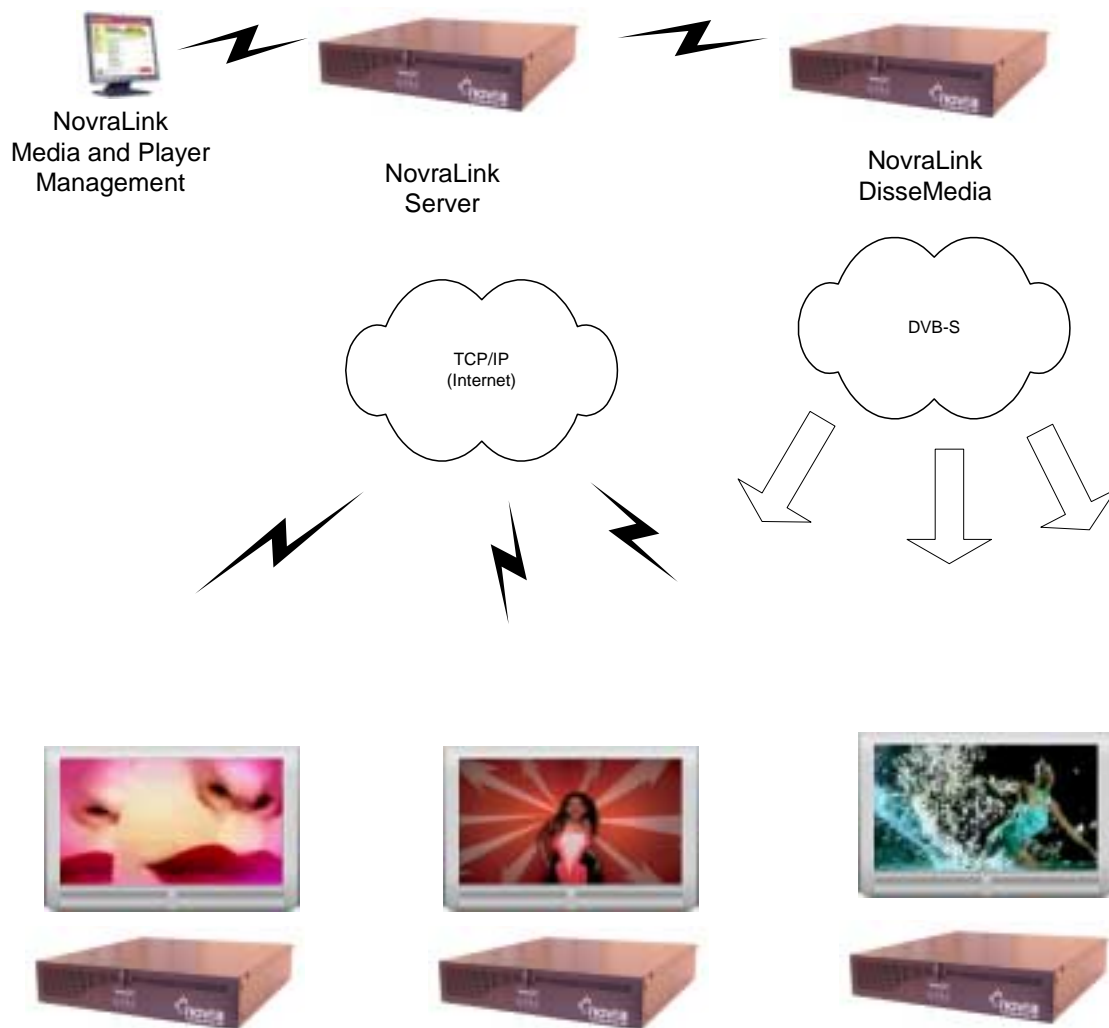


## NovraLink

### Overview

NovraLink is an innovative digital media distribution and management system based on industry network standards and a flexible software architecture, enabling many types of digital media and data broadcasting applications. **NovraLink** is at the cutting edge of technology in terms of speed, security, reliability and efficiency and has been designed to allow service providers to reliably distribute digital media and data. Through an intuitive content management user interface, the user can easily manage **what** plays **where** and **when**.



