



# R-Series Media Servers

## Operating R-Series Media Servers

User Guide



# Operating R-Series Media Servers : User Guide

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E: [info@7thsense.one](mailto:info@7thsense.one)  
W: 7thsense.one

7thSense Design Ltd  
2 The Courtyard, Shoreham Road  
Upper Beeding  
Steyning  
West Sussex  
BN44 3TN  
UK

T: +44 (0) 1903 812299

7thSense Design LLC  
4207 Vineland Rd  
Suite M1  
Orlando, FL 32811  
USA

T: +1 407 505 5200



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## Introduction

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R-Series Servers are custom-built, configured to meet specific user requirements. This Guide covers all the common hardware features. For user guides on Delta, Compere<sup>®</sup>, Actor<sup>®</sup> and Conjurer<sup>®</sup> software and connectivity, media and server management, please see our [Online-Help](#) pages.

All servers are supplied with the appropriate Hardware User Guide. Copies of these can also be found on the [7thSense User Portal](#)

For Delta Media Servers, see [Operating Delta Media Servers](#)

## Installation

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### Unpacking

Unpack your server carefully onto a clean and level surface and examine it for any signs of transit damage. Contact your supplier immediately if anything appears to be damaged, or any parts missing. Please retain all packaging in case of future need to return a server.

### Supplied accessories

In your white accessories box, you will have:

- power cable
- server motherboard manual
- spare pair of front panel air filters
- 2 × rack rails and screws

Depending on specification, HDMI / DVI adapters may be included.

### Lifting

The weight of your R-Series server is stated on the server's product label and may require a two-person lift, especially when manoeuvring one into a rack. Observe your internal manual handling recommendations to avoid injury.

### Rack Mounting

The front panel fascia must first be removed before mounting in a rack.

**Note:** Once mounted, sufficient finger access should be allowed in the rack sides to again remove the fascia for maintenance.

R-Series media servers are supplied with rack mount slide rails and fixings. To fit the rails supplied, follow the instructions included with the rails.

Remove the plastic front fascia before mounting. Two small cross-head screws retain the plastic fascia panel, to the bottom left and right. Locate and remove these before attempting to remove the fascia.



After removing the two screws, pull the fascia forwards and straight off the unit. It is retained by four push-fit fasteners. Refit the fascia after mounting. Where side access is restricted for unranking, a 7thSense tool is available to insert into the grille. Take care not to damage the grille with other tools, or force when removing.



Secure the unit to the rack using two rack bolts to each side. Ensure that each server is properly secured to the rack cabinet.

Replace the fascia and secure using the two screws previously removed.

### Rack Stability Precautions

- Ensure the rack is stable (e.g. bolted to the floor) before sliding out the server.
- Do not place objects on equipment projecting from a rack (e.g. do not use as a shelf).
- Only slide out one piece of equipment from the rack at a time.

### Connecting External Equipment

To ensure best performance from the server and compliance with relevant EMC regulations, this equipment should only be used with high-quality shielded data and signal cables.

Only equipment and accessories approved to IEC 60950-1 and SELV circuits may be connected to the server. All equipment and accessories shall comply to the relevant standard for the server's port to which it is connected.

## Environment

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- R-Series media servers should be operated in a clean, dry, dust-free area.
- The server is intended for operation in benign environments; that is, not subject to corrosive or explosive atmospheres, moisture or flammable gases. The server is non-protected against ingress of liquid (IPx0).
- The server is not designed to be subject to excessive mechanical shock or vibration.
- This equipment is not suitable for use in locations where children are likely to be present.



Only used at altitude not exceeding 2000 m



Only used in not-tropical climate regions

## Thermal

Do not block any of the server's air vents and ensure the ambient temperature around the server is compatible with the environmental characteristics stated below.

Particularly when mounted in a rack cabinet with front or rear doors the ambient temperature around the server may be higher than the ambient room temperature.

## Electrical

Before connecting power to the server, ensure that electricity supply is compatible with the electrical ratings stated on the server's product label. The server shall not be connected to an IT (unearthed neutral) power distribution system and the mains socket-outlet used shall connect to the building installation ground.

The server is connected to and disconnected from the mains supply with the two IEC 60320 power connectors on the rear of the unit.

## Care and Maintenance

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### Cleaning

External casing and the front panel should be carefully wiped with a soft cloth and antistatic solution.

### Air filters

User-serviceable air filters are located behind the server's front panel fascia. It is important to remove and clean or replace the filters periodically to avoid overheating. R-Series media servers are supplied with one pair of spare filters, others can be supplied by 7thSense. Servers should not be run without filters, since accumulations of dust inside the server can affect performance.

Before removing any filter, power the server down. This will avoid disturbing dust, which can then be drawn back into the server.

Two small cross-head screws retain the plastic fascia panel, to the bottom left and right. Locate and remove these before attempting to remove the fascia.



After removing the two screws, pull the fascia forwards and straight off the unit. It is retained by four push-fit fasteners. If the fascia sides are inaccessible, plastic hooks are provided to pull the fascia off (see [Installation](#) <sup>5</sup>).

The two filter pads can be lifted out for cleaning or replacement. One side has a cutout for the power switch.





## Internal maintenance

There are no internal user-serviceable electrical parts.

## Electrostatic discharge (ESD)

When handling electronic assemblies, take precautions to avoid electrostatic discharge (ESD) causing damage. Precautions should include the wearing of an ESD protective wrist strap and using antistatic bags for electronic assemblies when not installed in any equipment.

**Warning:** Do not operate the server with any covers removed as the air flow through the unit will be compromised and may lead to overheating. The lid of the server forms an integral part of the cooling circuit. Operation of the unit with the lid removed can cause overheating.

Any alterations to the product's specification, e.g. additional/alternative components, may invalidate the warranty or impact the unit's performance. Additionally, such changes or modifications could cause equipment no longer to comply with the relevant EMC regulations, and void the user's authority to operate the equipment. If in doubt, please contact your supplier.

## End of Service Life



Dispose of the equipment and any components in accordance with all local and national safety and environmental requirements.

## Rear Panel Connections

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### Cables and Connectors


To ensure best performance from the server and compliance with relevant EMC regulations, this equipment should only be used with high-quality shielded data and signal cables.

### DisplayPort Adapters and Nvidia GPUs

Users are recommended to use VESA standard cables and adaptors only: <https://vesa.org/about-displayport>. A maximum width of the moulding around DP connectors of 19.75 mm can be used for 4-output Nvidia GPUs.

### Audio connectors (3.5 mm TRS / mini stereo jack)

These are the Realtek® defaults as used in R-Series servers.

- |  |  |
|--|--|
|  5.1 / 7.1 Centre + Sub                   |  7.1 Side L+R if grey is optical out – or Line in |
|  5.1 / 7.1 Rear L+R                       |  Stereo phones/speakers, or 5.1 / 7.1 Front       |
|  7.1 Side L+R, or position of optical out |  Mic  |

Double-click a connector's graphic in Realtek HD Audio Manager to enable the auto pop-up dialog. This enables you to choose which device has been plugged in, for example to assign the blue socket to 'Side Speakers Out' rather than 'Line In'.

