grass valley
A BELDEN BRAND

SIRIUS 800 ROUTER

FOR SIRIUS 830, 840 AND 850 ROUTERS

Maintenance & Upgrade Manual

Issue 1 Revision 3

2019 March 15

www.grassvalley.com

FCC Compliance

In order to comply with FCC/CFR47: Part 15 regulations, it is necessary to use Mini HDMI to HDMI high-quality triple-screened cable assemblies with integrated ferrite suppression at both ends.

Patent Information

This product may be protected by one or more patents.

For further information, please visit: www.grassvalley.com/patents/

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A Grass Valley manual may have been revised to reflect changes made to the product during its manufacturing life. Thus, different versions of a manual may exist for any given product. Care should be taken to ensure that one obtains the proper manual version for a specific product serial number.

Information in this document is subject to change without notice and does not represent a commitment on the part of Grass Valley.

Warranty information is available from the Legal Terms and Conditions section of Grass Valley's website (www.grassvalley.com).

Title	Sirius 800 Router Maintenance & Upgrade Manual
Part Number	Issue 1 Revision 3
Revision	2019-March-15, 14:36

Contents

1 About this Manual

This Maintenance & Upgrade manual describes how to maintain and upgrade the Sirius 830, 840 and 850 routers. Refer to the appropriate Installation Manuals for details on how to unpack, install and test the Sirius 800 routers and the Sirius 800 User manual for operational details.

Refer to the Workbench Manual for details on configuring hardware and software panels. If you have any questions regarding the installation and setup of your product, please refer to the table in Section 1.2 for Customer Service contact details.

1.1 Software and Firmware Release Details

This version of the Sirius 800 maintenance & upgrade manual documents the features and functions available with Workbench version 3.17.x and firmware release PA1250x. These features are shown in summary in Table 1.

Firmware Release Version	Module	Features Supported
3.0.x	2464/2463	AHP control (software/firmware supplied with the Workbench release).
PA1250x	4915	Gain, Phase Invert, Left/Right Swap, Left Both, Right Both, Mono Mix.
PA1250x	5919	Audio De-embedding, Audio Delay, Gain, Phase Invert, 16 Channel Mix and Channel Swap (Shuffle), Video Frame/Line Sync, Video Delay, Audio Input Re-embedding.
PA1250x	4929	Gain, Phase Invert, Left/Right Swap, Left Both, Right Both, Mono Mix, Audio Delay, Sample Rate Convert.
PA1250x	5949	16 Channel Mix, Channel Swap (Shuffle), Gain, Phase Invert, Audio Delay and Audio Embedding, Video Frame/Line Sync, Video Delay.
Crosspoint Modules		
PA1250x	5903.	Audio crosspoint operation, Audio Input Re-embedding.
PA1250x	5905	Video crosspoint operation.
Modules no longer supplied with new systems		
PA1250x	5915	Audio De-embedding, Gain, Phase Invert, 16 Channel Mix and Channel Swap (Shuffle).
PA1250x	4925	Gain, Phase Invert, Left/Right Swap, Left Both, Right Both, Mono Mix.
PA1250x	5925	16 Channel Mix, Channel Swap (Shuffle), Gain, Phase Invert and Audio Embedding.

Table 1 Software and Firmware Release Details

Firmware release notes are included with the firmware and are available on request from Grass Valley Customer Service, see section 1.2 for contact details.

1.1.1 Export System Information (Nucleus2 controllers only)

Router system information can be exported to a CSV file by right clicking on the controller in the configuration screen of Workbench. System information saved includes; hardware module types, hardware versions, firmware versions, software versions, Workbench details and database location information. See the Workbench manual for information on using Workbench.

1.2 Contact Details

Customer Support

For details of our Regional Customer Support Offices please visit the Grass Valley website.

https://www.grassvalley.com/contact/support/

Customers with a support contract should call their personalized number, which can be found in their contract, and be ready to provide their contract number and details.

1.3 Copyright and Disclaimer

2 Warnings and Precautions

Chapter contains:

Warnings and Precautions

Explanation of Safety Symbols (GB)

This symbol refers the user to important information contained in the accompanying literature. Refer to manual.

This symbol indicates that hazardous voltages are present inside.
No user serviceable parts inside.
This unit should only be serviced by trained personnel.

Safety Warnings

CAUTION: These servicing instructions are for use by qualified personnel only.
To reduce risk of electric shock do not perform any servicing other than that contained in the Operating Instructions unless you are qualified to do so.
Refer all servicing to qualified service personnel.

- **To reduce the risk of electric shock, do not expose this appliance to rain or moisture.**
- **Always ensure that the unit is properly earthed and power connections correctly made.**
- **This equipment must be supplied from a power system providing a PROTECTIVE EARTH ⏚ connection and having a neutral connection which can be reliably identified.**
- **The power outlet supplying power to the unit should be close to the unit and easily accessible**

Légende : (F)

Ce symbole indique qu'il faut prêter attention et se référer au manuel.

Ce symbole indique qu'il peut y avoir des tensions électriques à l'intérieur de l'appareil. Ne pas intervenir sans l'agrément du service qualifié.

Précaution d'emploi :

Attention: Les procédures de maintenance ne concernent que le service agréé. Afin de réduire le risque de choc électrique, il est recommandé de se limiter aux procédures d'utilisation, à moins d'en être qualifié. Pour toute maintenance, contacter le service compétent.

- **Pour réduire le risque de choc électrique, ne pas exposer l'appareil dans un milieu humide.**
- **Toujours s'assurer que l'unité est correctement alimentée, en particuliers à la liaison à la terre.**
- **La source électrique de cet équipement doit posséder une connexion à la terre ⏚, ainsi qu'une liaison « neutre » identifiable.**
- **La prise électrique qui alimente l'appareil doit être proche de celle-ci et accessible.**

Simboli di sicurezza: (I)

Questo simbolo indica l'informazione importante contenuta nei manuali appartenenti all'apparecchiatura. Consultare il manuale.

Questo simbolo indica che all'interno dell'apparato sono presenti tensioni pericolose. Non cercare di smontare l'unità.
Per qualsiasi tipo di intervento rivolgersi al personale qualificato.

Attenzione:

Le istruzioni relative alla manutenzione sono ad uso esclusivo del personale qualificato. E' proibito all'utente eseguire qualsiasi operazione non esplicitamente consentita nelle istruzioni. Per qualsiasi informazione rivolgersi al personale qualificato.

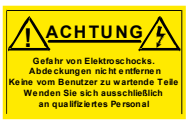
- **Per prevenire il pericolo di scosse elettriche è necessario non esporre mai l'apparecchiatura alla pioggia o a qualsiasi tipo di umidità.**
- **Assicurarsi sempre, che l'unità sia propriamente messa a terra e che le connessioni elettriche siano eseguite correttamente.**
- **Questo dispositivo deve essere collegato ad un impianto elettrico dotato di un sistema di messa a terra efficace.**
- **La presa di corrente deve essere vicina all'apparecchio e facilmente accessibile.**

Erklärung der Sicherheitssymbole (D)

Dieses Symbol weist den Benutzer auf wichtige Informationen hin, die in der begleitenden Dokumentation enthalten sind.

Dieses Symbol zeigt an, dass gefährliche Spannung vorhanden ist.
Es befinden sich keine vom Benutzer zu wartenden Teile im Geräteinneren.
Dieses Gerät sollte nur von geschultem Personal gewartet werden

Sicherheits-Warnhinweise



Die angeführten Service-/Reparatur-Anweisungen sind ausschließlich von qualifiziertem Service-Personal auszuführen. Um das Risiko eines lektroschocks zu reduzieren, führen Sie ausschließlich die im Benutzerhandbuch eschriebenen Anweisungen aus, es sei denn, Sie haben die entsprechende Qualifikation. Wenden Sie sich in allen Service-Fragen an qualifiziertes Personal.

- **Um das Risiko eines Elektroschocks zu reduzieren, setzen Sie das Gerät weder Regen noch Feuchtigkeit aus.**
- **Stellen Sie immer sicher, dass das Gerät ordnungsgemäß geerdet und verkabelt ist.**
- **Dieses Equipment muss an eine Netzsteckdose mit ⏚ Schutzleiter angeschlossen werden und einen zuverlässig identifizierbaren Nullleiter haben.**
- **Die Netzsteckdose sollte nahe beim Gerät und einfach zugänglich sein.**

Explicación de los Símbolos de Seguridad (ESP)

Éste símbolo refiere al usuario información importante contenida en la literatura incluida. Referirse al manual.

Éste símbolo indica que voltajes peligrosos están presentes en el interior.
No hay elementos accesibles al usuario dentro.
Esta unidad sólo debería ser tratada por personal cualificado.

Advertencias de Seguridad

Las instrucciones de servicio cuando sean dadas, son sólo para uso de personal cualificado. Para reducir el riesgo de choque eléctrico no llevar a cabo ninguna operación de servicio aparte de las contenidas en las instrucciones de operación, a menos que se esté cualificado para realizarlas.
Referir todo el trabajo de servicio a personal cualificado.