**Figure 1 : Novralink Media Distribution Overview**

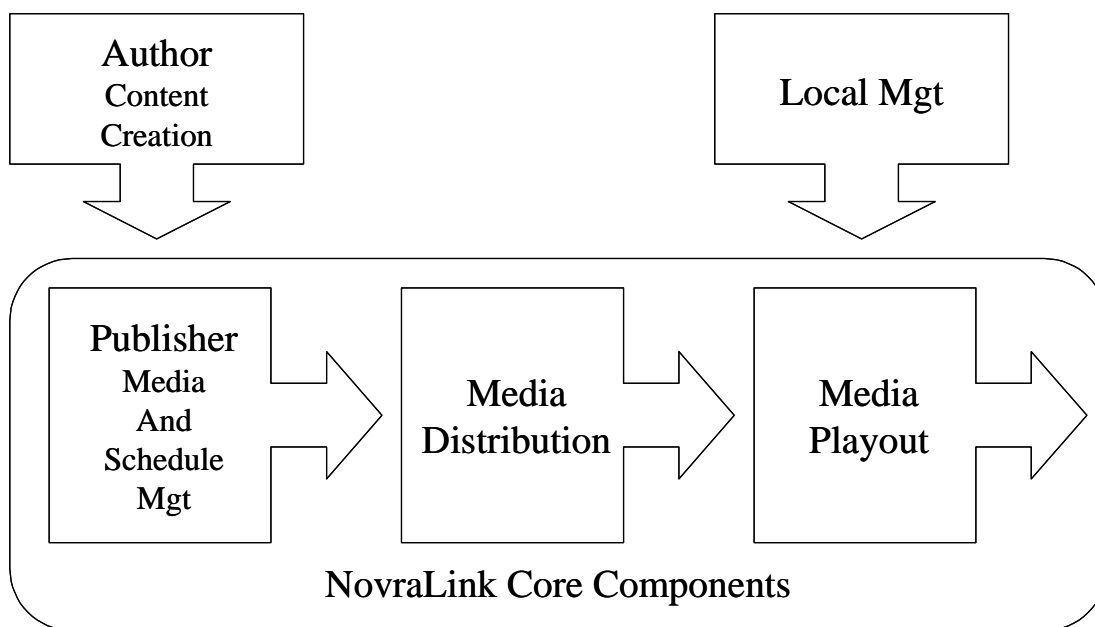
Multicast data distribution supports multiple acknowledgement schemes or can be run without a return channel, using adjustable forward error correction. Receivers can be addressed individually or in groups, executing received scripts or programs. **NovraLink** can be deployed

over a TCP/IP network but is optimized for transport over DVB (Digital Video Broadcast) transport streams. Each NovraLink component is designed to be flexible and robust. The remainder of this document will describe the major features of the various components

## Content Management

### Overview

Novralink content management software is used to manage each piece of digital content from its entry into the system to the point of obsolescence. Software is used to import and index media. From that point it can be uploaded to the distribution server. After content has been added to the content library it can be incorporated into playlists that in turn can be scheduled for each player group. The overall flow of content and control information is shown in Figure 2.



**Figure 2 : Content Flow with NovraLink**

There are specific opportunities for local interaction as well. For example using the local messaging feature, local retailers can put their own messages on top of professional video backgrounds. The number of local message slots are determined by the central scheduler. In a bar entertainment application the local interaction could be a dj night where the dj chooses his own playlist.

### Importing Content

Upon receiving the latest new media prepared for delivery and playout, a user simply copies the content to their content management PC from DVD/CD. The user then can import all of the new media to the NovraLink Content Management application. Before this new media is sent to DisseMedia (the NovraLink multicast server) for distribution, it must be previewed and tagged. The user needs to set the “Properties” or keywords for each of these new media items. Many critical elements are automatically detected by the software such as media size and duration. Other keywords will have meaning only to the user and specifics of their application and are used for finding media in the library and matching media with appropriate player groups.

