Newtec

FILE EXCHANGE MANAGER (R2.0)
NEWTEC DIALOG®

Description

The broadcast industry is gradually moving from linear workflows to non-linear, file based workflows, thereby benefitting from all the advantages it brings: the possibility for off-peak hour content exchanges, error-free transmissions of assets, embedded support for content metadata etc. File based workflows come however with their own challenges: the need for reliable, secure and bandwidth-efficient transmissions, demanding end-to-end automation of the transmission, **OPEX friendly transmissions through optimized and flexible capacity usage**, and a transmission workflow that can be tailored exactly to the needs of the broadcaster.

Service providers in the enterprise and governmental market are confronted with the need for the dissemination of files to a variety of remote stations like cinemas or points of sales (POSs). Beside a reliable and secure transmission, this also requires the management of different content bouquets for different receiver groups while honoring the importance and priority of those.

The File Exchange Manager application is a versatile solution for the non-linear contribution, distribution and exchange of file-based digital assets. At its ground, it's using an **innovative technology for the bandwidth-efficient, reliable and secure data transmission over satellite as well as hybrid IP networks.** The product provides a set of features which optimize the transmission over that type of networks, like an IP multicast based transmission, variable bandwidth support for DVB-S2 ACM links or even opportunistic IP data insertion.

Key Features

- Reliable point-to-point file contribution
- Reliable point-to-multipoint file distribution using IP multicast
- Transport-layer FEC and lost fragments retransmission
- Cross-Layer-Optimization technology for variable bitrate transmissions (e.g. DVB-S2 ACM)
- Integrated Conditional Access System (CAS)
- On-the-fly channel encryption
- Interface to Newtec's SATLink Manager for session and resource management
- Embedded SLA and QoS management
- NMS/OSS/BSS integration using extensive open API
- Central software & configuration management including over-the-air updates
- Web-based GUI

Main Advantages

- Reliability
  - Highly reliable and guaranteed file reception
  - Encrypted transmission to ensure content privacy
- Flexibility
  - Supporting wide range of applications and services on a single platform
  - Interoperability with any transport system: Newtec Dialog®, HUB6000, 3rd party SCPC/VSAT system or terrestrial/hybrid IP network
  - Versatile platform support
  - Umbrella NMS for support of flexible workflows and hybrid connectivity
- Scalability
  - Scales from small to large networks
  - Scales with the number of supported services and throughputs
  - Low upfront CAPEX requirements, invest as your business grows
- Efficiency
  - Satellite-bandwidth efficient file exchange
  - Full utilization of available satellite capacity
  - Fully automated file workflows
  - Easy self-deployment and operation

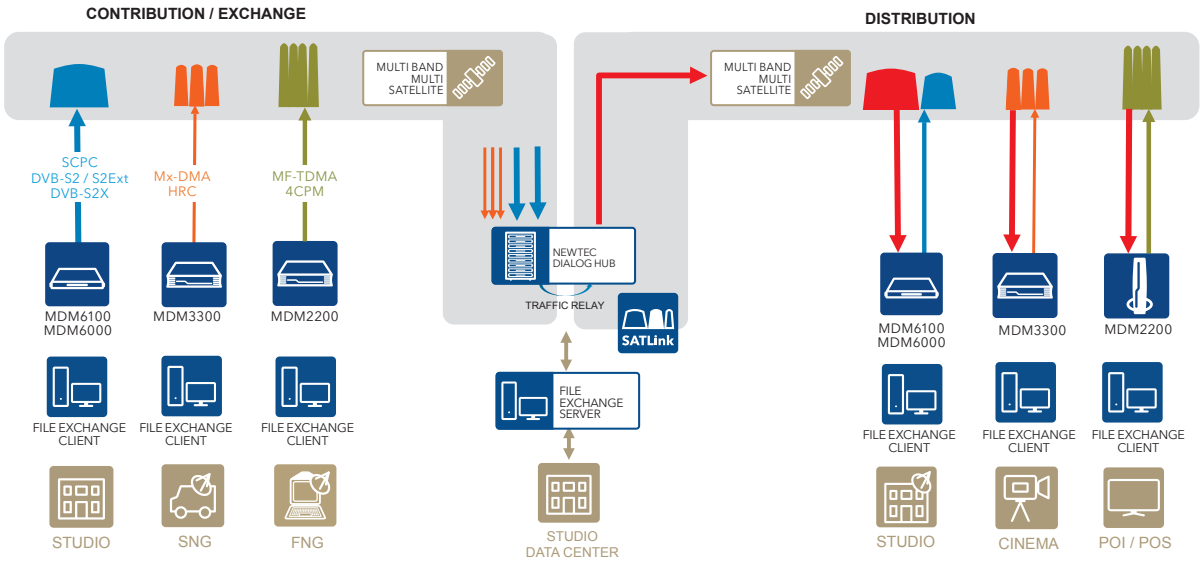


Figure 1: Newtec Dialog multiservice platform – File Exchange Manager applications

The application consists of two components. The server component is typically deployed in the corporate headquarter or data center and is connected to the digital asset database. The client components are located in remote facilities like studios, cinemas or POIs. The application software can be installed on any commercial off-the-shelf PC/Server platforms or can be integrated into a virtualized infrastructure.