### Audio (stereo) TRS plug connections

Tip = Left channel

Ring = Right channel

Sleeve = Ground (common)

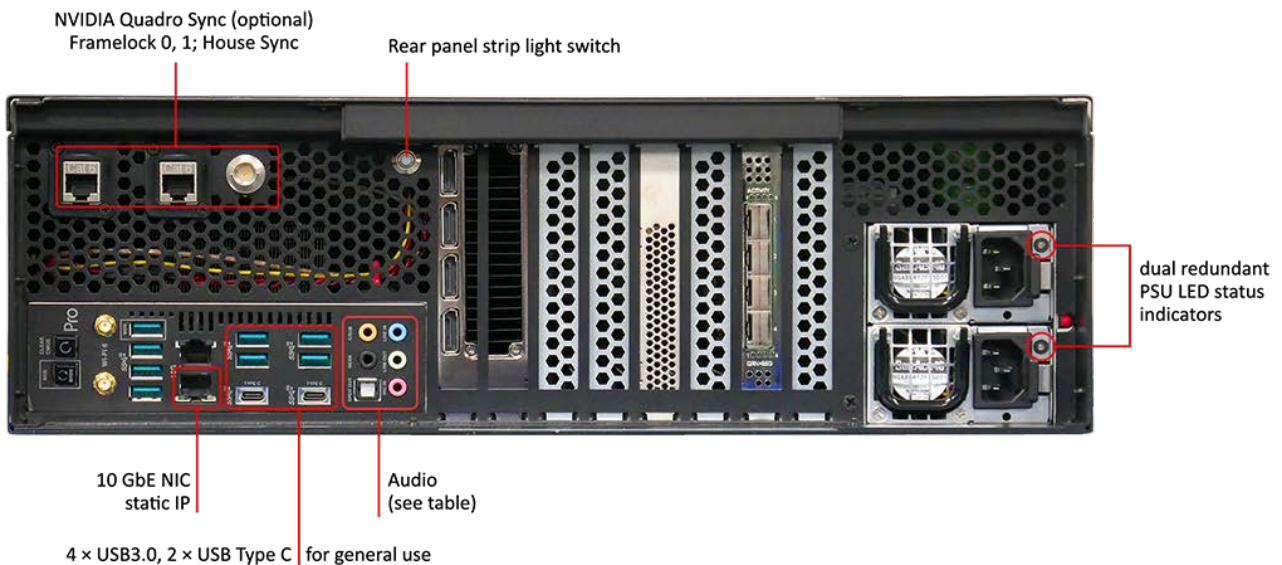
Channel identifier		Socket colour	TRS connection	7.1 speaker config	5.1 speaker config
1	FL	Green	Tip+Sleeve	Front left	Front left
2	FR	Green	Ring+Sleeve	Front right	Front right
3	C	Orange	Tip+Sleeve	Centre	Centre
4	S	Orange	Ring+Sleeve	Sub	Sub
5	L	Blue	Tip+Sleeve	Side left	(unused)
6	R	Blue	Ring+Sleeve	Side right	(unused)
7	BL	Black	Tip+Sleeve	Rear left	Rear left
8	BR	Black	Ring+Sleeve	Rear right	Rear right

**Note:** if one of the motherboard audio channels is assigned to LTC, that motherboard channel becomes unavailable for output.

## Rear panel connections

R-Series 10 and R-Series 8 media servers are custom-built, with additional cards and connectors as specified for the user. These will be labelled. There is an LED light strip for the rear panel.

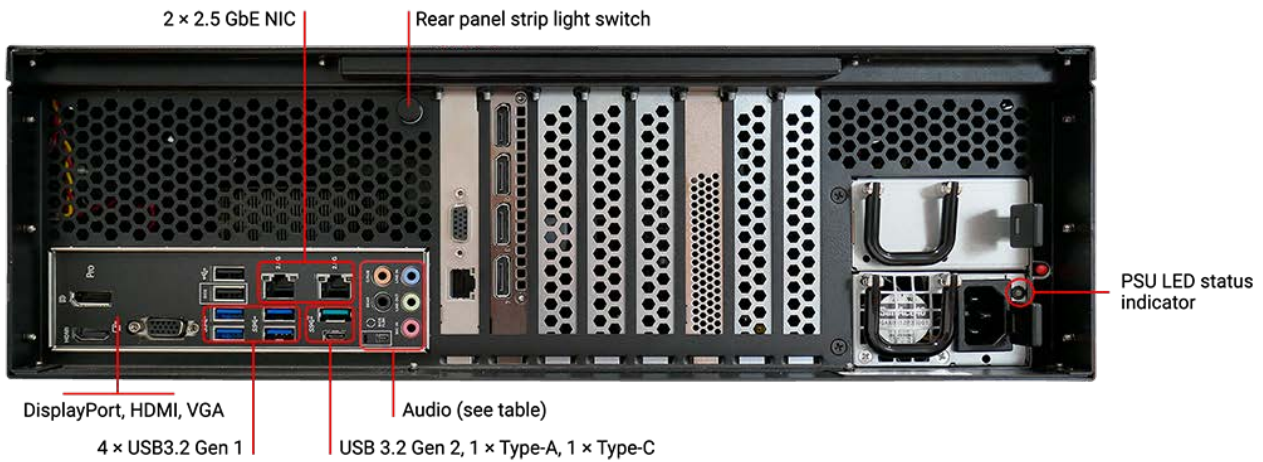
R-Series 10 servers (illustrated below) are fitted with dual redundant power supplies.



Both should be connected, since they operate in parallel. If one unit fails, the indicator light to the right of the failed socket will go to yellow and emit a high-pitched beeping sound. If only one PSU is connected, the other's indicator will show amber. Green LEDs indicate healthy PSUs.

Condition	LED status	Sound
Dual PSU, both good	Both green	none
Dual PSU, one PSU failed	Green-lit PSU good Yellow-lit PSU failed	Audible alarm from the power distribution board
One PSU unplugged	This PSU unlit	Audible alarm from the power distribution board
One PSU removed	N/A	Audible alarm from the power distribution board

R-Series 8 servers have a different motherboard and a single PSU, which can be withdrawn in the same way (see [Power Supply](#))<sup>13</sup>.



## Power Supply

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R-Series 10 servers are fitted with dual redundant removable power supply units (PSUs). These can be replaced only with exactly matched units as follows:

- **To remove:** Power down the server and then remove both IEC320 power connectors from the unit's PSUs.
- Press the PSU's release tab inwards and pull the handle to slide the power supply out of the server:



- **To replace:** Slide the replacement power supply into the server and push firmly until it fully clicks home.
- Refit the IEC320 power connectors and power on the server.

R-Series 8 servers have a single PSU, which can be replaced in the same way.



**Warning:** The IEC320 power connector should never be inserted into the PSU when the PSU is not fitted in a server.

## Front Panel

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The front panel has a '7' power push-button recessed into the fascia that lights when the unit is powered and switched on. All other control is via the touch screen display. This will initially show a landing page with information and options for the role the unit is playing: Delta, Actor or Conjurer.



The two USB 3 connectors can be used for peripherals (keyboard and mouse) or introducing software updates.