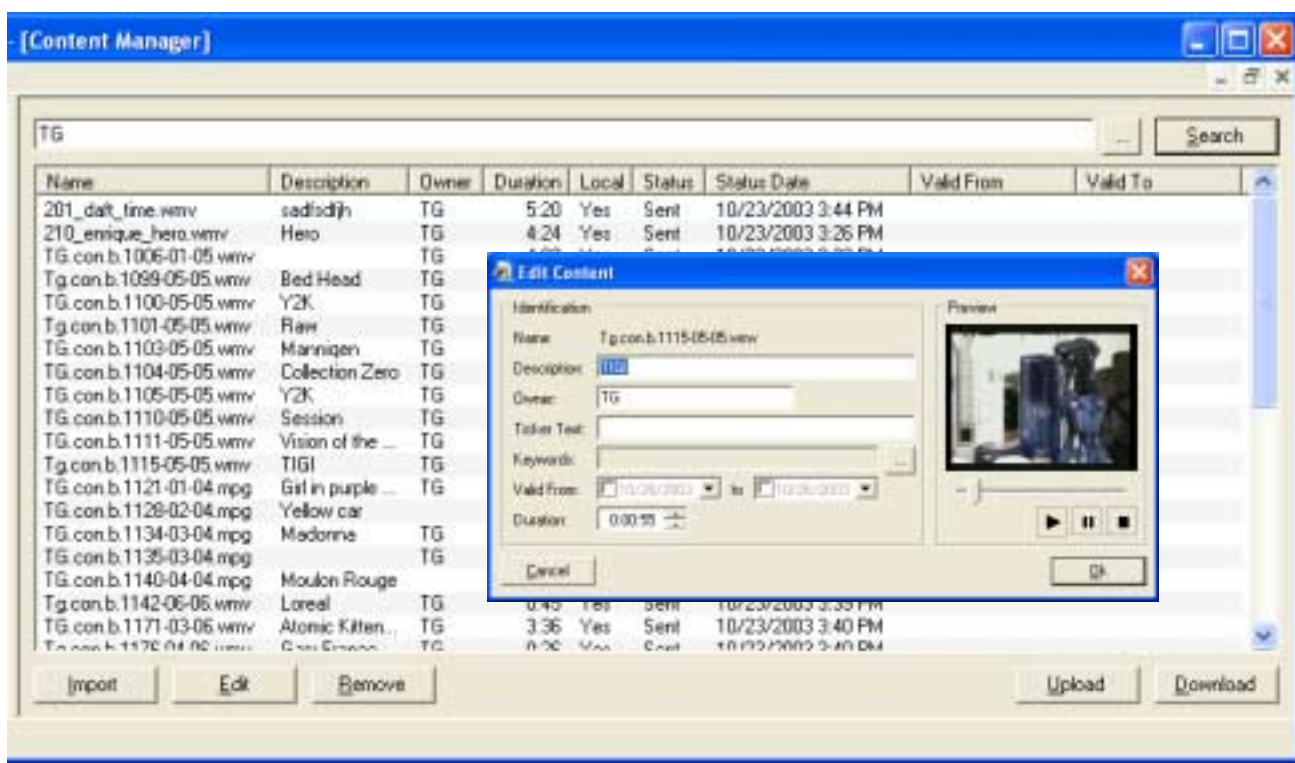


Figure 4: Indexing new Content

### Playlist Creation

Once content is added to the content library, it is available for new or existing playlists. Playlists can be as simple as a sequence of media items that can be scheduled for playout on a group of player units. Playlists can also control optional messaging features that are available.

Playlists can also act as templates for network operation. For example one can create templates for various parts of a day that are edited for weekly/daily publication. Playlist templates can be constrained so that operations staff will create playlists that meet corporate playout guidelines.