- **Para reducir el riesgo de choque eléctrico, no exponer este equipo a la lluvia o humedad.**
- **Siempre asegurarse de que la unidad está propiamente conectada a tierra y que las conexiones de alimentación están hechas correctamente.**
- **Este equipo debe ser alimentado desde un sistema de alimentación con conexión a TIERRA ⏚ y teniendo una conexión neutra fácilmente identificable.**
- **La toma de alimentación para la unidad debe ser cercana y fácilmente accesible.**

Forklaring på sikkerhedssymboler (DK)

Dette symbol gør brugeren opmærksom på vigtig information i den medfølgende manual.

Dette symbol indikerer farlig spænding inden i apparatet. Ingen bruger servicerbare dele i apparatet på brugerniveau.
Dette apparat må kun serviceres af faglærte personer..

Sikkerhedsadvarsler

Serviceinstruktioner er kun til brug for faglærte servicefolk. For at reducere risikoen for elektrisk stød må bruger kun udføre anvisninger i betjeningsmanualen.
Al service skal udføres af faglærte personer.

- **For at reducere risikoen for elektrisk stød må apparatet ikke udsættes for regn eller fugt.**
- **Sørg altid for at apparatet er korrekt tilsluttet og jordet.**
- **Dette apparat skal forbindes til en nettilslutning, der yder BESKYTTENDE JORD ⏚ og 0 forbindelse skal være tydeligt markeret.**
- **Stikkontakten, som forsyner apparatet, skal være tæt på apparatet og let tilgængelig.**

Förklaring av Säkerhetssymboler

S

Denna symbol hänvisar användaren till viktig information som återfinns i litteraturen som medföljer. Se manualen.

Denna symbol indikerar att livsfarlig spänning finns på insidan. Det finns inga servicevänliga delar inne i apparaten. Denna apparat få endast repareras av utbildad personal.

Säkerhetsvarningar

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVERS
NO USER SERVICEABLE PARTS
REFER SERVICING TO QUALIFIED PERSONNEL ONLY

Serviceinstruktioner som anges avser endast kvalificerad och utbildad servicepersonal. För att minska risken för elektrisk stöt, utför ingen annan service än den som återfinns i medföljande driftinstruktionerna, om du ej är behörig. Överlåt all service till kvalificerad personal.

- **För att reducera risken för elektrisk stöt, utsätt inte apparaten för regn eller fukt.**
- **Se alltid till att apparaten är ordentligt jordad samt att strömtillförseln är korrekt utförd.**
- **Denna apparat måste bli försörjd från ett strömsystem som är försedd med jordadanslutning ⏚ samt ha en neutral anslutning som lätt identifierbar.**
- **Vägguttaget som strömförsörjer apparaten bör finnas i närheten samt vara lätttillgänglig.**

Símbolos de Segurança

P

O símbolo triangular adverte para a necessidade de consultar o manual antes de utilizar o equipamento ou efectuar qualquer ajuste.

Este símbolo indica a presença de voltagens perigosas no interior do equipamento. As peças ou partes existentes no interior do equipamento não necessitam de intervenção, manutenção ou manuseamento por parte do utilizador. Reparações ou outras intervenções devem ser efectuadas apenas por técnicos devidamente habilitados.

Avisos de Segurança

PERIGO
RISCO DE CHOQUE ELÉCTRICO!
NÃO RETIRAR AS PROTECÇÕES
PARTES QUE NÃO REQUEREM INTERVENÇÃO DO UTILIZADOR!
CONTACTAR UM TECNICO DEVIDAMENTE HABILITADO!

As instruções de manutenção fornecidas são para utilização de técnicos qualificados. Para reduzir o risco de choque eléctrico, não devem ser realizadas intervenções no equipamento não especificadas no manual de instalações a menos que seja efectuadas por técnicos habilitados.

- **Para reduzir o risco de choque eléctrico, não expor este equipamento à chuva ou humidade.**
- **Assegurar que a unidade está sempre devidamente ligada à terra e que as ligações à alimentação estão correctas.**
- **O sistema de alimentação do equipamento deve, por razões de segurança, possuir ligação a terra de protecção ⏚ e ligação ao NEUTRO devidamente identificada.**
- **A tomada de energia à qual a unidade está ligada deve situar-se na sua proximidade e facilmente acessível.**

Turvamerkkien selitys

FI

Tämä merkki tarkoittaa, että laitteen mukana toimitettu kirjallinen materiaali sisältää tärkeitä tietoja. Lue käyttöohje.

Tämä merkki ilmoittaa, että laitteen sisällä on vaarallisen voimakas jännite. Sisäpuolella ei ole mitään osia, joita käyttäjä voisi itse huoltaa. Huollon saa suorittaa vain alan ammattilainen.

Turvaohjeita

VAROITUS
SÄHKÖISKUN VAARA ÄLÄ AVAA
LAITTEEN KANSIA EI SISÄLLÄ
KÄYTTÄJÄLLE HUOLLETTAVIA
OSIA HUOLTO AINOASTAAN
AMMATTILAISEN SUORITTAMANA

Huolto-ohjeet on tarkoitettu ainoastaan alan ammattilaisille. Älä suorita laitteelle muita toimenpiteitä, kuin mitä käyttöohjeissa on neuvottu, ellet ole asiantuntija. Voit saada sähköiskun. Jätä kaikki huoltotoimet ammattilaiselle.

- **Sähköiskujen välttämiseksi suojaa laite sateelta ja kosteudelta.**
- **Varmistu, että laite on asianmukaisesti maadoitettu ja että sähkökytkennät on tehty oikein.**
- **Laitteelle tehoa syöttävässä järjestelmässä tulee olla SUOJAMAALIITÄNTÄ ⏚ ja nollaliitännän on oltava luotettavasti tunnistettavissa.**
- **Sähköpistorasian tulee olla laitteen lähellä ja helposti tavoitettavissa.**

Επεξήγηση των Συμβόλων Ασφαλείας

Αυτό το σύμβολο παραπέμπει το χρήστη σε σημαντικές πληροφορίες που συμπεριλαμβάνονται στο συνοδευτικό εγχειρίδιο.

Αυτό το σύμβολο υποδεικνύει ότι στο εσωτερικό υφίστανται επικίνδυνες ηλεκτρικές τάσεις. Στο εσωτερικό δεν υπάρχουν επισκευάσιμα μέρη. Αυτή η μονάδα πρέπει να επισκευάζεται μόνο από ειδικά εκπαιδευμένο προσωπικό.

Προειδοποίηση Ασφαλείας

CAUTION

Οδηγίες επισκευής, όπου παρέχονται, αναφέρονται αποκλειστικά και μόνο σε εξειδικευμένο προσωπικό. Για να μειωθεί ο κίνδυνος ηλεκτροπληξίας, μην εκτελείτε επισκευές παρά μόνο τις συμπεριλαμβανόμενες στο εγχειρίδιο των οδηγιών, εκτός και αν έχετε τα απαραίτητα προσόντα για να το κάνετε. Όλες οι επισκευές να εκτελούνται από ειδικά εκπαιδευμένο προσωπικό.

- **Για να μειώσετε τον κίνδυνο ηλεκτροπληξίας μην εκθέτετε τη συσκευή σε βροχή ή υγρασία.**
- **Πάντα να εξασφαλίζετε τη σωστή γείωση της συσκευής και τη σωστή σύνδεση των συνδέσμων τροφοδοσίας.**
- **Ο εξοπλισμός πρέπει να τροφοδοτείται από ένα σύστημα τροφοδοσίας που να εξασφαλίζει ΠΡΟΣΤΑΤΕΥΤΙΚΗ ΓΕΙΩΣΗ ⏚ και να έχει καθορισμένες θέσεις ουδέτερου και φάσης.**
- **Ο εξοπλισμός που τροφοδοτεί τη συσκευή θα πρέπει να βρίσκεται κοντά στη συσκευή και να είναι εύκολα προσβάσιμος.**

2.1 Explanation of Safety Symbols

This symbol refers the user to important information contained in the accompanying literature.

This symbol indicates that hazardous voltages are present inside. No user serviceable parts inside. This system should only be serviced by trained personnel.

2.2 Safety Warnings

CAUTION: These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the Operating Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

To reduce the risk of electric shock, do not expose this appliance to rain or moisture.

Always ensure that the unit is properly earthed and power connections correctly made.

This equipment must be supplied from a power system providing a PROTECTIVE EARTH connection and having a neutral connection which can be reliably identified.

The power circuit breakers or switches supplying power to the unit should be close to the unit and easily accessible.

2.3 Lithium Batteries

The Sirius 800 door PC and router control module(s) each contain a Lithium battery.

2.4 Fiber Output Modules Warning

LASER SAFETY

The average optical output power does not exceed 0 dBm (1mW) under normal operating conditions. Unused optical outputs should be covered to prevent direct exposure to the laser beam.

Even though the power of these lasers is low, the beam should be treated with caution and common sense because it is intense and concentrated. Laser radiation can cause irreversible and permanent damage of eyesight. Please read the following guidelines carefully:

- Make sure that a fiber is connected to the board's fiber outputs before power is applied. If a fiber cable (e.g. patchcord) is already connected to an output, make sure that the cable's other end is connected, too, before powering up the board.
- **Do not** look in the end of a fiber to see if light is coming out. The laser wavelengths being used are totally invisible to the human eye and can cause permanent damage. Always use optical instrumentation, such as an optical power meter, to verify light output.

2.5 Cable Management

It is important that the cabling to and from the router is correctly labeled and routed. This will simplify the work required if the installation needs to be changed or added to at a future date.