## Front Panel Control and Display

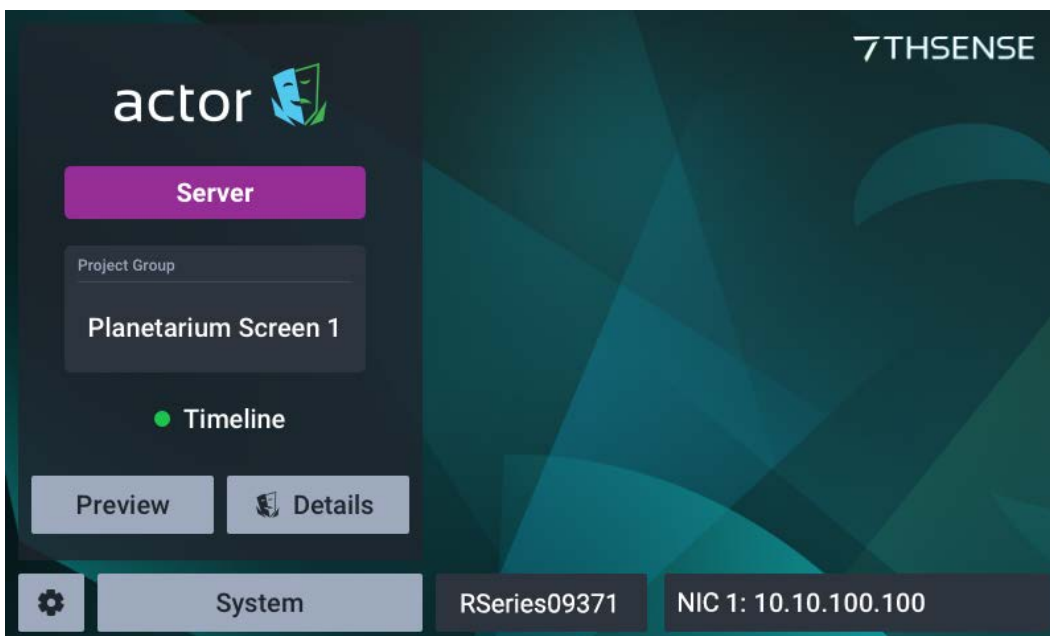
The front panel display is a touch-screen controller for the server, whether running as Delta, Actor or Conjurer. It is used for configuration, monitoring and play control. Touch and swipe navigation provides selection menus, and NDI media display in user-selectable layouts. The panel can itself be tested and calibrated.

All front panel display and controls are managed by the Watchdog app that runs alongside any Performer running on a R-Series server. This is accessible from the system tray icon: 

If the server app (Delta, Actor, Conjurer) is running and fails for any reason or is stopped, Watchdog will automatically restart it. To stop this action, click the Watchdog icon and select 'Disengage'. The auto-restart is resumed by selecting 'Engage'.

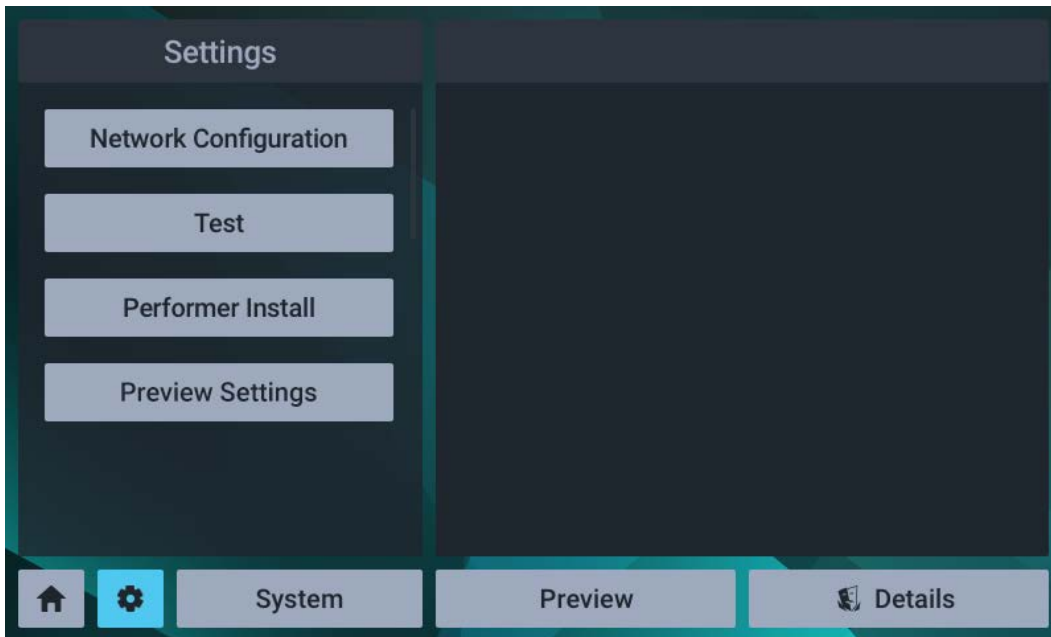
### Landing Page

The home/landing page for the front panel display shows what software (Compere 'performer') is running and in what role. For example, an Actor server will show this detail:



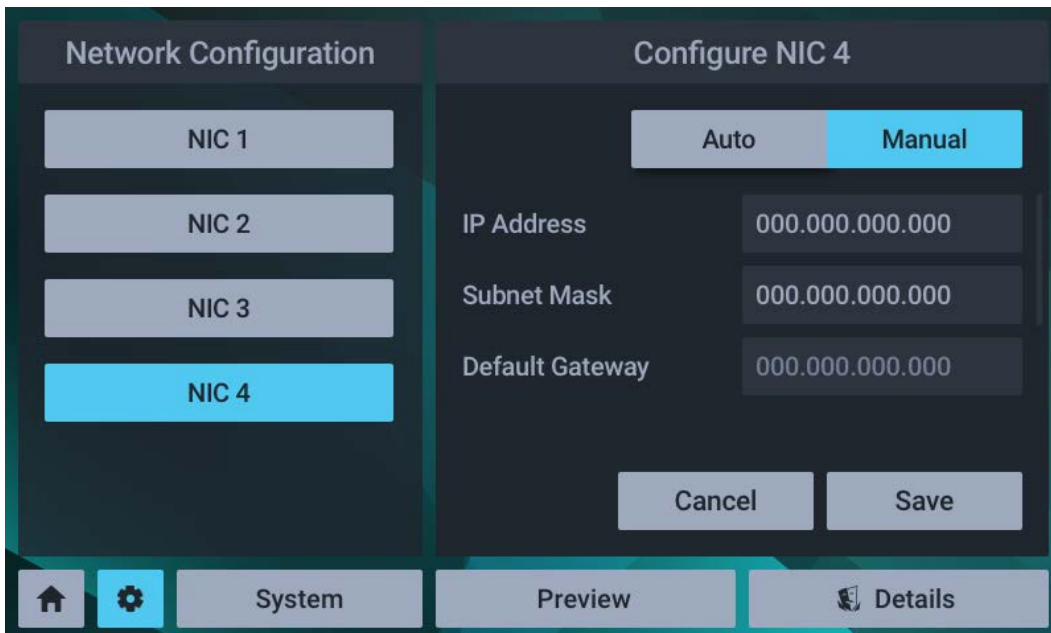
The other 7thSense Performer software that uses R-Series servers are Conjurer (a Compere 'performer') and Delta.