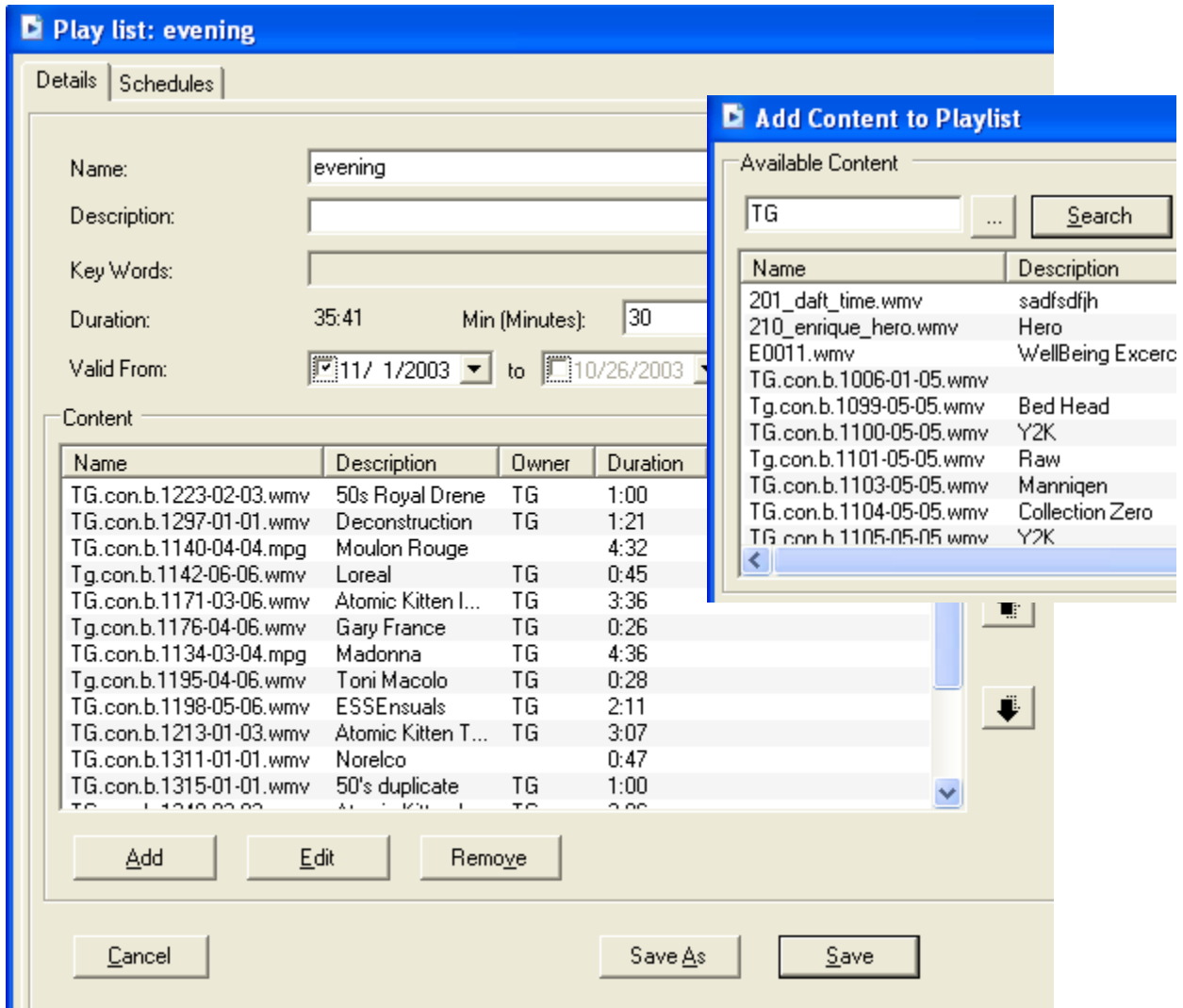
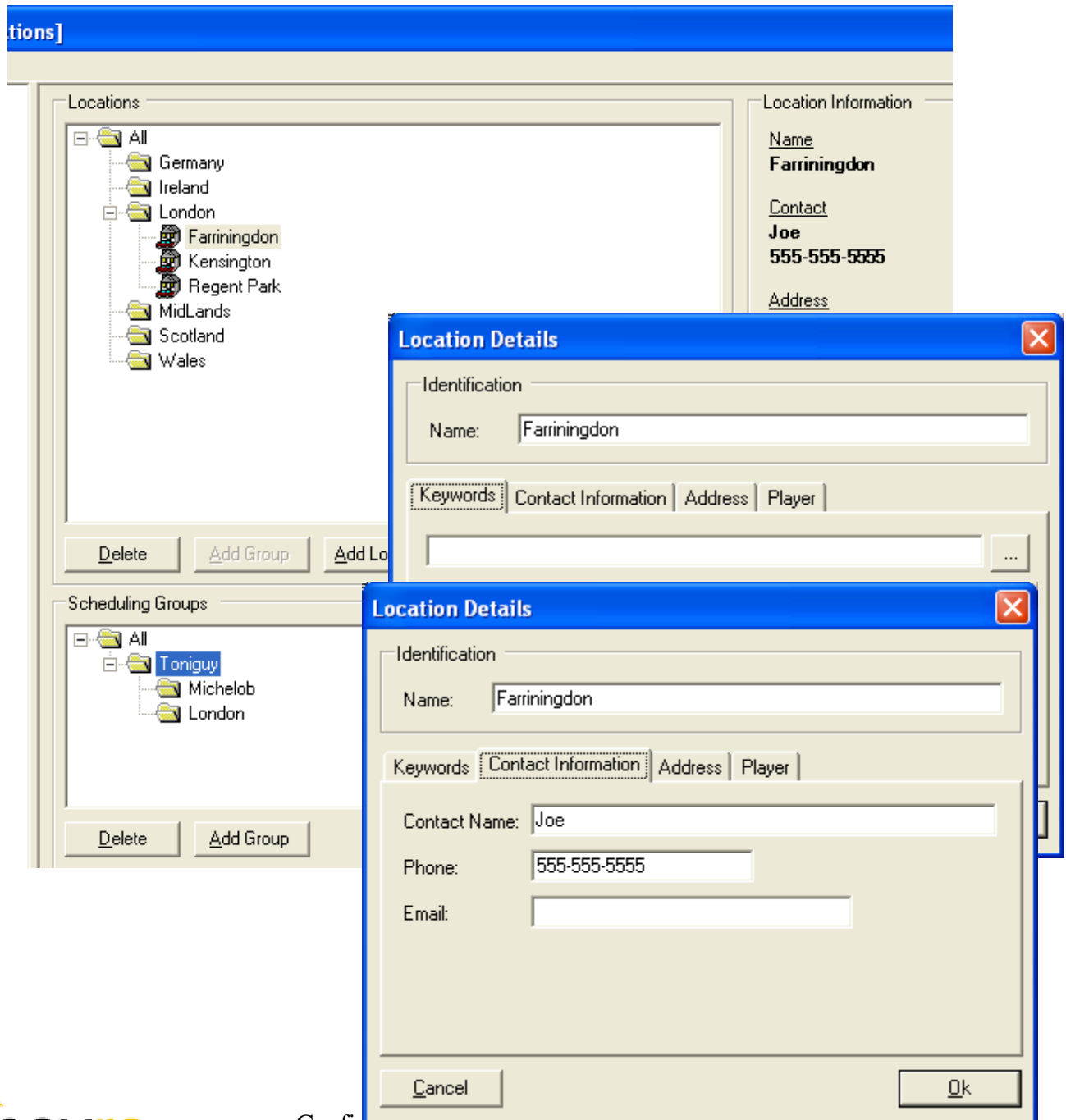


