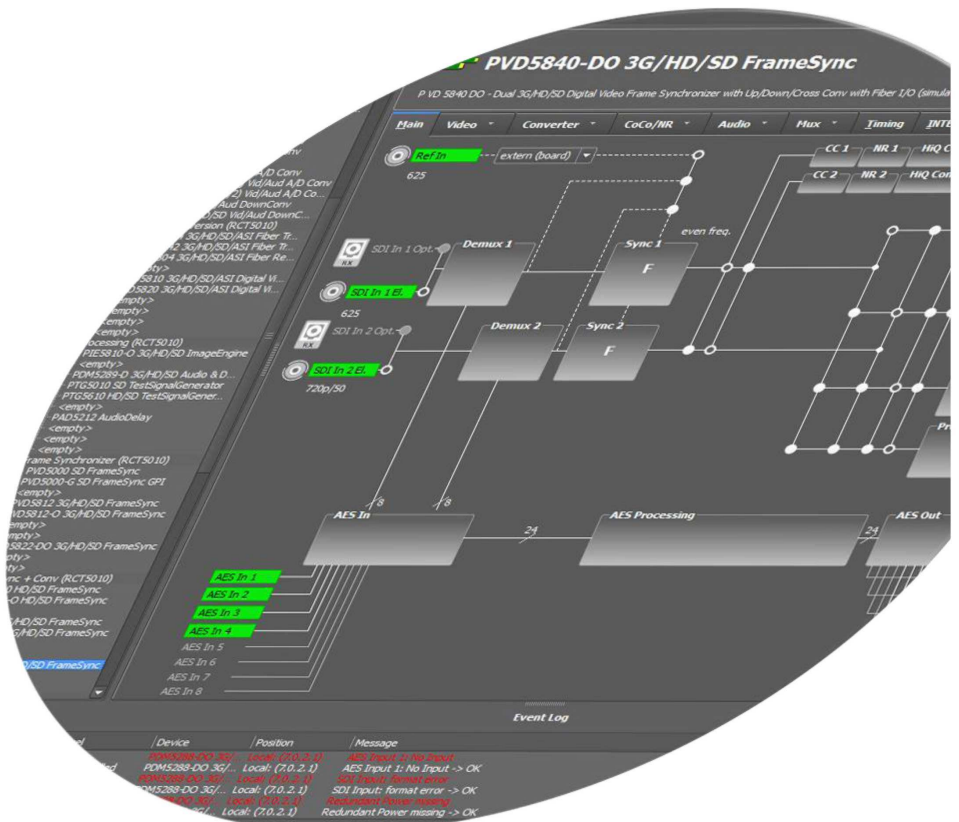**LYNX**Technik **AG**®
Broadcast Television Equipment

APPolo | Control™

Redundant Servers   User Guide

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Contents

APPolo Control and Signal Processing

A typical LYNX Technik Series5000 Signal Processing System consists of RackFrames with boards, Rack-Controllers, and the APPolo Control System.

The broad portfolio of Series5000 Signal Processing includes solutions for: conversion, distribution, embedding / de-embedding, frame-synchronization, video processing and fiber optic transport. Each RackFrame accommodates up to ten signal processing boards, allowing you to mix-and-match depending on your application and infrastructure requirements.

Figure 1: LYNX Technik Series5000 connected to APPolo Control System

The APPolo Control System is a fully integrated, intelligent, and pro-grammable automation system for the LYNX Technik Series5000 Signal Processing solutions. All LYNX Technik modules are APPolo-ready. They include fully integrated
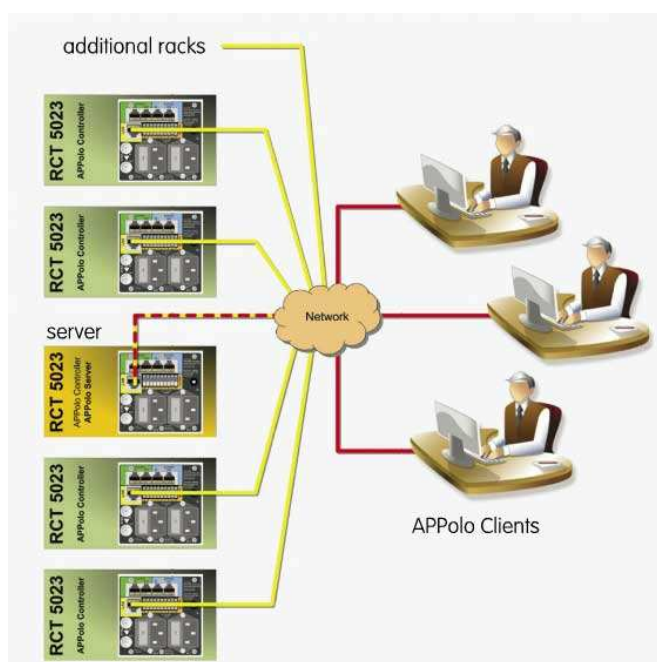
support for APPolo, and can either be used with the APPolo Control System or as standalone modules.