- Cables connected to the router must be fitted with adequate vertical and horizontal strain relief to avoid twisting of the rear panels causing damage to the router connectors and loss of electrical/signal connection to the router.
- Cables connected to the router should be routed so they do not cover any of the frame fan exhausts as this can restrict airflow through the router.

2.6 Power Supplies

The power supply shelves are separate 2RU modules. Power supply shelves are rack mountable and can be placed above, below or remote from the Sirius frame.

- Ensure that the power supply shelves are correctly earthed see section 2.7 for details.
- The power supply units are sealed and do not contain any serviceable items

- Power supply shelves are heavy so it is advised that two people are needed to support the weight of the power supply shelves during installation.
- To prevent damage, power supply shelves should not be mounted using just the front ears, and should have support at the rear of the shelves.

The power supply alarm cable(s) and 48 V DC cables are supplied by Grass Valley and can be ordered as either 2.5 meter cables or 8 meter cables.

2.7 Earth Cables

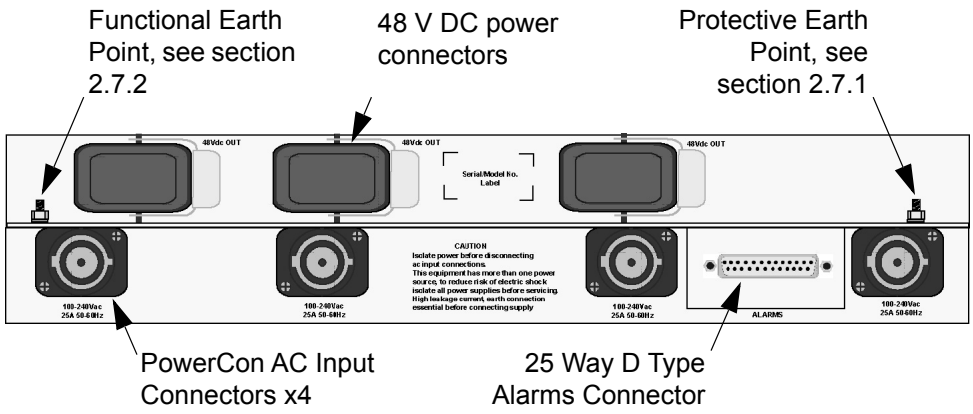


Figure 1 Power Supply Shelf Rear Panel

2.7.1 Important Protective Earth Information

Due to the high leakage current, ensure that all of the power supply shelves are grounded to the protective earth. Earth studs are provided on the rear of each power supply shelf for this purpose. These studs have M6 size nuts, and are suitable to take an eyelet crimp.

Note:

- The Protective earth is indicated on the power supply shelf by this symbol:  (located on the right side of the power supply shelf, see Figure 1).
- Protective Earthing is a conductor in the building installation wiring, or in the power supply cord, connecting a main protective earthing terminal to an earth point in the building installation.

PROTECTIVE EARTH

- The building installation must provide a means for connection to the protective earth and the equipment must be connected to that means.
- A service person must check that the socket outlets that the equipment is to be powered from provide a connection to the protective earth. If not the service person must arrange for the installation of the protective earth wire in the building.

Warning

High leakage current; the Protective Earth connection is essential before connecting the supply.

2.7.2 Important Functional Earth Information

Up to three earth cables (636027) are supplied with the Sirius 800 depending on how many power supply shelves are fitted. One should be fitted from each power supply shelf to the Sirius 800 router frame, this is called a Functional Earth.

Note:

- The Functional Earth on the power supply shelf is indicated by this symbol:  (located on the left side of the power supply shelf, see Figure 1).
- Functional Earthing is the earthing of a point on the equipment or system, which is necessary for purposes other than safety.

Warning

The Functional Earth cable from the power supply shelf to the Sirius frame must be fitted.

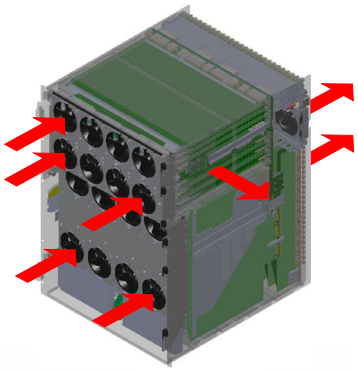
2.8 Ventilation

A fully populated Sirius 800 is ventilated by groups of fan modules mounted in the front and rear of the router. The vents in the front, sides and rear must not be obstructed and should be periodically cleaned and kept free from the build-up of dust. All the fan modules are monitored for failure.

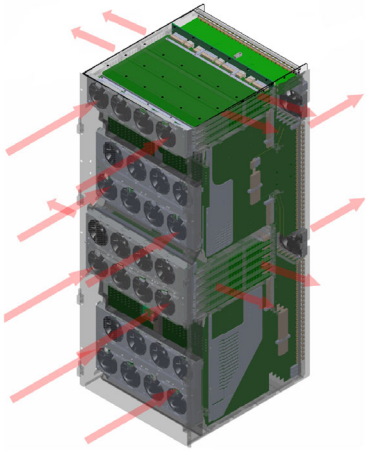
Air is pulled in through the ventilation slots in the front door and circulated through the router, passing over the modules, and then expelled by the rear fans, air is also expelled out at points on each side of the frame, where the crosspoint modules are situated.

The power supply shelves have their own integral cooling system.

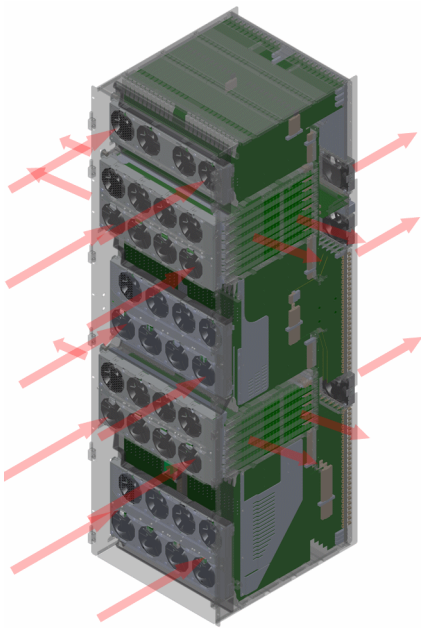
- Ensure the flow of air is not restricted through the vents and fan exhausts.
- Do not obstruct the air vents situated on both sides of the frame, and allow a minimum of 50 mm (2 inches) clearance to allow air flow. The air that is exhausted from the sides must be able to flow past the rear of the router frame without being obstructed. This also applies to the PSU shelves.
- The fan assemblies should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.



Sirius 830



Sirius 840



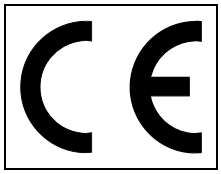
Sirius 850

Airflow through the frames is indicated by the arrows

Figure 2 Sirius 800 Ventilation Airflow

2.9 Compliance Standards

This equipment complies with the following standards:



EN60950-1 2006
Safety of information Technology Equipment Including Electrical Business Equipment.

UL1419 (3rd Edition) - UL File E193966
Standard for Safety - Professional Video and Audio equipment

EMC Standards

This unit conforms to the following standards:

EN55103-1:2009 (Environment E4)
Electromagnetic Compatibility, Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1. Emission

EN55103-2:2009 (Environment E2)
Electromagnetic Compatibility, Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2. Immunity

Federal Communications Commission Rules, 47 CFR: Part 15, Subpart B (Class A)

EMC Performance of Cables and Connectors

Grass Valley products are designed to meet or exceed the requirements of the appropriate European EMC standards. In order to achieve this performance in real installations it is essential to use cables and connectors with good EMC characteristics.

All signal connections (including remote control connections) shall be made with screened cables terminated in connectors having a metal shell. The cable screen shall have a large-area contact with the metal shell.

COAXIAL CABLES

Coaxial cables connections (particularly serial digital video connections) shall be made with high-quality double-screened coaxial cables such as Belden 1694A or Belden 1505A.

D-TYPE CONNECTORS

D-type connectors shall have metal shells making good RF contact with the cable screen. Connectors having “dimples” which improve the contact between the plug and socket shells, are recommended.

AC and DC Cables

AC & DC cables used must be double screened to maintain EMC compliance.

3 Power Supplies

Chapter contains:

Power Supplies

3.1 Electrical Requirements

3.1.1 Important Protective Earth Information

See section 2.7.1 for full details of the Protective Earthing requirements.

PROTECTIVE EARTH

1. The building installation must provide a means for connection to the protective earth. The equipment must be connected to that means.
2. A service person must check that the socket outlets that the equipment is to be powered from provide a connection to the protective earth. If not the service person must arrange for the installation of the protective earth wire in the building.

3.1.2 Cable Management

See Section 2.5 for details on cable management.

3.2 Mains Power Cables

The maximum current drawn by each power supply unit is dependent on the local mains voltage, the configuration of the router and the number of power supply shelves installed.

Each AC feed must have an Isolating Switch or Circuit Breaker rated at 20 A type B to IEC 60898-1. The isolating switch/circuit breaker must be Type B (trips at 3 to 5 times full load current) so that it is capable of handling a maximum inrush current of 50 A. Installation must be in accordance with Local and National electrical codes.

Any mains cables used must be rated above the rating of the circuit breaker. The mains cable used should be a three core, double insulated with a minimum current rating of 25 A (typically 6 mm^2, 10 AWG).