Figure 5 : Creating Playlists

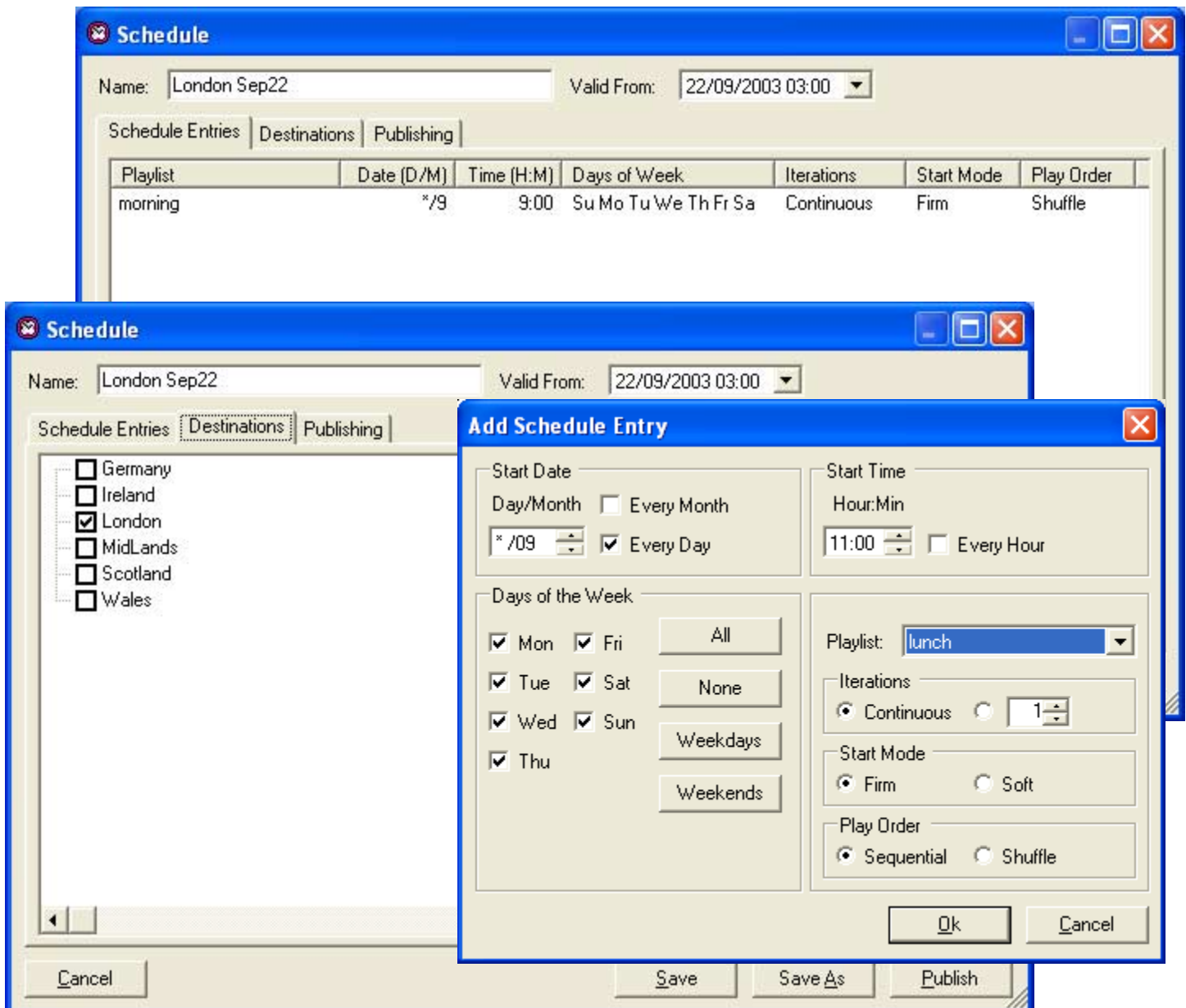
## Player/Location Management

Your network of locations can be easily managed through a simple management interface. With this application you can define all of your locations along with important contact details, player id and important keywords. Locations can then be grouped together easily for purposes of scheduling and other mgt functions.



## Content/Location Scheduling

Schedules are created as required for location groups. Each schedule can incorporate single or repeating playlist events. New events can occur every minute and allow for soft or firm playlist startup. Multiple schedules can be worked on using the backup and restore feature along with different “valid from” dates. Schedules that are delivered early are only activated when the valid from date/time occurs.