Each Series5000 RackFrame requires a RCT 5023 RackController to connect to the APPolo Control System. For large applications, an optional dedicated APPolo Control SERVER runs the APPolo System Software, making it a central and vital part of the APPolo Control System. The RackController and the APPolo SERVER are logically attached to each other via an IP network. All APPolo users, as well as any 3rd party Master Control system can connect to the APPolo Control SERVER.

APPolo Server Redundancy

Since the APPolo SERVER serves as a fundamental part of the system, a backup and failover solution may be required for system servicing and functionality.

Users may add a second APPolo SERVER to a system, which serves as a backup or secondary server. In the case that the Primary APPolo SERVER is not available on the network, the Secondary APPolo SERVER takes over the active role, with all functionality. Therefore, even in the unlikely event of a failure of the Primary APPolo SERVER, the system's functions are always available.
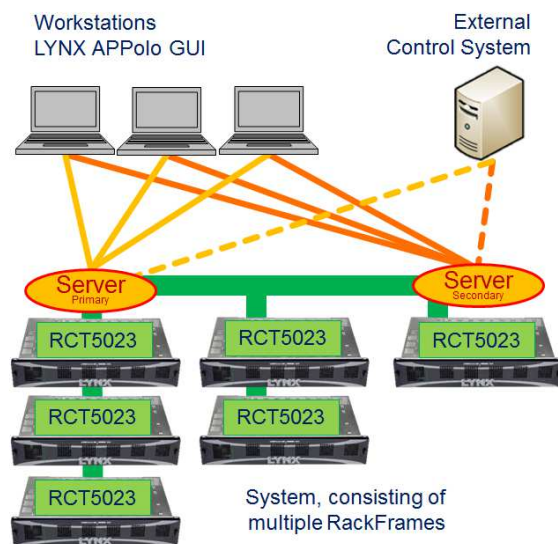
Figure 2: APPolo Control Redundant Servers

NOTE: Both servers operate under their own individual IP address. The entire system is accessible under two different IP addresses.

NOTE: The processing boards will continue to work even if the Primary APPolo SERVER is not available. In the event of a server failure, only the remote access (e.g. from the GUI) and additional system functions (e.g. AutoControl) will no longer be available.

The LYNX Technik Series5000 system will detect a failure of the Primary APPolo SERVER and automatically change control to the Secondary APPolo SERVER. The appropriate notifications and alarms will be provided to the user.

APPolo Control Server Operation & Hot Failover

Once a pair of APPolo SERVERs has been configured to work together as a redundant pair of servers, they are referred to as a **Cluster of Redundant Servers**. By default, the Primary SERVER has the ACTIVE role and the Secondary SERVER has the PASSIVE role. All control GUIs or external Control Systems are connected to the ACTIVE server. The PASSIVE server is in Hot Standby Mode and ready to become ACTIVE when required.

Figure 3: LYNX APPolo Control GUI Showing Cluster of Redundant Servers

The paired SERVERs are constantly connected, and when the Secondary SERVER cannot reach the Primary SERVER in the network for more than 15 seconds (this value can be adjusted), then the Secondary SERVER automatically switches to ACTIVE mode and takes over control of the complete system. The LYNX APPolo GUI as well as any Remote Control System will be notified of this switch and adjust its behavior accordingly.
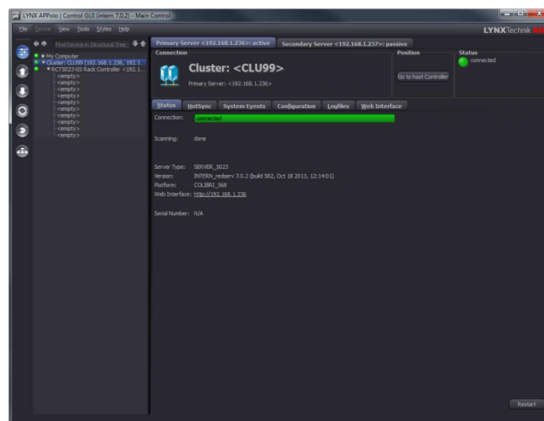
When the cluster of redundant servers goes into Failover Mode, the entire system will continue to work as usual and the user will be able to access all services and functions. Notification of failover mode is provided via the GUI, Remote Control, and SNMP functions, and provides the administrator with the cause of the problem so that they can take appropriate measures to fix it.

When the Primary SERVER is back on the network, the administrator uses the LYNX Control GUI to change control back to the Primary SERVER.