See section 3.2.1 for details on wiring the PowerCon connectors supplied with the Sirius 800 router.

Installation must be in accordance with Local and National electrical codes. This product is pluggable type B (IEC 60309).

Important: The Sirius 800 has up to twelve “PowerCon” AC power connectors for the power supply shelves (three or four per power supply shelf). It is the responsibility of the customer to connect these to the mains supply.

Note: Ensure all DC power cables are fitted before powering up the Sirius 800.

3.2.1 PowerCon Connector

For full details on the mains cable requirements please see section 3.2.

1. The following PowerCon connector wiring instructions **MUST** be followed.
2. The AC supply feed MUST be isolated before connecting or disconnecting the “PowerCon” connectors. This is required because the “PowerCon” connectors are not suitable for isolating current.
3. The mains conductor colors for Live, Neutral and Earth in Figure 3 are only examples and may not match the colors used in your geographical location.

PowerCon Wiring:

- Cable outside diameter: 17 mm (general range: 8.0 to 20.0 mm)
- Cable Connector: Screw-type terminals for stranded wires up to 6.0 mm^2 (AWG 10).

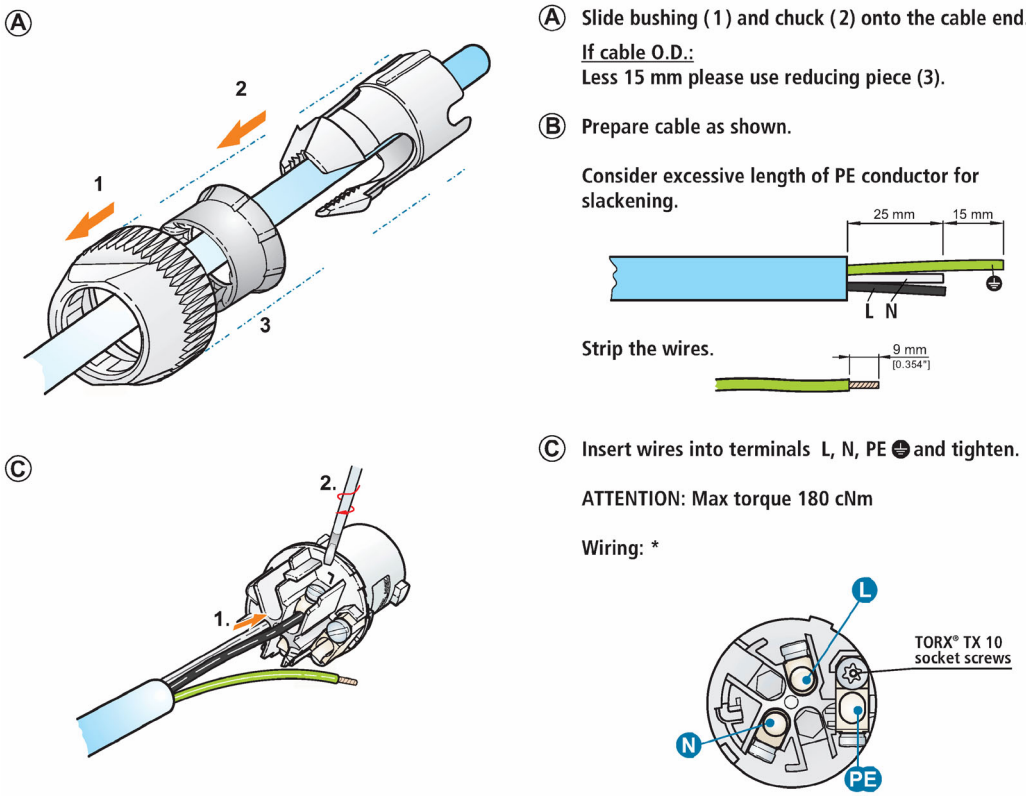


Figure 3 Cable Connector Assembly instructions

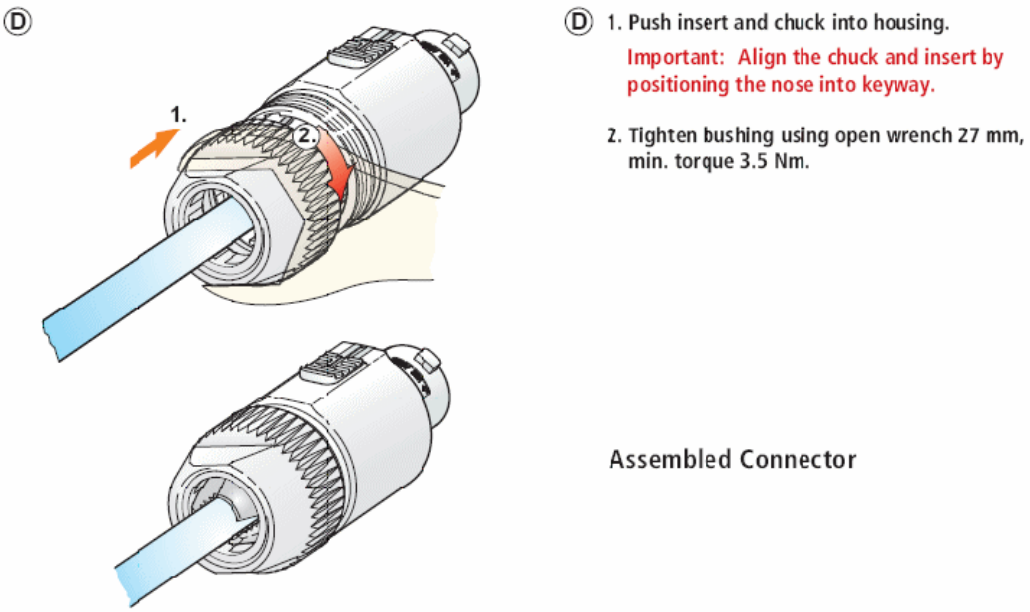


Figure 4 Cable Connector Assembly instructions (continued)

3.3 Power Supply Redundancy

To ensure full dual redundancy, half of the power supplies should be powered from a separate power source to the other power supplies. Under normal operating conditions with dual power sources, each power supply unit runs at less than 50% loading.

The number of power supply shelves should be selected based on the mains supply operating voltage, router type and router configuration.
See the following sections for information:

- **Sirius 830** - see section 3.3.1
- **Sirius 840** - see section 3.3.2
- **Sirius 850** - see section 3.3.3

3.3.1 Sirius 830: Power Supply Shelf Requirements

The number of power supply shelves should be selected based on the mains supply operating voltage and router configuration, see Table 2 for information.

To reduce the risk of electric shock, plug each power supply shelf into separate branch circuits employing separate service grounds.

Sirius 830 Router Configuration	Mains Supply (V AC)	Number of Power Supply Shelves and Units Required for Redundancy
Typical router configuration of less than 12 video AHP modules (5919/5949/5915/5925) fitted in the router	100 - 120 V AC Nominal	1 Shelf 4 Power Supply Units 2 DC Cables see section 3.6.2
If 12 or more video AHP modules (5919/5949/5915/5925) are fitted in the router	100 - 120 V AC Nominal	2 Shelves 6 Power Supply Units 4 DC Cables see sections 3.6.3 and 3.6.4
All router configurations	220 - 240 V AC Nominal	1 Shelf 4 Power Supply Units 2 DC Cables see section 3.6.2

Table 2 Sirius 830 Power Supply Redundancy

Important:

- If the Sirius 830 router is expanded from its initial configuration check Table 2 to see if extra power supply shelves are required. If an extra power supply shelf is required see section 4.5 for details on configuring PSU alarms.
- It is the responsibility of the Sirius 830 installer to ensure any AC power requirements are met.

3.3.2 Sirius 840: Power Supply Shelf Requirements

The number of power supply shelves should be selected based on the mains supply operating voltage and router configuration, see Table 3 for information.

To reduce the risk of electric shock, plug each power supply shelf into separate branch circuits employing separate service grounds.

Sirius 840 Router Configuration	Mains Supply (V AC)	Number of Power Supply Shelves and Units Required for Redundancy
Typical router configuration of less than 36 video AHP modules (5919/5949/5915/5925) fitted in the router	100 - 120 V AC Nominal	2 Shelves 8 Power Supply Units 4 DC Cables see sections 3.6.6 and 3.6.7
If 36 or more video AHP modules (5919/5949/5915/5925) are fitted in the router	100 - 120 V AC Nominal	3 Shelves 12 Power Supply Units 6 DC Cables see sections 3.6.10 and 3.6.11
Typical router configuration of less than 36 video AHP modules (5919/5949/5915/5925) fitted in the router	220 - 240 V AC Nominal	1 Shelf 4 Power Supply Units 3 DC Cables see section 3.6.5
If 36 or more video AHP modules (5919/5949/5915/5925) are fitted in the router	220 - 240 V AC Nominal	2 Shelves 8 Power Supply Units 6 DC Cables see sections 3.6.8 and 3.6.9

Table 3 Sirius 840 Power Supply Redundancy

Important:

- If the Sirius 840 router is expanded from its initial configuration check Table 3 to see if extra power supply shelves are required. If an extra power supply shelf is required see section 4.6 for details on configuring PSU alarms.
- It is the responsibility of the Sirius 840 installer to ensure any AC power requirements are met.