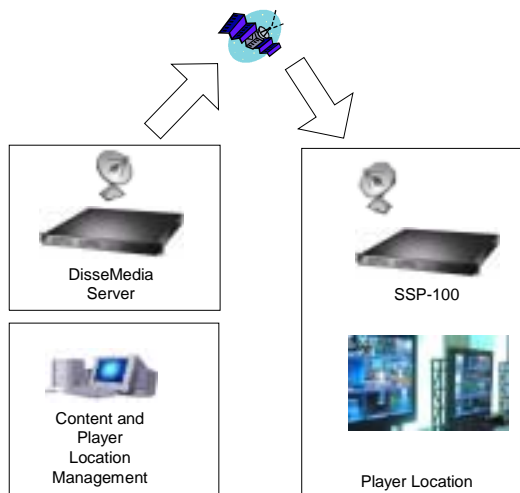


## Content Distribution Services

### Overview

NovraLink's DisseMedia server is used for multicast content distribution over DVB transport streams or multicast enabled IP networks. It is preconfigured for bandwidth requirements of your operation. Typically there is a high speed channel for content and a high priority low speed channel for control information. Once this configuration is complete there is no need for a content publisher to access the DisseMedia screens.

Novralink Servers can also act as update servers to broadband players (cable/DSL IP networks). In this type of configuration the players can be scheduled to check for updates or the server can push content as needed.



### Multiple Networks/Providers

DisseMedia supports multiple player networks. Content and control information for each network is securely stored in separate locations on the server. Bandwidth for each of the separate networks can be shared according to agreed on bandwidth requirements that specify a minimum and maximum speed for both of the content and control channels for each provider.

### Content Retransmission

Using the missing file reports from the receivers, one can decide to retransmit one or more files. This is simply accomplished by selecting upload for each of the individual media items.

If required, the optional DisseMedia retransmit module will automatically process the missing file reports and retransmit files.

### Player Scripts and Upgrades

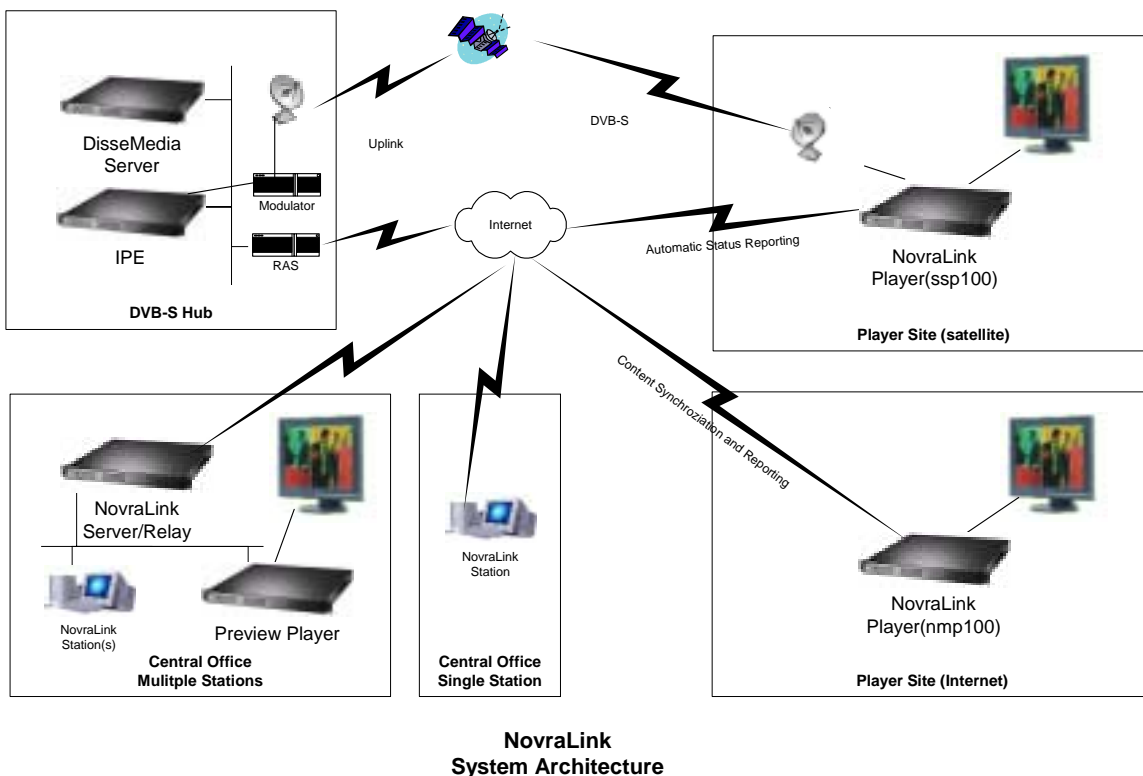
When new features are required for the player network, NovraLink provides the capability to send player updates that will automatically upgrade some or all player units.

## Novralink Architecture

Novralink is an integrated family of flexible robust components that can be integrated together to meet specific requirements of a particular service provider and/or requirements of the end user network.

Generally, satellite distribution (via DVB-S) is the recommended distribution architecture. However there are cases where an Internet distribution system is suitable. For example, when there are a small number of players or when some sites are unable to get approval for a satellite dish.

Distribution of Novralink information is available in either a push or pull configuration between the Novralink Server/relay and a NMP (Network Media Player).