The administrator can manually assign active control to either the Primary or Secondary SERVER during planned maintenance schedules.

Synchronization of Configuration between Servers

Once a pair of servers has been configured as a cluster of redundant servers, the current configuration of the ACTIVE SERVER (by default: the Primary SERVER) will automatically be mirrored to the PASSIVE SERVER (by default: to the Secondary). This is how the passive backup server is always up to date with the latest configuration changes that have been applied to the system. This process is completely automatic. No manual operation is required to keep the two servers in sync.

Should the user need to switch the ACTIVE operation from the Primary to the Secondary Server, the Series5000 system will continue to operate within the same configuration.

Setup & Configuration

As part of the creation of a cluster of redundant servers, two existing and independent servers need to be identified as the Primary SERVER and the Secondary SERVER respectively. The complete current configuration of the Primary SERVER will be copied into the Secondary SERVER, discarding any previous configuration settings on that SERVER. The user will define a cluster name, and the complete system will be visible under this name as one system within the LYNX APPolo GUI.

NOTE: A cluster can only be defined if at least one of the participating servers has the appropriate software option enabled. See section on Licensing & Software.
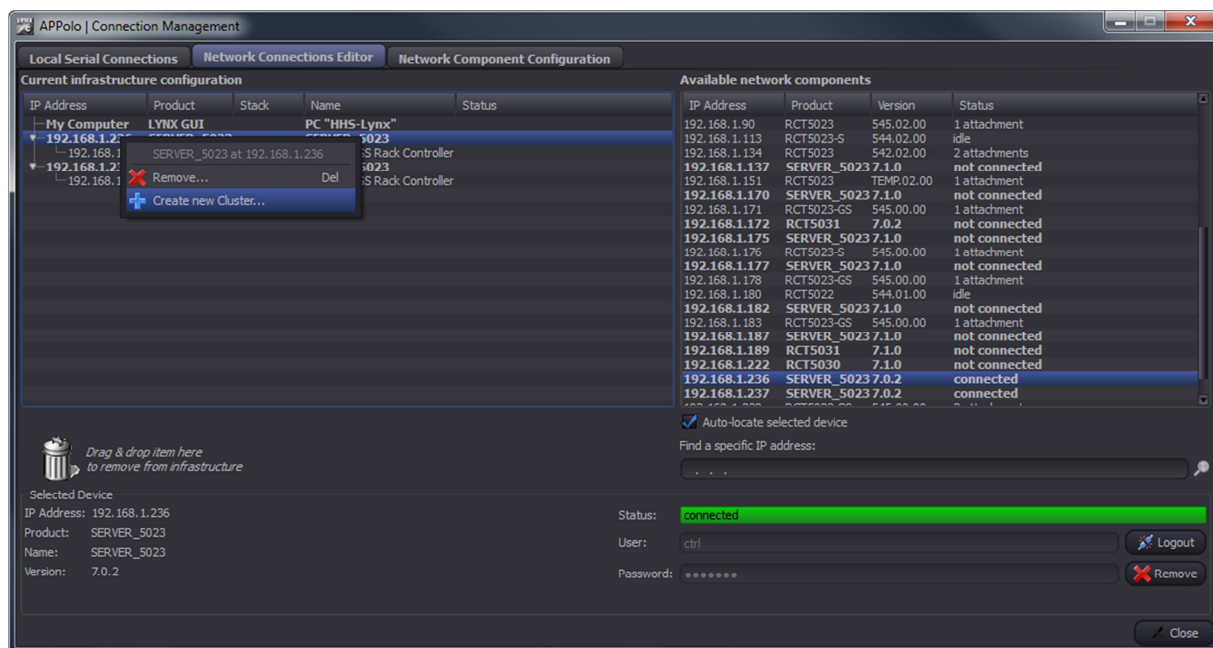

