MAM systems, OSS/BSS systems
- Fault & Performance management of satellite capacity and Newtec and third party equipment
- Unified service management for hybrid fiber – satellite network with uniform workflow support
- VN based access control
- VNO NOC can manage, control and monitor remotely satellite ground equipment through the Integrated Management System

## Deployment Possibilities

- Deployable in combination with Newtec's "File Exchange Manager"
- Possibilities for integration with 3rd party NMS eco-systems through REST based web APIs
- Centralized and distributed deployments
- Integrates with Newtec Dialog platform R1.2.4
- Integrates with Newtec HUB6000 platform
- Deployable on virtualized infrastructure (VMWare, VirtualBox, Hyper-V, KVM)

## Supported Newtec modems

- MDM2200, MDM2500, MDM3100, MDM3300 Satellite IP Modems
- MDM6000 Satellite Modem
- MCD6000 Multi-Carrier Demodulator
- MDM6100 Broadcast Modem
- MCX7000 Multi-Carrier Satellite Gateway modem





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