## SSP-100 Receiver Player Units

The SSP100 integrates novra's core receiver and reliable multicast file delivery technology into a high-quality broadband media player. Designed to work with novra's DisseMedia product, each SSP100 in a network is able to receive multicasted media files, playlists, schedules, and executable scripts with one transmission from the DisseMedia multicast server. Once the transmission is received, the SSP100 is able to play the scheduled audio and video files out onto plasma displays, television or computer monitors. The SSP100 is compliant with industry standards such as DVB-S, IP Multicasting, and TCP/IP protocols. It plays out a variety of common media formats including; avi, mp3, wmv, flash, powerpoint, to name a few. With unattended operation in mind, the SSP100 was designed on a robust platform with a hardware watchdog timer, embedded operating system and dial-in and dial-out capability.

### *Applications*

The SSP100 is a standalone appliance that is perfectly suited for a wide range of media distribution applications. Network operators and service providers can cost-effectively deliver media files, play lists and schedules over non-real time bit rates to a network of SSP100 units. All SSP100s in the group will then play out the content under scheduled control, to a variety of display types including; point-of-information kiosks, gaming kiosks, in-store displays or public digital display signs. With the SSP100 and the DisseMedia multicast server, a service provider can deliver applications such as specialty programming and targeted advertising to retail stores, pop videos and music to public areas or public service information to health care offices.

### *Features*

- Robust Unattended Operation
- Excellent graphic and sound display quality
- Compatible with ever growing list of media files
- Remote Monitoring and Management
- Local Messaging Options
- Hardware Watchdog
- DVB and TCP/IP Compliant
- Remote script execution capability
- Live software upgrades and management



## Advertising Campaign Support

Many new media applications are driven by revenue generating advertising model. In this case Novralink allow complete support for entering detailed playout contracts for media pieces by location and time. Typically this advertising database needs to be honored with playout audit information and without complex scheduling. Novralink provides a data driven ad campaign management system where the ad contract details are sent to the correct players that play the content at the requested times. This capability can be thought of as a television ad insertion being done right in the person's home.

The screenshot shows a web-based interface for configuring an advertising campaign. The window title is "[Campaigns]". The main heading is "litten Network BMW July Campaign". Below the heading are two buttons: "View existing campaigns" and "Create a new campaign".

**Item Information:**

- Name:
- Location Group:
- Media:  >>Select media | >>Specify no media
- Duration:  seconds

**Schedule:**

**Play between:**

- Start time:  :
- End time:  :

**Over time period:**

- Start date:
- End date:

**Play on:**

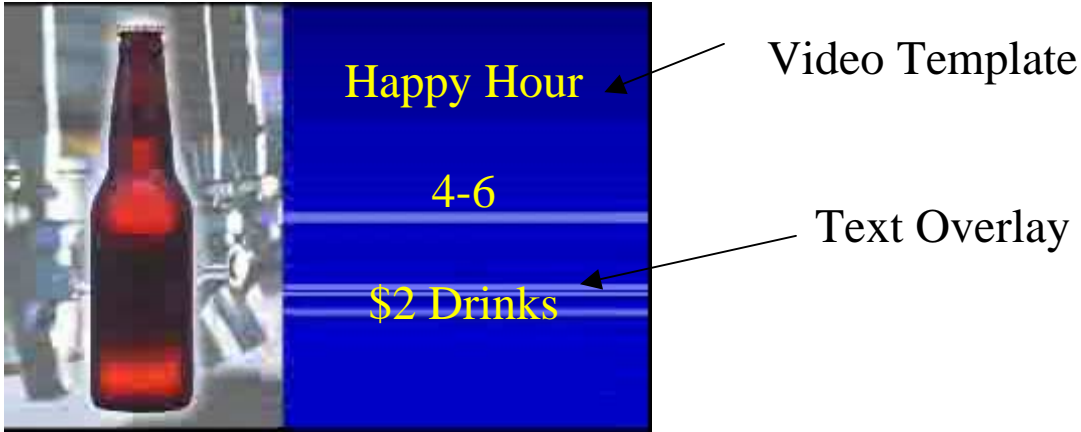
- Mon
- Tue
- Wed
- Thu
- Fri
- Sat
- Sun

**Spots/hour:**

Buttons:

## Local Messaging

Another example of location interaction supported by Novralink players is the local messaging feature that allows local operators (eg bars/clubs/retail specials) to promote local events specials using professional video backgrounds and local text messages.



The management of the messages is achieved through a simple to use web application hosted by the player. This application allow the user to select video templates, enter the message and choose timing by date and time and frequency.