3.3.3 Sirius 850: Power Supply Shelf Requirements

The number of power supply shelves should be selected based on the mains supply operating voltage and router configuration, see Table 4 for information.

To reduce the risk of electric shock, plug each power supply shelf into separate branch circuits employing separate service grounds.

Sirius 850 Router Configuration	Mains Supply (V AC)	Number of Power Supply Shelves and Units Required for Redundancy
Typical router configuration of less than 20 video AHP modules (5919/5949/5915/5925) fitted in the router **and** no 5928 expansion output modules fitted (outputs above 576 or expansion to a second frame)	100 - 120 V AC Nominal	2 Shelves 8 Power Supply Units 4 DC Cables see sections 3.6.6 and 3.6.7
If 20 or more video AHP modules (5919/5949/5915/5925) are fitted in the router **and** any 5928 expansion output modules are fitted (outputs above 576 or expansion to a second frame)	100 - 120 V AC Nominal	3 Shelves 12 Power Supply Units 6 DC Cables see sections 3.6.10 and 3.6.11
All router configurations	220 - 240 V AC Nominal	2 Shelves 8 Power Supply Units 6 DC Cables see sections 3.6.8 and 3.6.9

Table 4 Sirius 850 Power Supply Redundancy

Important:

- If the Sirius 850 router is expanded from its initial configuration, check Table 4 to see if extra power supply shelves are required.
- It is the responsibility of the Sirius 850 installer to ensure any AC power requirements are met.

3.4 Power Supply Shelf

Caution

- Ensure that the power supply shelves are correctly earthed see section 2.7 for details.
- The power supply units contain dangerous high voltages and are **NOT** user-serviceable.
- The DC leads connecting the power supply shelf to the router are capable of supplying very high electric current. Do not short circuit.
- The power supply shelf has a protective metal mesh cover over the front of the individual power supply units, this should only be removed by a qualified engineer. See section 4.3 for details on replacing power supply units.
- There is one spare DC connector on each power supply shelf and up to four on the Sirius 800 router frame. Do not remove the covers of the unused connectors.

A single Power Supply Shelf is a separate 2RU assembly which contains up to four sealed power supply units (see Figure 5). The power supply units are self-contained and do not contain any serviceable components. The power supply shelf is rack-mountable and can be placed above, below or remote from the Sirius frame.

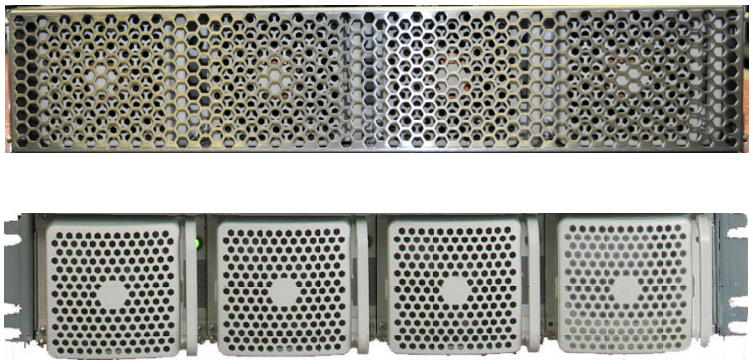


Figure 5 Front View of the Power Supply Shelf (with and without the Protective Cover)

The power supply shelf has auto-sensing inputs, which accept input voltages of between 100 V AC and 240 V AC at 50/60 Hz. Each power supply unit has an independent PowerCon AC input socket.

The AC input of each power supply unit is rated up to a maximum of 25 A. This assumes the power supply units are running at their maximum power. Any cables used must be rated above the rating of the circuit breaker with a suggested rating of 25 A.

The power supply shelf outputs 48 V DC and the power supply units current-share on the output. Each power supply shelf has three 48 V DC connectors at the rear but only two are used (see Figure 6). The power supply shelf can generate alarm signals to indicate presence and output status.

- Do not obstruct the air vents situated on both sides of the power supply shelf, and allow a minimum of 50 mm (2 inches) clearance to allow air flow. The air that is exhausted from the sides must be able to flow past the rear of the power supply shelf without being obstructed.
- The power supply unit is heavy weighing 24 Kg (53 lbs). When lifting use the correct local Health and Safety lifting guidelines.

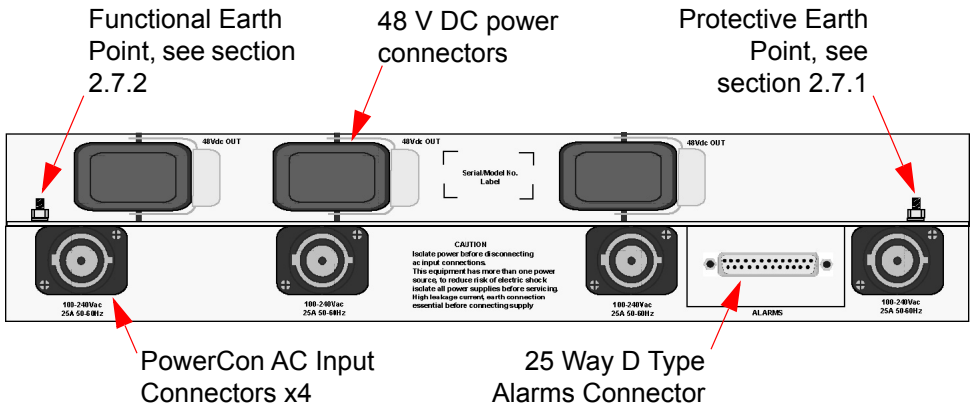


Figure 6 Power Supply Shelf Rear Panel

3.5 Power Distribution

The power supply shelves provide 48 V DC for distribution to the entire frame. All router modules (inside the frame) have on-board DC to DC converters to locally supply the required voltages. A single Green LED on the front edge of each module indicates that all is working correctly. This arrangement provides simple power distribution, as well as effective power de-coupling between modules.

Important: The Fan Out Control modules provide power to all fan modules. At least one Fan Control module must be present or the fans will stop, which will cause the Sirius 800 to quickly overheat. To prevent the fans from stopping, there are two Fan Control modules.

3.6 Power and Alarm Connections to the Sirius 800 Frame

The Sirius 800 is powered by up to three 2RU power supply shelves depending on the router configuration and mains voltage (see section 3.3 for details). The power supply shelves each have up to four PowerCon AC input connectors (see Figure 6).

Each power supply shelf has three 48 V DC power connectors. In some configurations only two power supply shelf DC connectors are used to power the Sirius 800. Covers must be left fitted to any unused 48 V DC sockets.

- The power supply shelves MUST be isolated from the AC supply by means of the external distribution switch/circuit breaker before connecting or disconnecting the 48 V DC power cables. This is required because the “PowerCon” connectors are not suitable for isolating current.
- This equipment has more than one power source, to reduce risk of electric shock isolate all power supplies before servicing.
- High leakage current, Protective Earth connection essential before connecting supply (see section 2.7.1).

Up to two power supply alarm cables (636028) are supplied with the Sirius 800 depending on the number of power supply shelves fitted. Connect each power supply shelf to the router alarm rear panel using the 25-Way connector. The alarm signals send a warning to the Door PC, and via external GPIs or an external Workbench system if there is a power supply failure.

The power supply alarm cable(s) are supplied by Grass Valley and can be ordered as either 2.5 meter cables or 8 meter cables.

3.6.1 48 V DC Power Out Cables

See sections 3.6.2 to 3.6.11 (depending on router type and the number of power supply shelves used) for the 48 V DC connection details. The 48 V DC power cables are supplied by Grass Valley and can be ordered as either 2.5 meter cables or 8 meter cables.

Important:

- All of the 48 V DC cables from the power supply shelves to the Sirius 800 router must be the same length to ensure that the voltage drop along each cable is the same at high currents.
- The power supply shelves MUST be isolated from the AC supply by means of the external distribution switch/circuit breaker before connecting or disconnecting the 48 V DC power cables.

3.6.2 Sirius 830: Single Power Shelf Connections (2 DC Cables)

This connection method is suitable for a single power shelf fitted with four power supply units and two DC cables.