 Settings



**Settings > Network configuration**

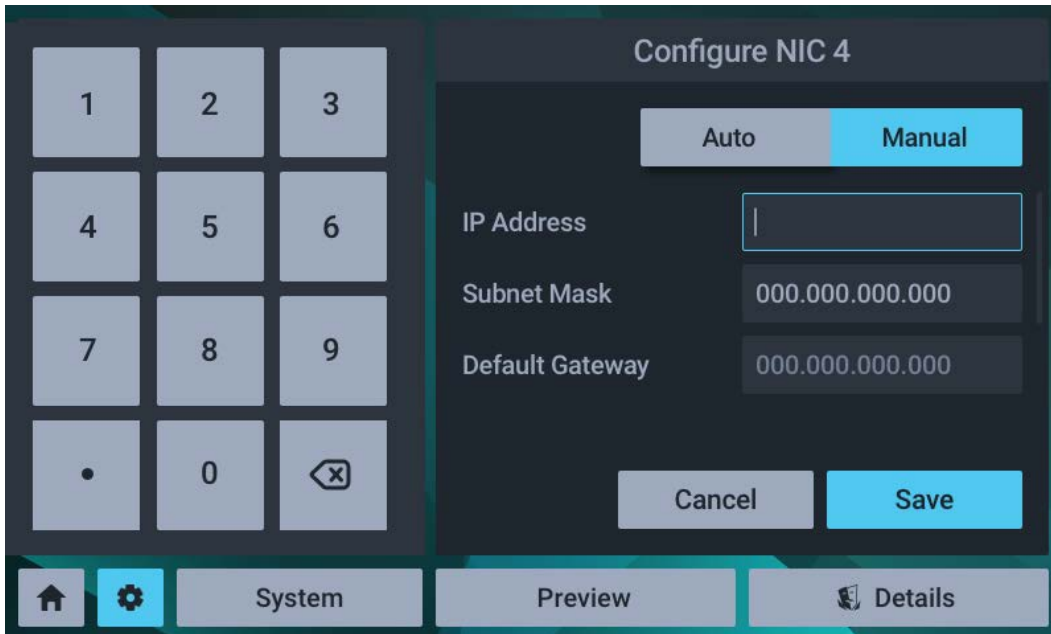
This shows all IP addresses and allows manual NIC configuration:



The NIC naming follows the 'friendly names' given in the software.

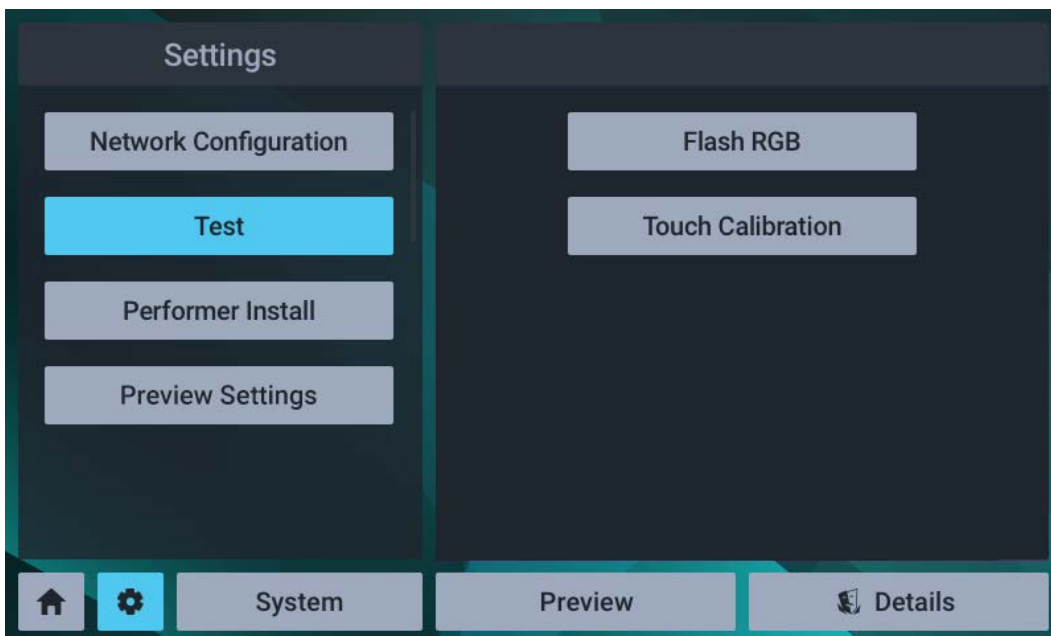


For manual edit of a selected NIC, select manual and click on the required field:



Edit the required octet(s) and save.

## Settings > Test



The **Test** button has two functions, to cycle all outputs once through solid red/green/blue, and to calibrate the touch function.

The touch calibration simply requires a touch to be traced across the range of the display panel:



If insufficient data is collected you will be prompted to try again, otherwise a success message will briefly be displayed.

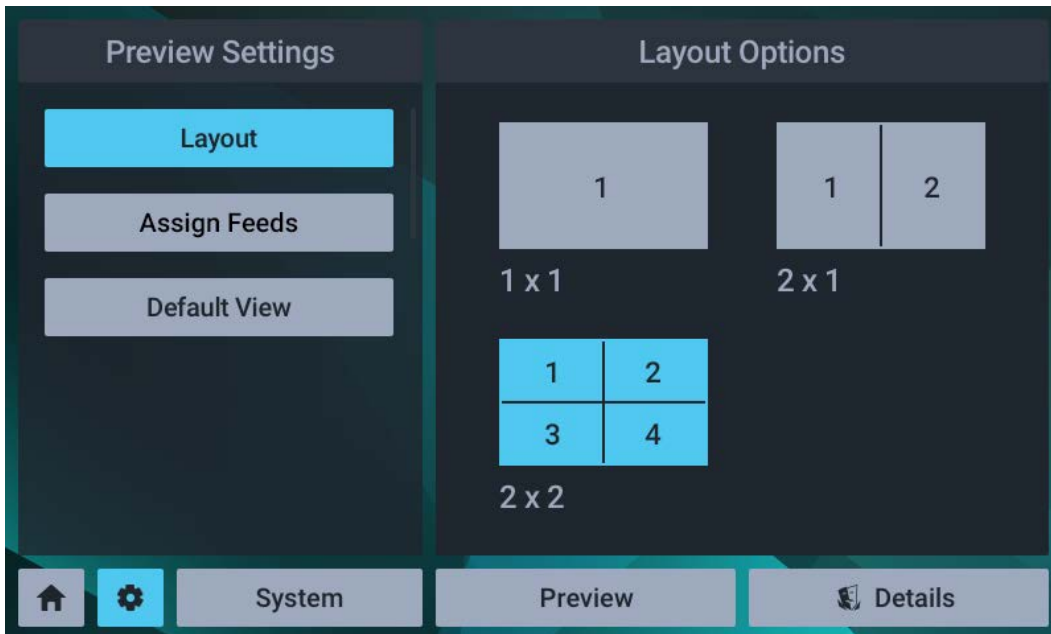
### **Settings > Performer Install**

This is a non-user service function for the configuration of the front panel to the installed Performer software (Actor, Conjurer, Delta).

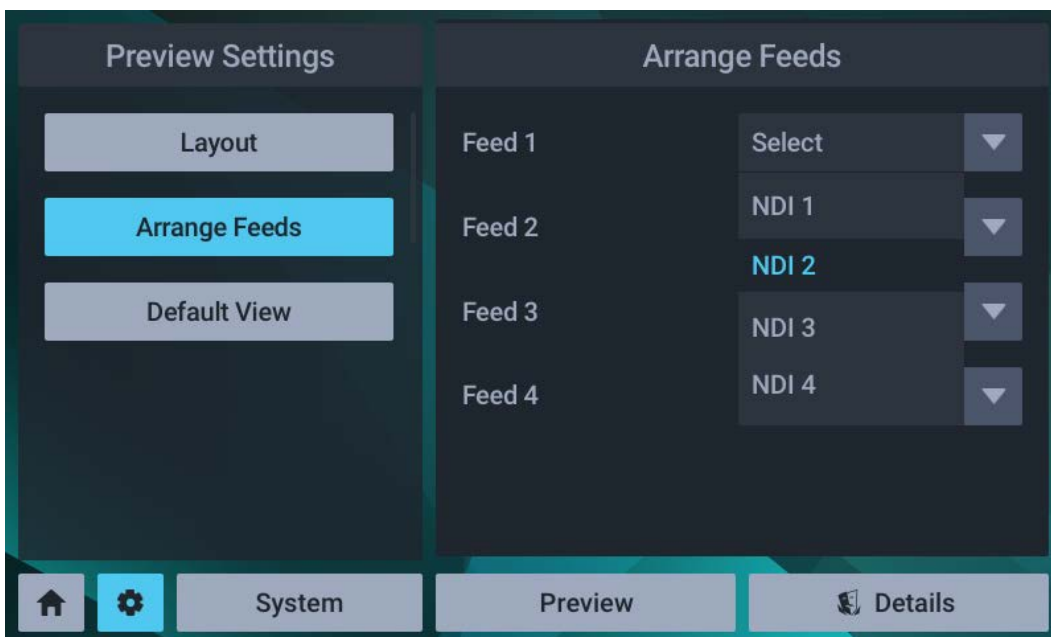
### **Settings > Preview Settings**

All NDI feeds available to the unit will be listed. Delta has only one NDI feed representing timeline playback, which will appear in the assigned position.