View existing messages    Create a new message

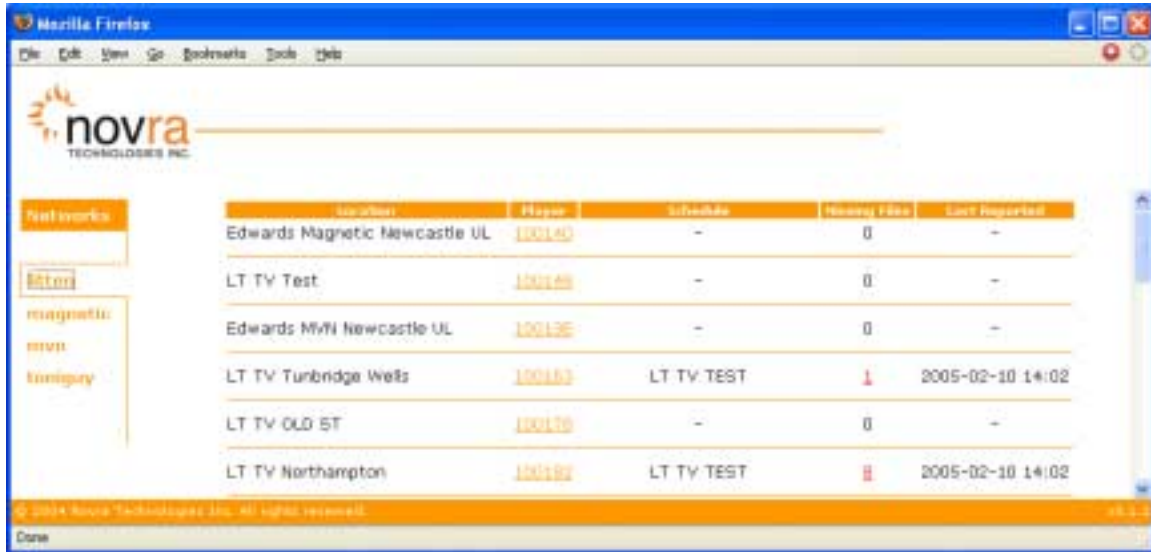
Delete selected messages    Enable selected messages    Disable selected messages

Cancel messages by date    Cancel messages by name

<input type="checkbox"/>	Template	Start Time	End Time	Start Date	End Date	Played on	Minimum gap	Message Text	
<input type="checkbox"/>	Food 2b (Fixed txt - Steak & table service version)	13:30	19:00	Jan 13 2005		Mon Tue Wed Thu Fri Sat Sun	0 min		Modify
<input type="checkbox"/>	Food 2b (Fixed txt - Steak & table service version)	13:30	19:00	Jan 13 2005		Mon Tue Wed Thu Fri Sat Sun	0 min		Modify
<input type="checkbox"/>	Food 1a (Fixed txt - Burger version)	15:00	17:00	Jan 13 2005		Mon Tue Wed Thu Fri Sat Sun	0 min		Modify
<input type="checkbox"/>	Food 2a (Fixed txt - Steak version)	17:00	20:00	Jan 13 2005		Mon Tue Wed Thu Fri Sat Sun	0 min		Modify
<input type="checkbox"/>	Food 1b (Fixed txt - Burger & table service version)	12:00	13:30	Jan 13 2005		Mon Tue Wed Thu Fri Sat Sun	0 min		Modify
<input type="checkbox"/>	Food 1b (Fixed txt - Burger & table service version)	12:00	13:30	Jan 13 2005		Mon Tue Wed Thu Fri Sat Sun	0 min		Modify
<input type="checkbox"/>	Cocktail (Fixed txt)	17:00	23:59	Jan 13 2005		Mon Tue Wed Thu Fri Sat Sun	0 min		Modify
<input type="checkbox"/>	Events 1 - Men in Suits (Fixed txt)	18:00	19:00	Jan 13 2005		Mon Tue Wed Thu Fri Sat Sun	0 min		Modify
<input type="checkbox"/>	Events 1 - Men in Suits (Fixed txt)	18:00	19:00	Jan 13 2005		Mon Tue Wed Thu Fri Sat Sun	0 min		Modify
<input type="checkbox"/>	Events 1 - Men in Suits (Fixed txt)	18:00	19:00	Jan 13 2005		Mon Tue Wed Thu Fri Sat Sun	0 min		Modify

## Logging Server

Using a TCP/IP compliant return channel, a player network can be configured to provide regular updates to the Novralink Server. Using a simple web browser your operations staff can be fully informed of the current status of all player units in the field. This data includes full media playout details for input to a advertising audit or billing system.



The screenshot shows a web browser window displaying the Novra Technologies Inc. interface. The interface includes a navigation menu on the left with options like 'Networks', 'Eaton', 'magnetic', 'nova', and 'tamigay'. The main content area displays a table with the following data:

Location	Player	Schedule	Missing Files	Last Reported
Edwards Magnetic Newcastle UL	100140	-	0	-
LT TV Test	100140	-	0	-
Edwards MRI Newcastle UL	100130	-	0	-
LT TV Tunbridge Wells	100183	LT TV TEST	1	2005-02-10 14:02
LT TV OLD ST	100170	-	0	-
LT TV Northampton	100181	LT TV TEST	1	2005-02-10 14:02

## Contact

For more information visit our web site [www.novra.com](http://www.novra.com) or send and email to [info@novra.com](mailto:info@novra.com).