Reliable and Protected Content Transmission

The transmission engine of the application protects against typical transmission (bit)errors by introducing on-the-fly Forward Error Correction (FEC) on top of the actual content. In addition, the file fragment retransmission mechanism can recover data loss caused by e.g. transmission outages. The receivers inform the sender about non-received file fragments and as a result, the sender resends only the missing ones. In combination with Newtec Dialog® platform, the Cross-Layer-Optimization technology allows the on-the-fly adaptation of the throughput to the available bitrate preventing the loss of data while at the same time optimizing the usage of available bandwidth.

The security engine has a built-in conditional access module which ensures that **the content is only received by the clients who are authorized to.** In addition, the transmission channel can be encrypted on-the-fly to prevent that eavesdroppers get illegally access to the digital assets.

Highest Network Efficiency by Combining Satellite and Terrestrial Technologies

The IP multicast technology allows the distribution of files to a large number of receivers with a single point-to-multipoint transmission. By doing so, it also ensures that the satellite resource is booked for a short period only, which allows to use the same satellite capacity for different services during different times of the day. During the day, high-value content can be distributed at guaranteed bitrates and highest SLAs while at nights best-efforts transmission can fill the unused capacity.

Thanks to the Cross-Layer-Optimization technology, the application is able to permanently **fill the available bandwidth up to its maximum** even if the throughput is varying over time as a result of DVB-S2 ACM or a best-effort SLA. Furthermore, the usage of the satellite bandwidth can be further optimized in combination with Newtec SATLink Manager software module, enabling the time-sliced sharing of SCPC links amongst different contribution senders.

File Exchange Manager's automated operation increases the efficiency of the end-to-end workflows. The human intervention is limited to the copying of the right files into the right input folders, the remaning tasks like session scheduling, capacity reservation and the actual transmission will be done by the system automatically. This also leads to the **prevention of human errors during the workflow, which results in a high reliability of the service.**

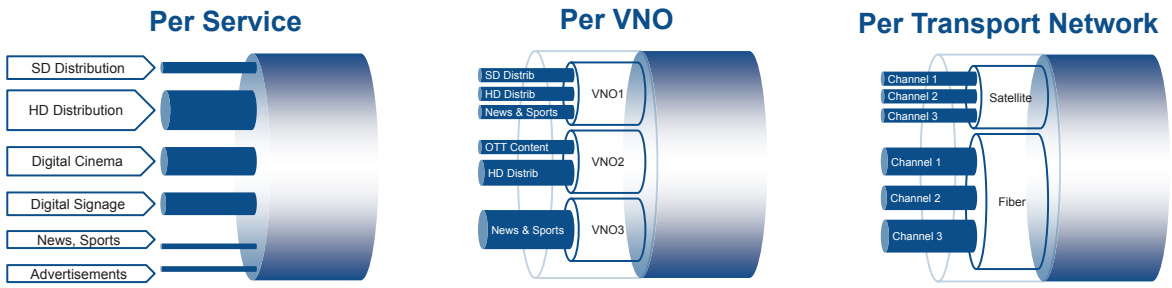


Figure 2: Flexible service differentiation on a single platform

Flexible Service Differentiation on a Single Platform

Whether the product is used for non-linear file workflows in the broadcast industry or for the dissemination of digital assets in the enterprise or governmental market, the File Exchange Manager is the optimal technology for any kind of file-based content transmissions. It enables the operator to provide different file exchange services on use of a single platform. Beside the realization of different applications on said platform, different bandwidth SLAs can be enforced – be it on a per-service, per-VNO or per-transport-network basis.

The application is also independent of the IP transport system and as such it can provide its services over satellite or hybrid networks at the same time.

Flexible Workflow Support Through 'Umbrella' NMS

The File Exchange Manager offers various operational interfaces, giving the customer a lot of **flexibility when integrating it with his content management or media asset management systems** and operational workflows.

The application comes standard with a SOAP or REST based API for provisioning purposes, the definition of channels and their SLAs as well as for the transmission status reporting. Additionally, it has a GUI for the monitoring of the service status.

Alternatively, the File Exchange Manager software product can be offered in combination with an 'umbrella' NMS system. An umbrella NMS typically provides support for more elaborate fault, configuration & performance management allowing full management of both Newtec modems and 3rd party equipment like network devices. Additionally, it can offer support for customer specific workflows and GUI's automating all equipment involved in the transmission chain. It typically also supports API's for integration with customer supplied schedulers or MAM systems. The umbrella NMS can, in case of a hybrid fiber – satellite deployment, ensure equal workflows for fiber and satellite connected terminals. Finally, it can also offer access control to VNO owned equipment.