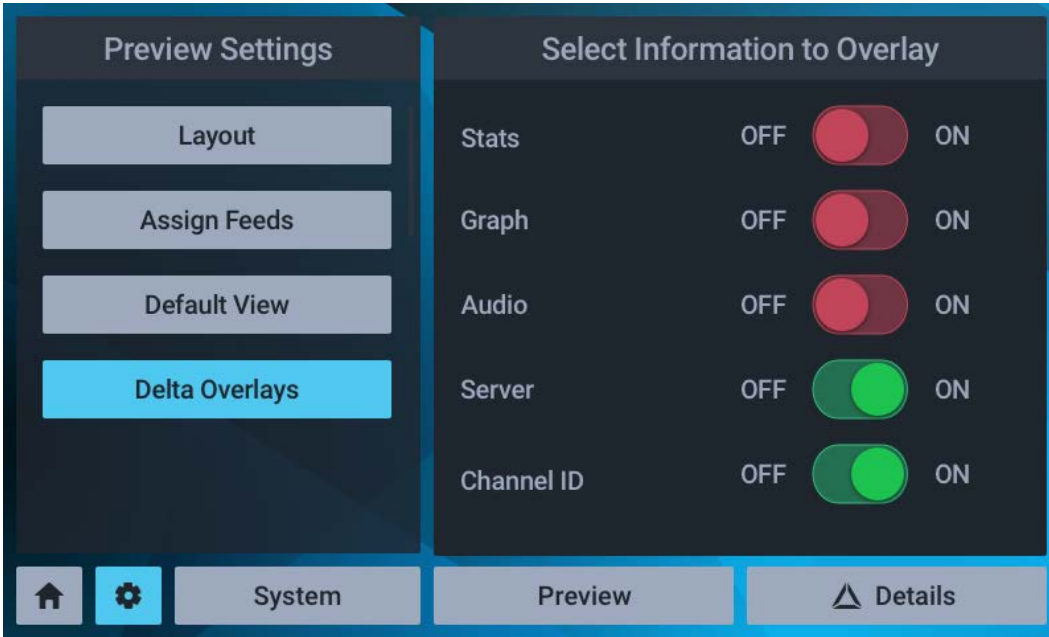
**Layout:** The display can show up to four available NDI feeds. Choose between 1, 2 and 4 feeds, laid out as shown:



**Arrange Feeds:** Allocate which NDI sources to assign to each part of the display.

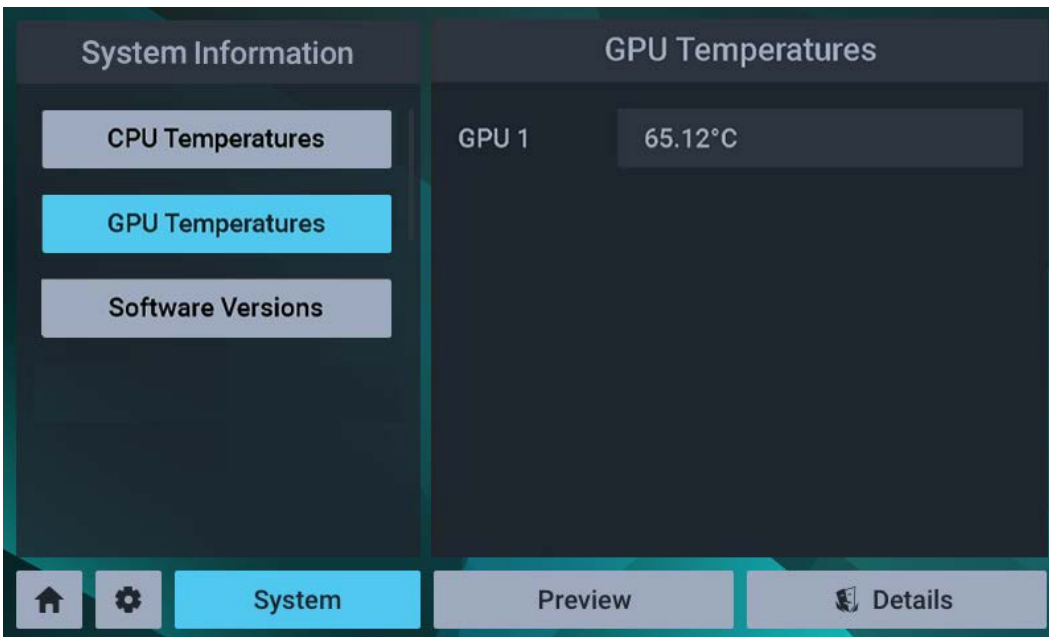


For Delta units, overlay of stats, information or performance graphs can be added:



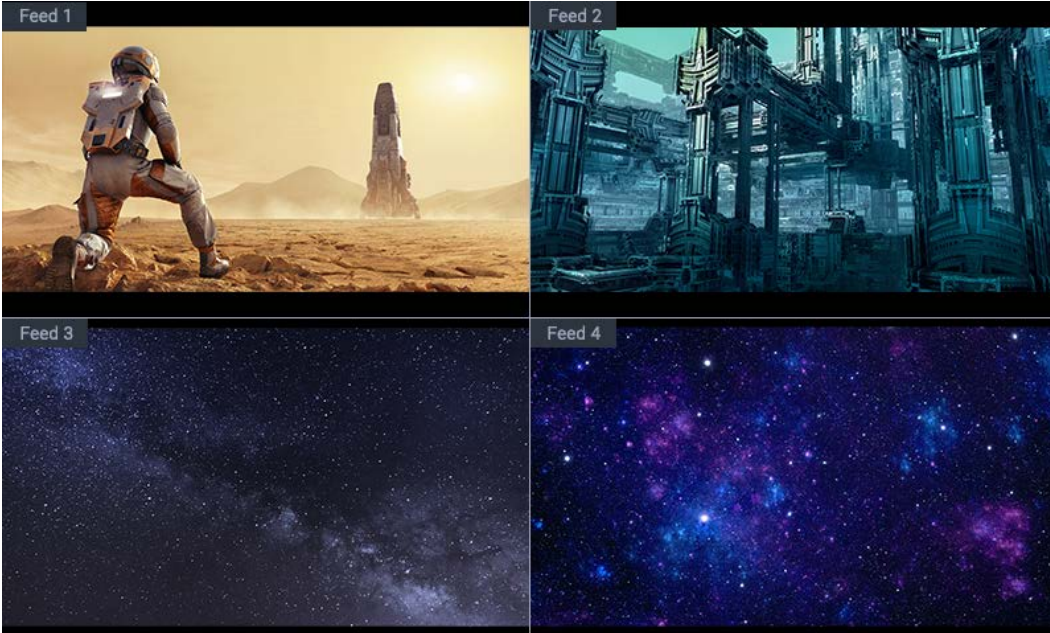
### System

This service function provides some key hardware information about what is in the unit and how it is performing:



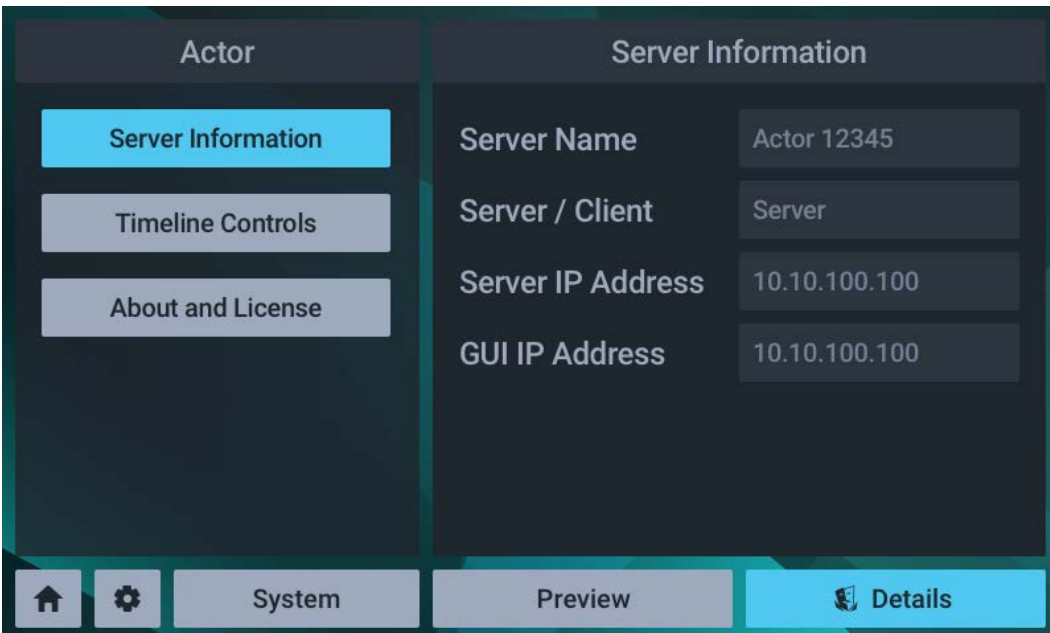
## Preview

Select the Preview button to see NDI feeds available in the server, arranged as in *Settings > Preview* *Settings > Layout*.

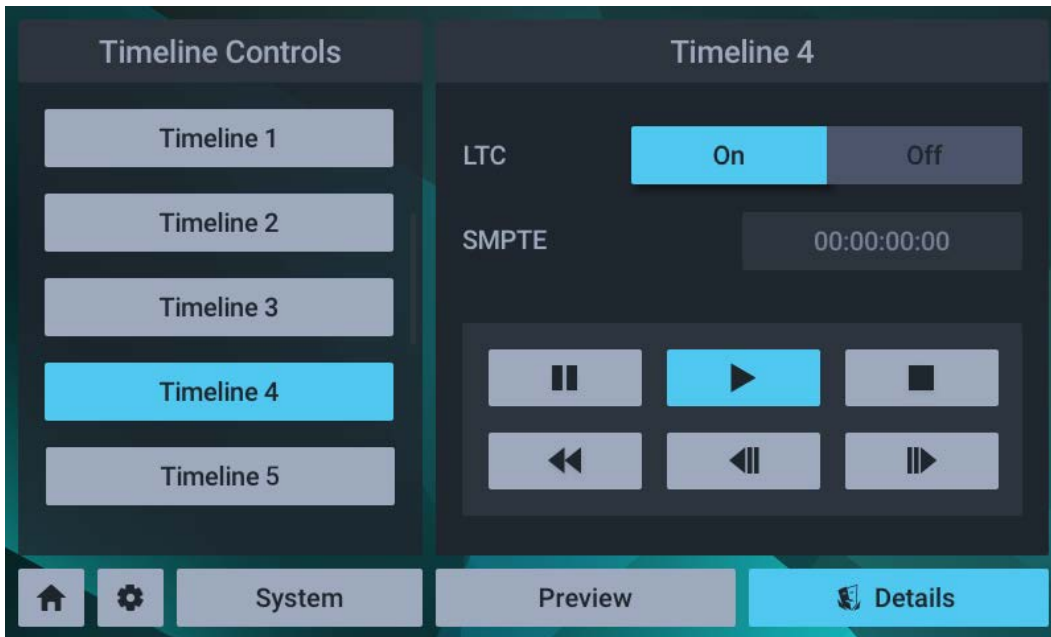


## Details

Here you access server information, version and licence details.



In addition, Timelines in the current project can be selected, time/sync controls edited, and play controls operated.



Timeline naming follows the names given in the software.



## Adding Custom Controls

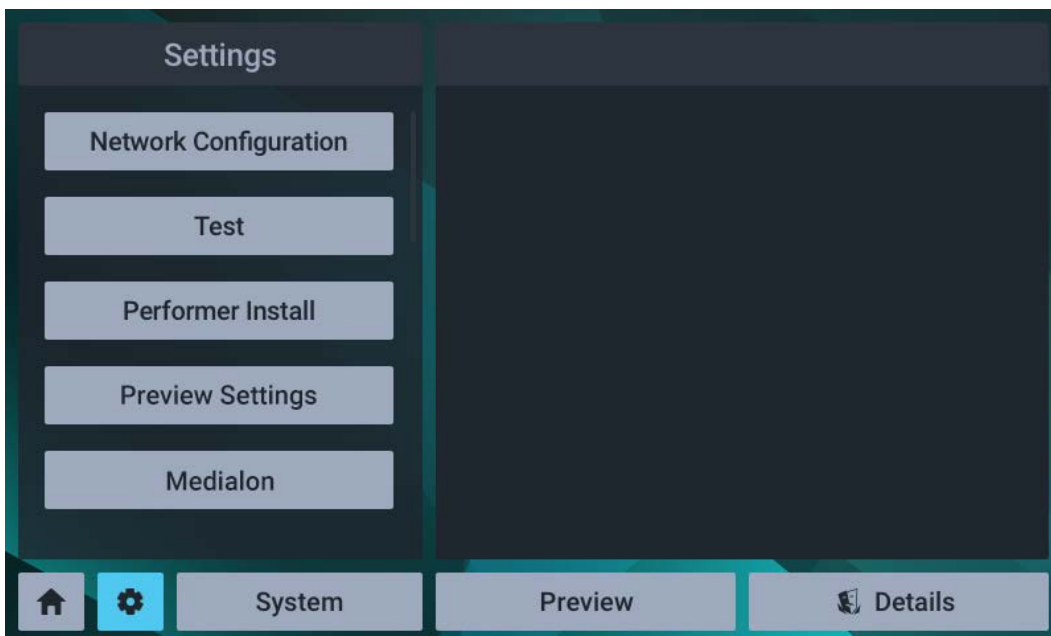
OSC (Open Sound Control) messaging is available in Delta, Medialon, Compere and Actor, and is used to send requests to an external web server, to display custom controls and information in an inline frame (iframe) on the front panel.