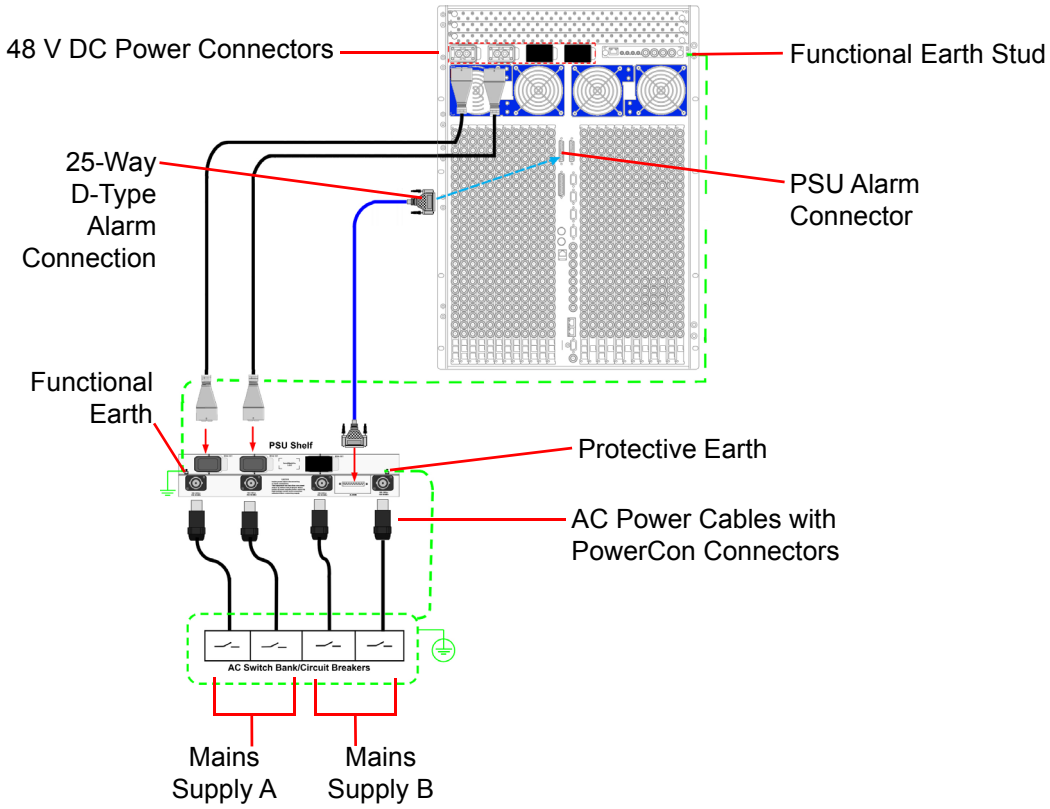


Figure 7 Sirius 830 Single Power Shelf, 2 DC Cables and Alarm Connection

Two separate mains supplies should be used to maintain redundancy in the event of one supply failing.

There is one spare 48 V DC connector on the power supply shelf and two on the Sirius 830 router frame. Do not remove the covers of the unused connectors.

Note:

- The three 48 V DC power connectors on the power supply shelf are common. Any two of the three sockets can be used to power the router frame.
- The four 48 V DC power sockets on the router frame are common. Any two of the four sockets can be used to power the router frame.

3.6.3 Sirius 830: Dual Power Shelf Connections (4 DC Cables)

This connection method is suitable for systems with two power shelves (fitted with three power supply units each) and two DC cables. This connection method allows an individual power supply shelf to be isolated if required
(see section 4.4).

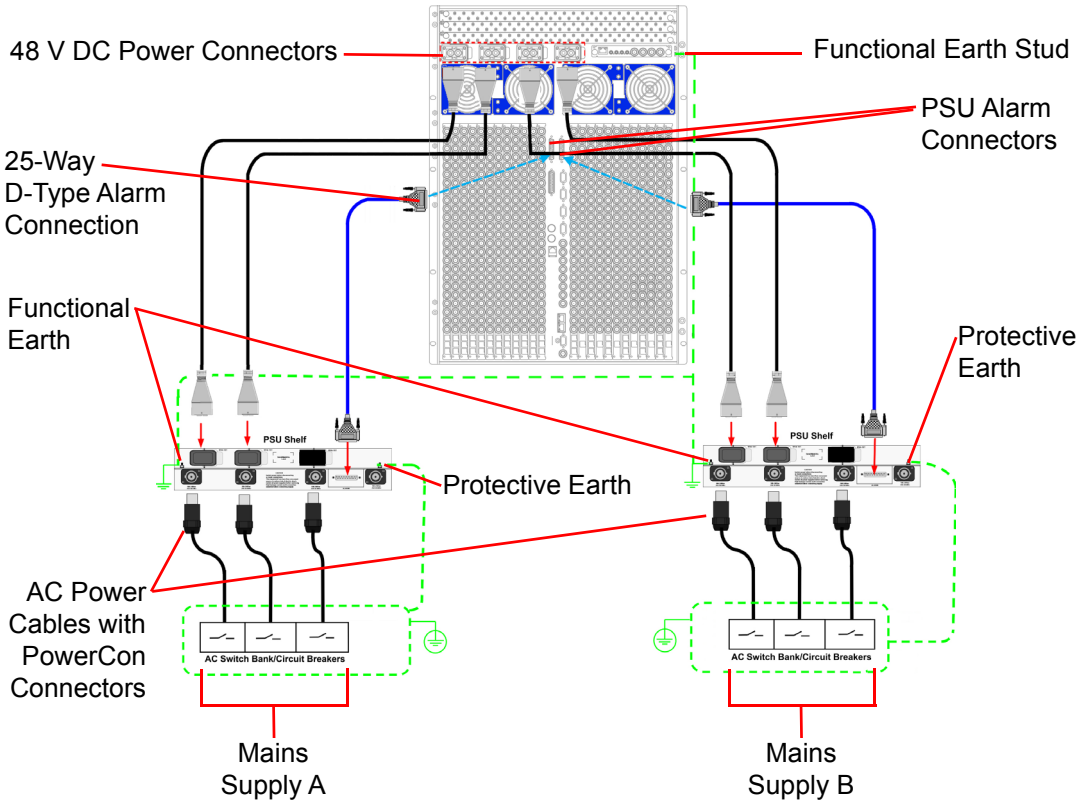


Figure 8 Sirius 830 Dual Power Shelf, 4 DC Cables and Alarm Connections

Two separate mains supplies should be used to maintain redundancy in the event of one supply failing.

There is one spare 48 V DC connector on each power supply shelf. Do not remove the covers of the unused connectors.

Note: The three 48 V DC power connectors on each power supply shelf are common. Any two of the three sockets on each shelf can be used to power the router frame.

3.6.4 Sirius 830: Alternative Dual Power Shelf Connections (4 DC Cables)

This connection method is suitable for systems with two power shelves (one fitted with four power supply units and the other fitted with two) and four DC cables.

Note: An individual power supply shelf cannot be isolated when connected in this configuration. If you need to be able to isolate an individual power supply shelf the mains supplies should be connected as described in section 3.6.3.

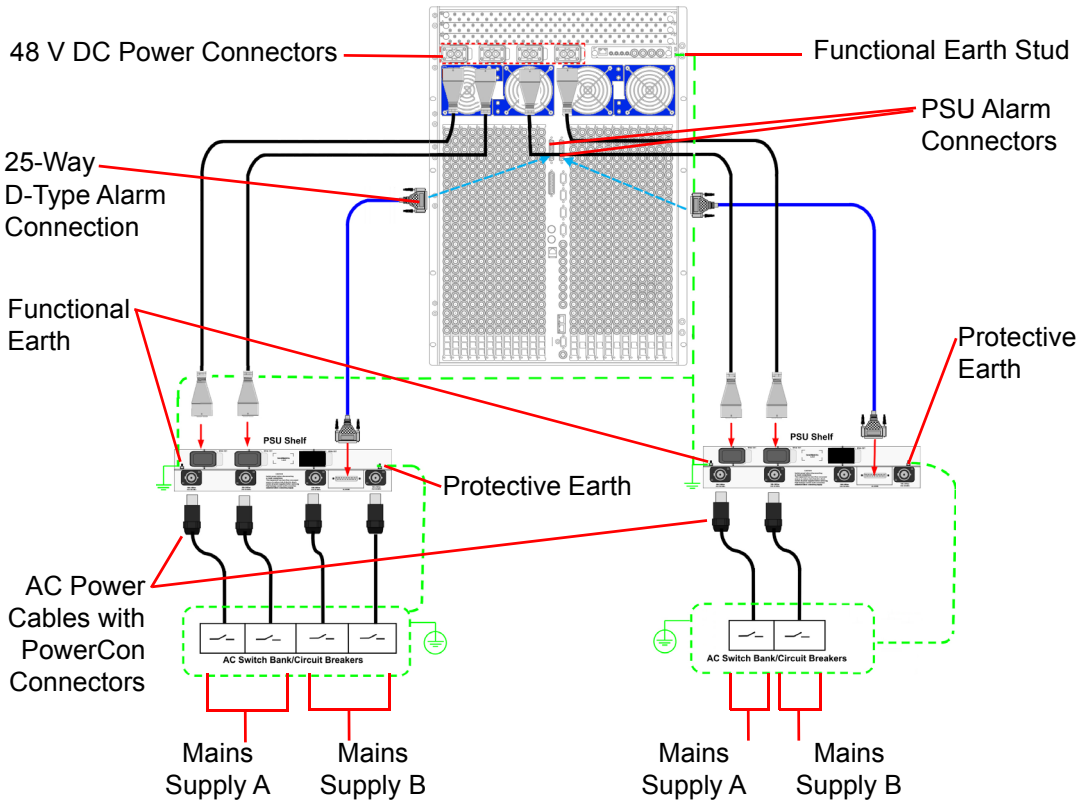


Figure 9 Sirius 830 Alternative Dual Power Shelf, 4 DC Cables and Alarm Connections

Two separate mains supplies should be used to maintain redundancy in the event of one supply failing.

There is one spare 48 V DC connector on each power supply shelf. Do not remove the covers of the unused connectors.

Note: The three 48 V DC power connectors on each power supply shelf are common. Any two of the three sockets can be used to power the router frame.

3.6.5 Sirius 840: Single Power Supply Shelf Connections (3 DC Cables)

This connection method is suitable for a single power shelf fitted with four power supply units and three DC cables.