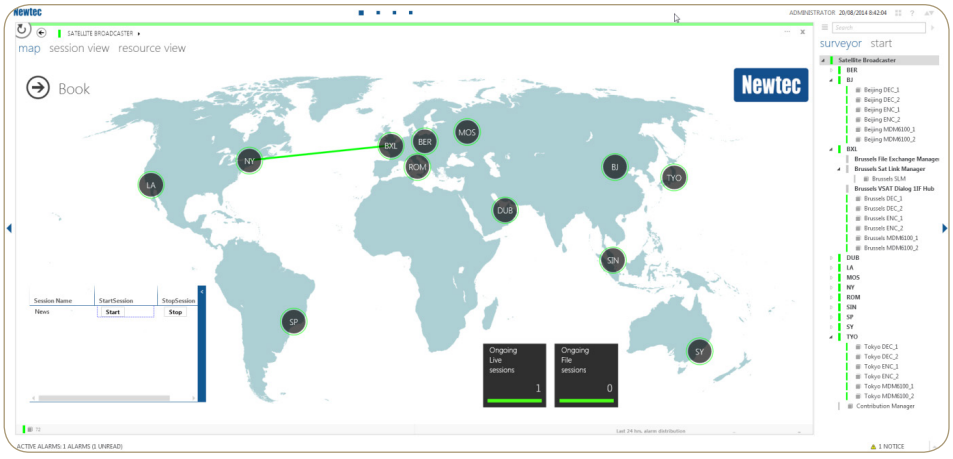
Typical Applications

- Broadcast market
  - Fixed broadcast contribution & exchange
  - Satellite News Gathering (SNG)
  - Fast News Gathering (FNG)
- Consumer & enterprise VSAT
  - Digital cinema
  - Push VoD
  - Digital signage
  - Central software upgrades
- Government & defense
  - Meteorological data dissemination
  - Morale, Welfare and Recreation (MWR)

Platform Scalability Following Business Growth

The application is highly scalable in both, commercial and technical manner. It is applicable to services operating at low bitrates like FNG file contributions up to very high bitrates as known from file exchange networks in the broadcast industry. At the same time, the file transmission can be conducted between two peers only (point-to-point), or up to hundreds of receivers can be served at the very same time. Due to the fact that the solution is agnostic to the file types it transmits, it can transmit a high quantity of small files like advertisement pictures or multi-gigabyte UHD video packages.

This scalability is also reflected in the licensing model of the application by implementing a **pay as you grow model with a low entry CAPEX investment.**



Related Products

Newtec Dialog®
HUB6000
SATLink Manager

Network Topologies

- Point-to-point file contribution
- Point-to-multipoint file distribution
- Point-to-multipoint file exchange in a star network topology

Transmission Reliability

- FEC and checksuming against bit errors
- File fragment retransmission to compensate transmission outages
- Transmission status reporting
- Cross-Layer-Optimization to counteract rain fade

Scheduling & Workflow Management

- Automated scheduling and file transfers using 'hot folders'
- FIFO based scheduling with multiple configurable priority levels
- Global transmission scheduler
- Scheduling paradigms:
  - Parallel on different IP channels from same client
  - Parallel on different carriers from different clients
  - Sequentially on same carrier from different clients

Bandwidth and QoS Management

- Definition of virtual IP circuits with CIR and/or PIR
- Admission Control and Session & Resource Management by SATLink Manager
- Cross-Layer-Optimization for variable bitrate transmissions over satellite

Content Security and Privacy

- On-the-fly AES encryption of the channel
- Built-in conditional access system

Performance and Scalability

- Network Size: up to 1000 clients
- Throughput: up to 200 Mbps (platform dependent)
- File sizes: Up to 100 GB

Management and Control

- Central management
  - Topology overview
  - Client provisioning
  - Software management (incl over-the-air multicast upgrades)
  - Configuration management
- SOAP / REST based North-bound Interface
  - Client provisioning
  - Transmission status reporting
  - Channel management
  - Reprioritization of scheduled file transfers
- Built-in web-based GUI for fault & status monitoring
- Umbrella NMS capabilities
  - Support for customer specific workflows and GUIs
  - Integration possibilities with 3rd party schedulers, ERP systems, MAM systems, OSS/BSS systems
  - Fault & Performance management of satellite capacity, Newtec equipment and third party equipment
  - Umbrella service management for hybrid fiber – satellite network with uniform workflow support
  - VN based access control supported through the umbrella NMS
  - VNO NOC can manage, control and monitor remotely VNO Resources from NMS web portal

Supported Technologies

- DVB-S2 and Clean Channel Technology® , 4CPM and HRC modulation schemes
- Mx-DMA™, MF-TDMA and SCPC access technologies
- FlexACM®
- Cross-Layer-Optimization

Supported Platforms

- PCs/Servers (x86, i64)
- Virtualized Infrastructure (VMWare, VirtualBox, Hyper-V, KVM)
- Filesystem Interfaces: SMB/CIFS, FTP, WebDAV

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