The configuration file that creates and names buttons to call in external web pages is C:\7thSense\Watchdog\WebServer\config.json.

Example, two buttons addressing different servers:

```
{
  "settings": {
    "buttons": [
      {
        "label": "Medialon",
        "url": "http://100.10.101.32:8081"
      },
      {
        "label": "Open Stage Control",
        "url": "http://100.10.101.76:8080"
      }
    ]
  }
}
```

Will introduce new buttons to these addresses on the bottom of the Settings menu:



Control pages on external servers can be created using [Open Stage Control](#), [TouchOSC](#) or similar control surface app, to add faders, buttons, text etc. Construct your page to a resolution of 780 × 400 px to fit the front panel area.

## Backup and Recovery

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R-Series Servers are provided with a stable Windows operating system, tested and proven hardware drivers, and no automatic updates. It is important that in the event of an O/S disk failure, this installation is replicated and restored. Making a clone is therefore one of the most useful insurances you can take.

We recommend Paragon Hard Disk Manager for Windows, which includes Paragon Backup & Restore, or just the Backup & Restore program. You will need an adequate USB external storage device, or networked storage, allowing up to 30 GB for all system and program files. This will depend on the system setup, but check what you need before you start. Paragon software has its own comprehensive user manual, but here are some overview steps.

### Paragon<sup>®</sup> Backup & Recovery<sup>™</sup>

**Download** your selected programs and manuals from [kb.paragon-software.com](http://kb.paragon-software.com) and transfer everything to the server.

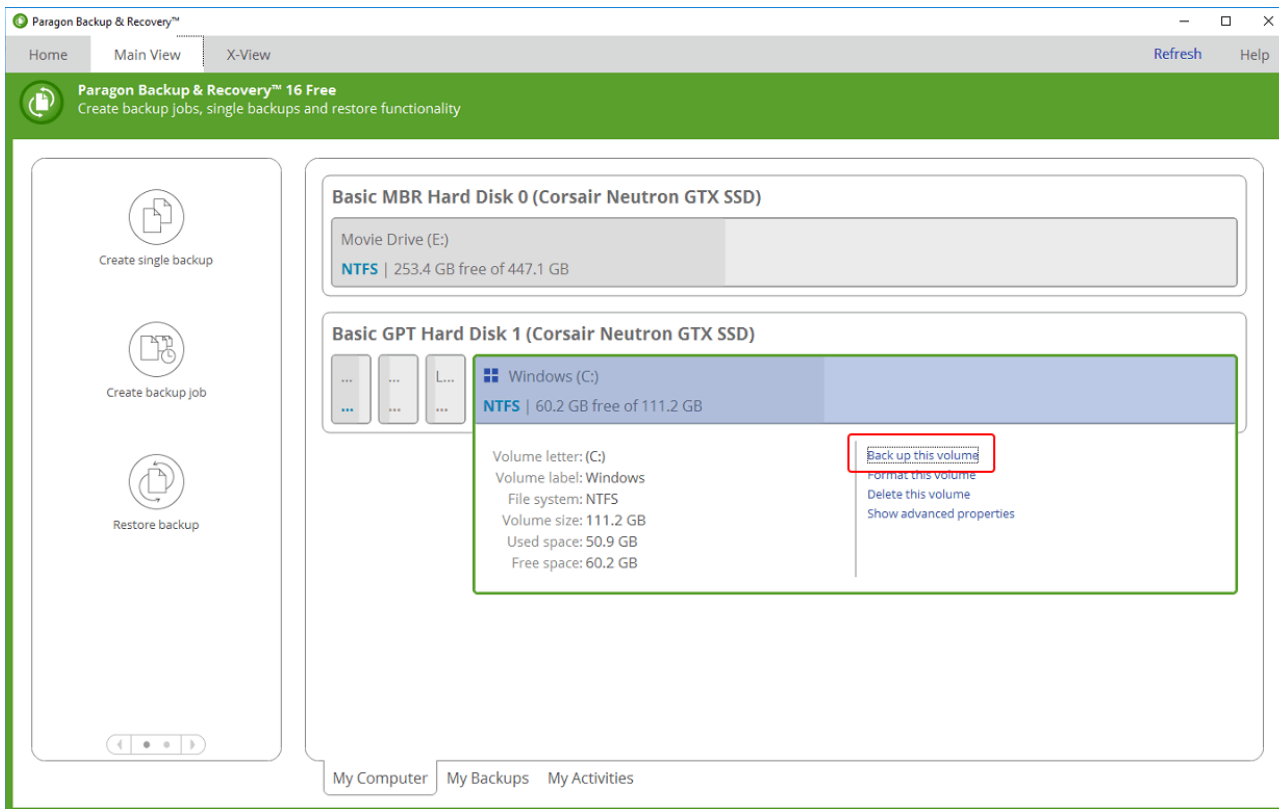
**Install** the Paragon software and register your product. Make sure that you do not allow any automatic updates.

**Activation** normally requires an Internet connection, but the Paragon website 'MyParagon' customer portal allows you to sign in and activate online from another PC. This will provide you with an .xml license file to copy onto your offline server. You will have the option then to 'import a licence file' to activate the product.

**The purpose described here** is to create a one-off original clone of your Delta server C:\ drive, and your system configurations, not the audio or visual media. These should always have copies elsewhere in any case.

Open Backup & Restore and in the Main View tab, select the required disk, and then from the right-hand menu, 'Back up this volume':





The Single Backup wizard will ask you to:

- name and describe the backup
- choose a target (choose either an external device or a network location)
- (if you select advanced settings) set degree of compression and/or maximum file size.

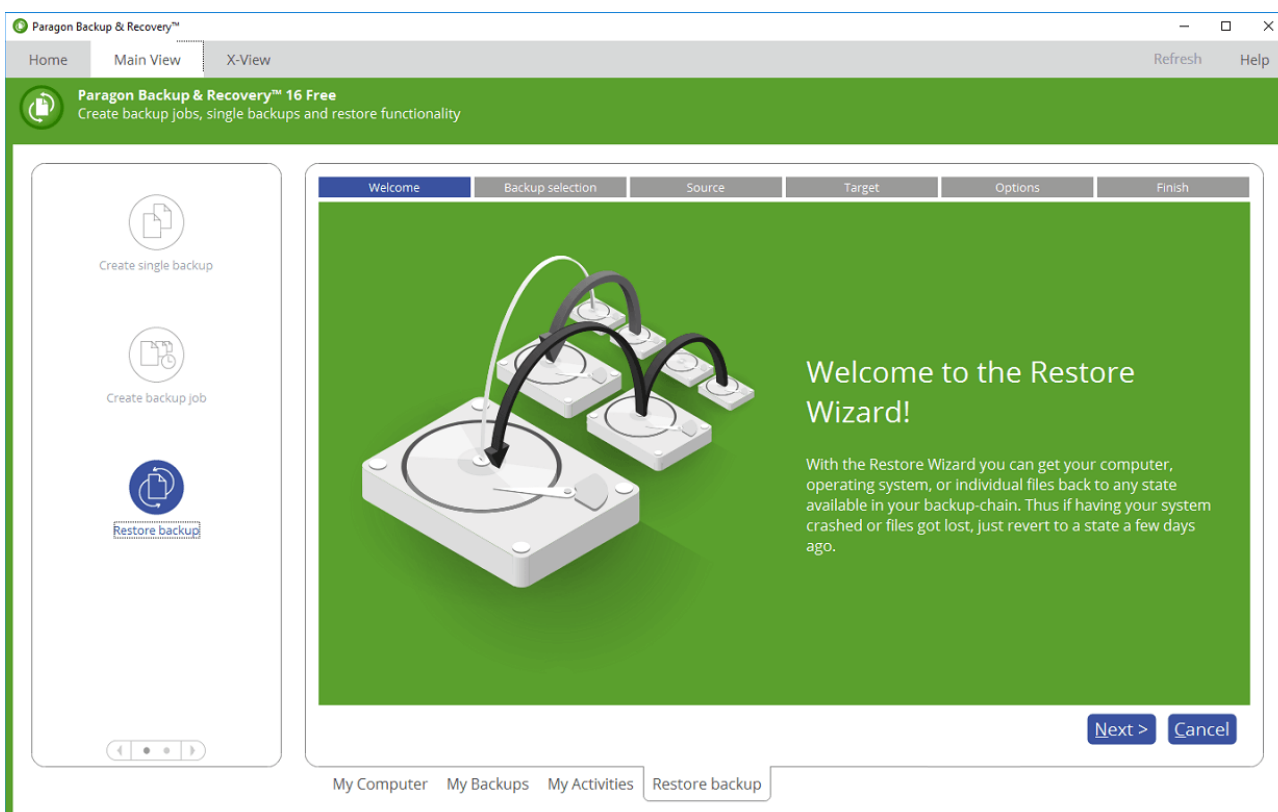
Finish the wizard to start the single backup. The backup folder will contain a series of files like these:

Name	Date modified	Type	Size
Backup_20180515_1432.pfi	15/05/2018 14:43	PFI File	35,520 KB
hdd-0.pvhd	15/05/2018 14:43	PVHD File	2,912 KB
hdd-0_e00.p01	15/05/2018 14:41	P01 File	4,095,740 KB
hdd-0_e00.p02	15/05/2018 14:42	P02 File	4,095,580 KB
hdd-0_e00.p03	15/05/2018 14:43	P03 File	4,095,576 KB
hdd-0_e00.p04	15/05/2018 14:43	P04 File	4,095,676 KB
hdd-0_e00.p05	15/05/2018 14:43	P05 File	4,095,764 KB
hdd-0_e00.p06	15/05/2018 14:43	P06 File	4,095,536 KB
hdd-0_e00.p07	15/05/2018 14:43	P07 File	4,095,988 KB
hdd-0_e00.p08	15/05/2018 14:43	P08 File	4,095,628 KB
hdd-0_e00.p09	15/05/2018 14:43	P09 File	3,234,460 KB
hdd-0_e00.pbe	15/05/2018 14:43	PBE File	4,095,752 KB

You will now have a clone of your server C:\ drive. Keep this carefully, but always ensure you have backups of your additional media and resources over time.

## Restore Using Paragon

Open Paragon Backup & Restore, and select 'Restore backup':



Follow the wizard to:

- select your previous backup from 'My Backups'
- select your source: either a whole object to restore, or more selectively, files and folders
- select where to restore files to
- choose how to restore (this file only or more at once – or create a restore script).

The restore process will commence.

## Paragon Recovery Media Builder

It would be wise in the event of total O/S failure to have a WinPE-based bootable environment on a USB thumb drive or in an ISO file. The Paragon utility is available on the Backup & Recovery 'Home'

menu tab > *Recovery Media Builder*. Follow the wizard through to create the kind of bootable media you require. Label the USB and store safely.

## Media Storage (Delta)

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Internal media storage on R-Series servers is typically on Broadcom MegaRAID PCIe cards supporting U.2 disk drives. Actual storage capacity is according to individual build requirements.

For drive names and file structures as Delta server, or as Actor or Conjurer, please refer to the appropriate software user guide:

➤ [7thSense User Portal](#)

Note that the ingest process, and locations for assets of all kinds, is different between Delta systems and Compere (Actor, Conjurer) systems.

## Installation Records

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By the time your server system/network has been fully configured and made operational, you will have added media, configuration resources, set IP addresses and perhaps assembled a fully populated and cabled rack. Protect this investment by:

- keeping clear and complete records of installations, any additional drivers or software and their versions
- creating a map of your total system and how it is connected, including all IP addresses
- labelling all your cables, perhaps with photos of rear panel connections – the positions of plug connections for audio, capture and network ports are important
- creating a clone or backup of your whole C:\ drive on external storage
- ensuring you have copies of all your media – not just original files received from content creator, but all final converted 7th files, particularly if complex carving has been done.

7thSense has a complete record of your system as it was delivered, but your own records thereafter will be essential in the event of any malfunction.

## Physical Specifications

Environmental Characteristics	Operating	Non-operating
Temperature	+15 to +30 °C	-10 to +50 °C
Humidity (non-condensing)	10 to 90%	5 to 95%
Altitude	<2 000 m	<10 000 m

R-Series 10 Specification	Rating/Description	Notes
Rackmount dimensions (H × W × D)	3U × 483 mm × 620 mm	
Rackmount weight (approx.)	22 kg	variance by type?
Dual redundant power supply	100-240 V, 50/60 Hz, 13.5 A– 10.5 A ×2	Autoranging, IEC 60320 inlet
Max power consumption	800 W	(typical, based on dual GPU)
Cooling	Forced air	Front inlets, rear exhaust

R-Series 8 Specification	Rating/Description	Notes
Rackmount dimensions (H × W × D)	3U × 483 mm × 620 mm	
Rackmount weight (approx.)	20 kg	variance by type?
Power supply	100-240 V, 50/60 Hz, 13.5 A– 10.5 A	Autoranging, IEC 60320 inlet
Max power consumption	500 W	(typical, based on dual GPU)
Cooling	Forced air	Front inlets, rear exhaust

## Warranty, Support and Service

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Standard warranty is 24 months, return-to-distributor. Please contact 7thSense Design if you require an extended warranty.

Please ask for instructions and request authorisation before returning a server to your distributor.

### Server Internal Maintenance

Internal maintenance must only be undertaken by suitable qualified service personnel.



**Warning:** Do not operate the server with any covers removed as the air flow through the unit may be compromised leading to overheating.



**Warning:** Motherboard CMOS battery replacement: Danger of explosion if incorrect battery used or battery incorrectly installed. Contact your supplier for further instructions.

Any alterations to the product's specification, including additional/alternative components, BIOS changes, overclocking, etc., may invalidate the warranty or impact the server's performance. Additionally, such changes or modifications could cause equipment no longer to comply with the relevant EMC regulations, and void the user's authority to operate the equipment. If in doubt, please contact your supplier.

### Electrostatic discharge (ESD)

When handling electronic assemblies, take precautions to avoid electrostatic discharge (ESD) causing damage. Precautions should include the wearing of an ESD protective wrist strap and using antistatic bags for electronic assemblies when not installed in a server.

➤ Visit our Support Portal for [support and service](#)

## Regulatory Compliance

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### FCC

R-Series Servers comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**Note:** The equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

### European Union, UK

R-Series servers are a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

### End of Service Life



Dispose of the equipment and any components in accordance with all local and national safety and environmental requirements.



## Document Information

Date	Document edition	Revision Details	Author/Editor
June 2023	1	New release	Andie Davidson
January 2024	2	Revised product naming	Andie Davidson

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E: info@7thsense.one  
W: 7thsense.one

7thSense Design Ltd  
2 The Courtyard, Shoreham Road  
Upper Beeding  
Steyning  
West Sussex  
BN44 3TN  
UK

T: +44 (0) 1903 812299

7thSense LLC  
4207 Vineland Rd  
Suite M1  
Orlando, FL 32811  
USA

T: +1 407 505 5200