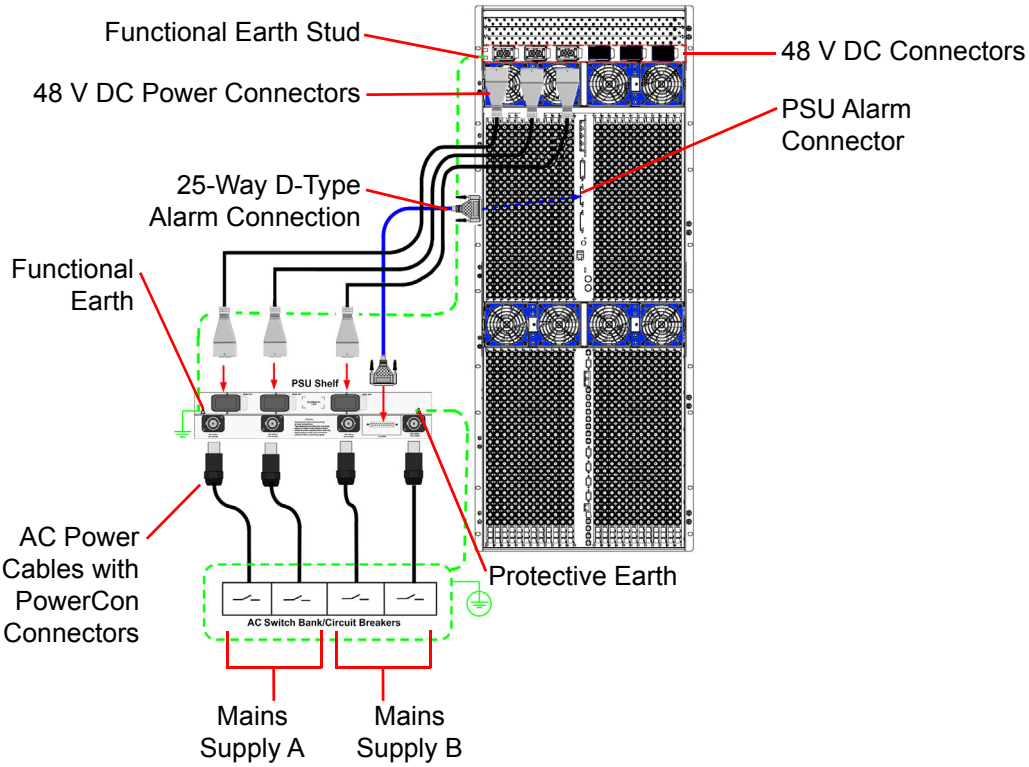


Figure 10 Sirius 840 Single Power Shelf, 3 DC Cables and Alarm Connection

Two separate mains supplies should be used to maintain redundancy in the event of one supply failing.

There are three spare 48 V DC connectors on the Sirius 840 router frame. Do not remove the covers of the unused connectors.

Note: The six 48 V DC power sockets on the router frame are common. Any three of the six sockets can be used to power the router frame.

3.6.6 Sirius 840/850: Dual Power Shelf Connections (4 DC Cables)

This connection method is suitable for systems with two power shelves (fitted with four power supply units each) and four DC cables. This connection method allows an individual power supply shelf to be isolated if required (see section 4.4).

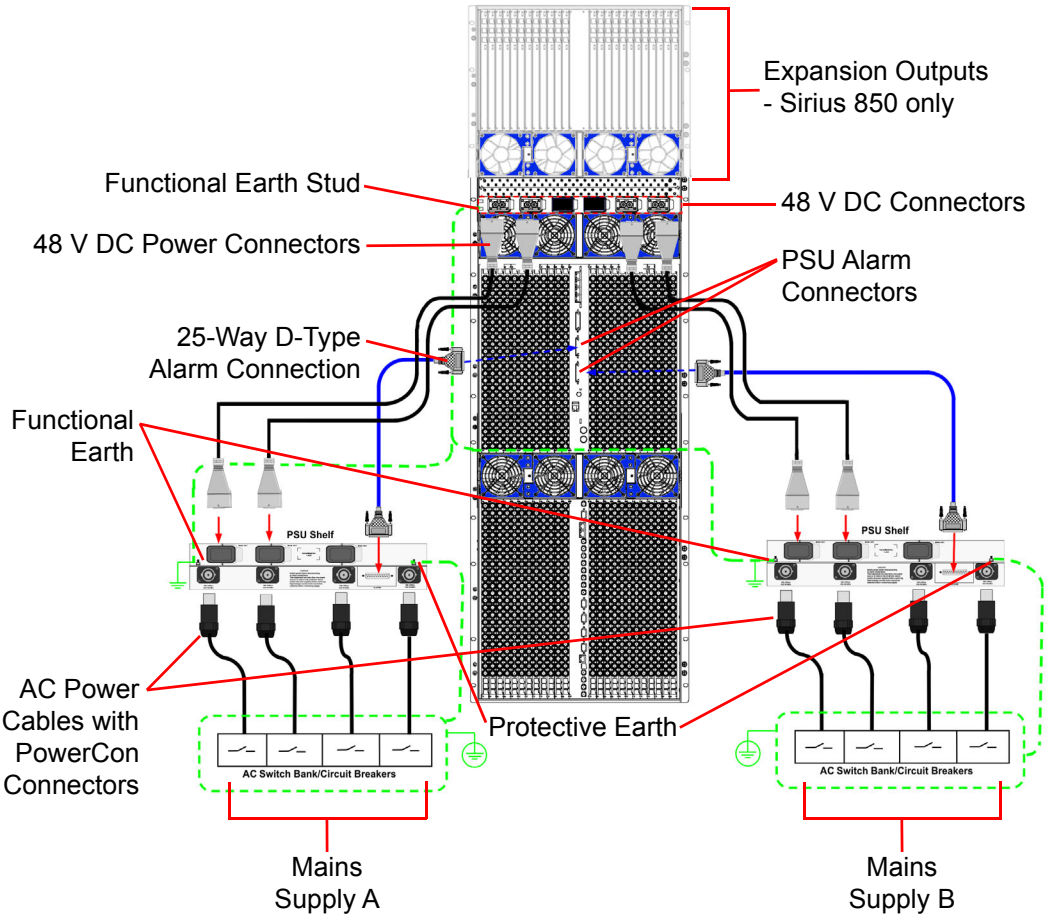


Figure 11 Sirius 840/850 Dual Power Shelf, 4 DC Cables and Alarm Connections

Two separate mains supplies should be used to maintain redundancy in the event of one supply failing.

There is one spare 48 V DC connector on each power supply shelf and two on the Sirius 840/850 router frame. Do not remove the covers of the unused connectors.

Note:

- The three 48 V DC power connectors on each power supply shelf are common. Any two of the three sockets on each shelf can be used to power the router frame.
- The six 48 V DC power sockets on the router frame are common. Any four of the six sockets (two from each power supply shelf) can be used to power the router frame.

3.6.7 Sirius 840/850: Alternative Dual Power Shelf Connections (4 DC Cables)

This connection method is suitable for systems with two power shelves (fitted with four power supply units each) and four DC cables.

Note: An individual power supply shelf cannot be isolated when connected in this configuration. If you need to be able to isolate an individual power supply shelf the mains supplies should be connected as described in section 3.6.6.

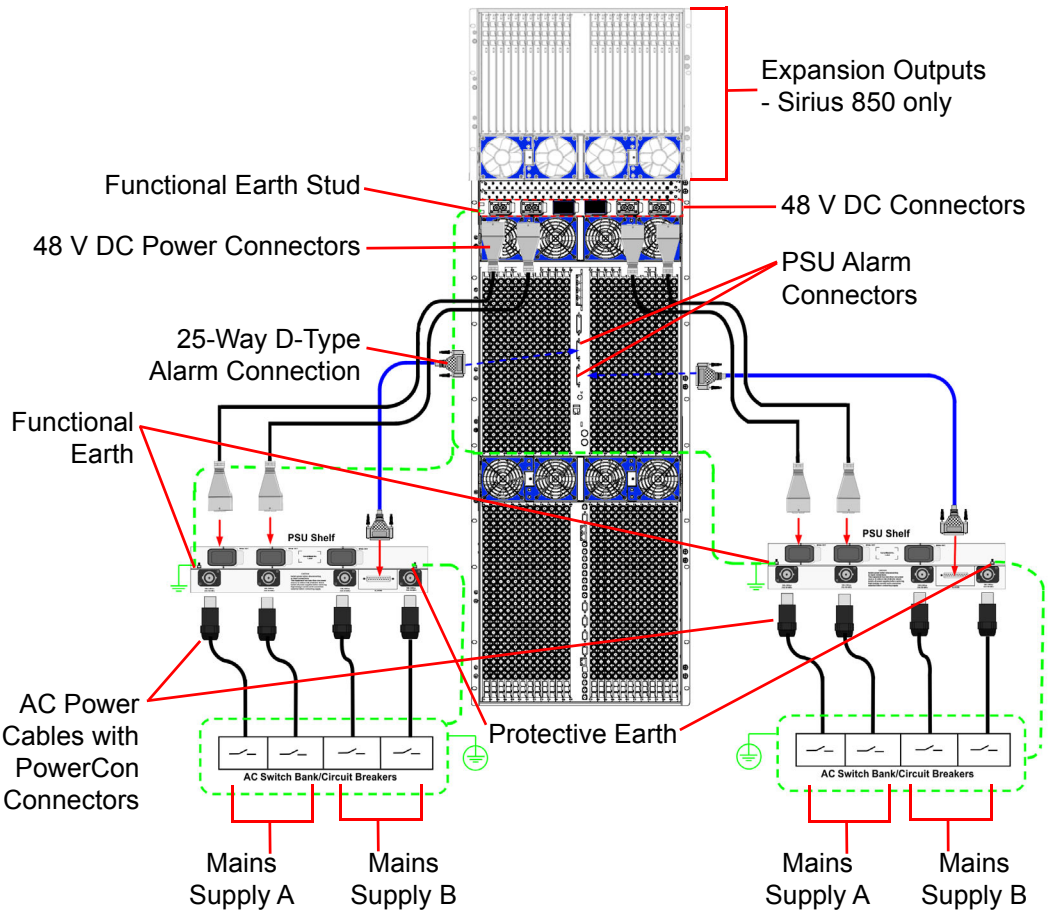


Figure 12 Sirius 840/850 Alternative Dual Power Shelf, 4 DC Cables and Alarm Connections

Two separate mains supplies should be used to maintain redundancy in the event of one supply failing.