Figure 4: Connection Manager – Creation of a new Cluster of Redundant Servers

Removing a Cluster of Redundant Servers

An existing cluster of redundant servers can be removed by the Administrator, resulting in two servers that are no longer connected or clustered. After this breaking up of a cluster, no automatic synchronization of data and no automatic failover will take place anymore. To remove a cluster of redundant servers, right-click the "Context" Menu of the cluster in the "Connection Manager" dialog.
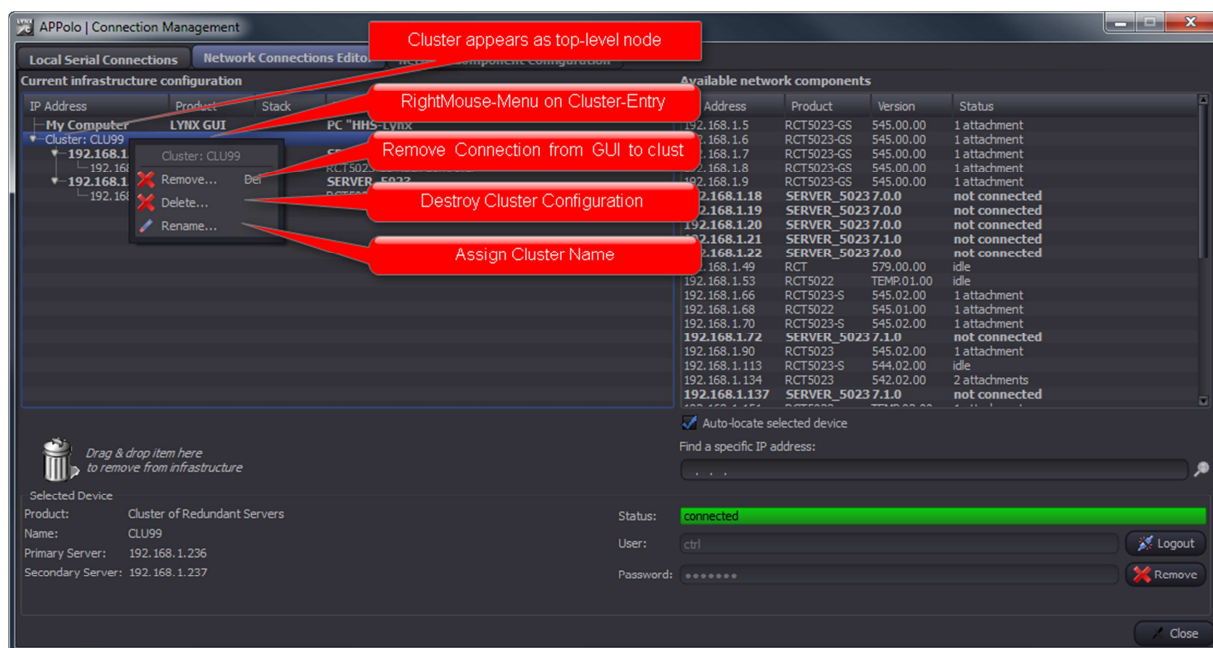

Figure 5: Connection Manager - Removing a Cluster of Redundant Servers

Step-by-Step Instructions: Create a new Cluster

1. Open the "Configuration Manager" dialog from the "Tools" menu

2. Open the "Connection Manager" tab (middle tab).

3. Generate a regular connection to both servers by dragging these servers from the right list (available components) into the left area (current configuration)

4. Right-click one of the servers and select "Create new Cluster"

5. Specify a name for the new cluster and select primary and secondary servers

6. Click "Create" and specify an administrator password to complete the process

Step-by-Step Instructions: Delete a Cluster

1. Open the "Configuration Manager" dialog from the "Tools" menu

2. Open the "Connection Manager" tab (middle tab).

3. Click the Right-Mouse-Button onto the named "Cluster-Entry"

4. Select the "Delete" function.

APPolo Control Server Licensing & Software

A cluster of redundant servers can only be defined if at least one of the participating servers has the software option OC_SERVER_REDUNDANT enabled. Software options are enabled on the "Options" tab of the individual server.

Shared Software Options

Individual software options (such as AutoControl, RemoteControl etc.) are shared between the SERVERs in a cluster. For example: if the Primary SERVER has the AutoControl option enabled, and the Secondary SERVER has the RemoteControl option enabled, both of these options will be available on both servers while they are configured as a common cluster. Even if one of the servers in the cluster is not available (e.g. in a failover situation), then the remaining server will offer the functionality of all the shared options in the cluster.

When the server cluster is removed (i.e. when the individual servers are set back to work individually), then the servers will discard all shared options and maintain only those options that were natively enabled on each individual server.

Configuration Parameters

The following list of server parameters is relevant for the configuration and management of a server cluster. These parameters are available on the LYNX RemoteIF and SNMP remote control interfaces as "Base Parameters" of the server. Regular update mechanisms apply, for example: the parameter "Server Is Active" can be subscribed to so that it will send an update callback on each parameter change.

Remote control parameters can be accessed and used by an external remote control system to check the status of a server cluster.

PARAMETER	DESCRIPTION	COMMENT
ServerIsClustered	Returns TRUE or FALSE	
ServerIsActive	Returns TRUE or FALSE	TRUE if not clustered
CLUSTER_NAME	Returns cluster name	Empty if not clustered
CLUSTER_PRIMARY_SERVER	Returns IP address of primary server in current cluster	Empty if not clustered
CLUSTER_SECONDARY_SERVER	Returns IP address of secondary server in current cluster	Empty if not clustered

Please contact _support@lynx-technik.com_ for more information on the LYNX RemoteIF protocol and general information on remote control access to your LYNX Control System.

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