There is one spare 48 V DC connector on each power supply shelf and two on the Sirius 840/850 router frame. Do not remove the covers of the unused connectors.

Note:

- The three 48 V DC power connectors on each power supply shelf are common. Any two of the three sockets can be used to power the router frame.
- The six 48 V DC power sockets on the router frame are common. Any four of the six sockets (two from each power supply shelf) can be used to power the router frame.

3.6.8 Sirius 840/850: Dual Power Shelf Connections (6 DC Cables)

This connection method is suitable for systems with two power shelves (fitted with four power supply units each) and six DC cables. This connections method allows an individual power supply shelf to be isolated if required (see section 4.4).

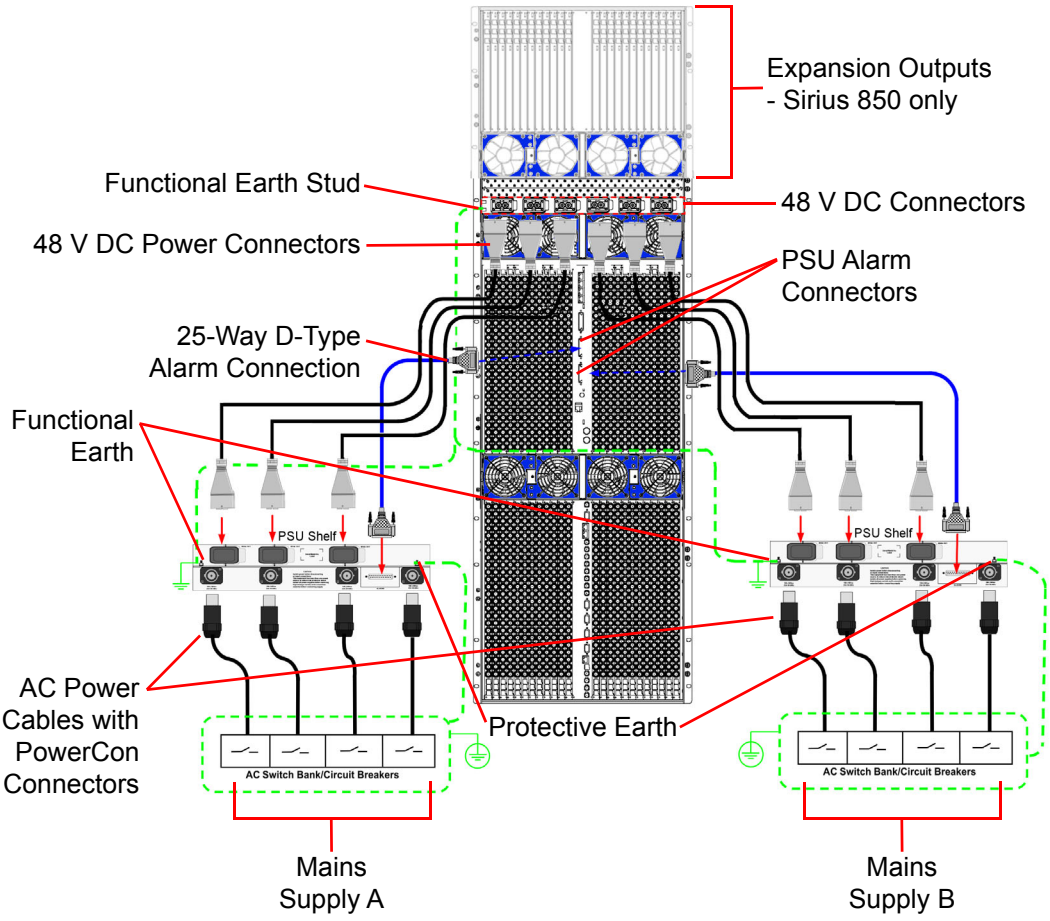


Figure 13 Sirius 840/850 Dual Power Shelf, 6 DC Cables and Alarm Connections

Two separate mains supplies should be used to maintain redundancy in the event of one supply failing.

3.6.9 Sirius 840/850: Alternative Dual Power Shelf Connections (6 DC Cables)

This connection method is suitable for systems with two power shelves (fitted with four power supply units each) and six DC cables.

Note: An individual power supply shelf cannot be isolated when connected in this configuration. If you need to be able to isolate an individual power supply shelf the mains supplies should be connected as described in section 3.6.6.

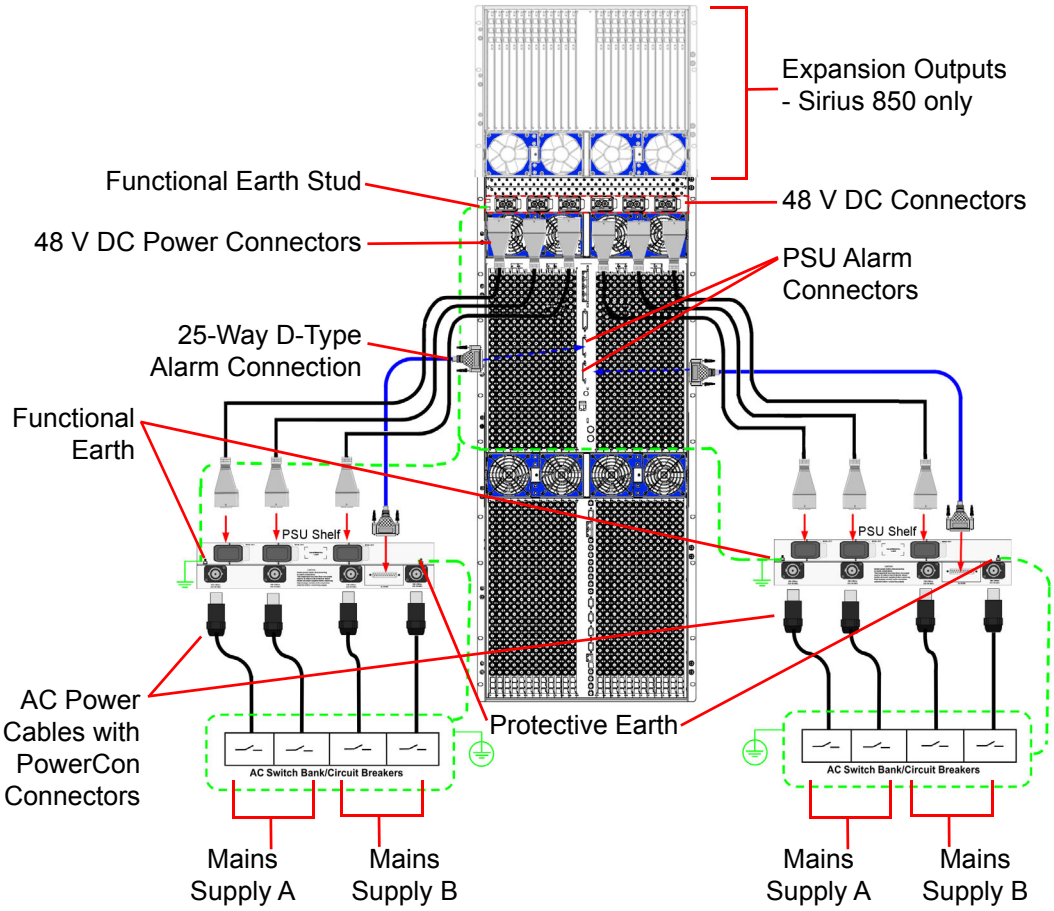


Figure 14 Sirius 840/850 Alternative Dual Power Shelf, 6 DC Cables and Alarm Connections

Two separate mains supplies should be used to maintain redundancy in the event of one supply failing.

3.6.10 Sirius 850: Triple Power Shelf Connections (6 DC Cables)

This connection method is suitable for systems with three power shelves (fitted with four power supply units each) and six DC cables.

Note:

- When a power supply shelf is fed by two mains supplies (as shown in Figure 15) it cannot be isolated.
- If three separate mains supplies are available then each power supply shelf can be connected to a different mains supply. This configuration allows an individual power supply shelf to be isolated if required (see section 4.4).
- The Sirius 850 only has two PSU alarm connectors so the third power supply shelf is not monitored for alarms.

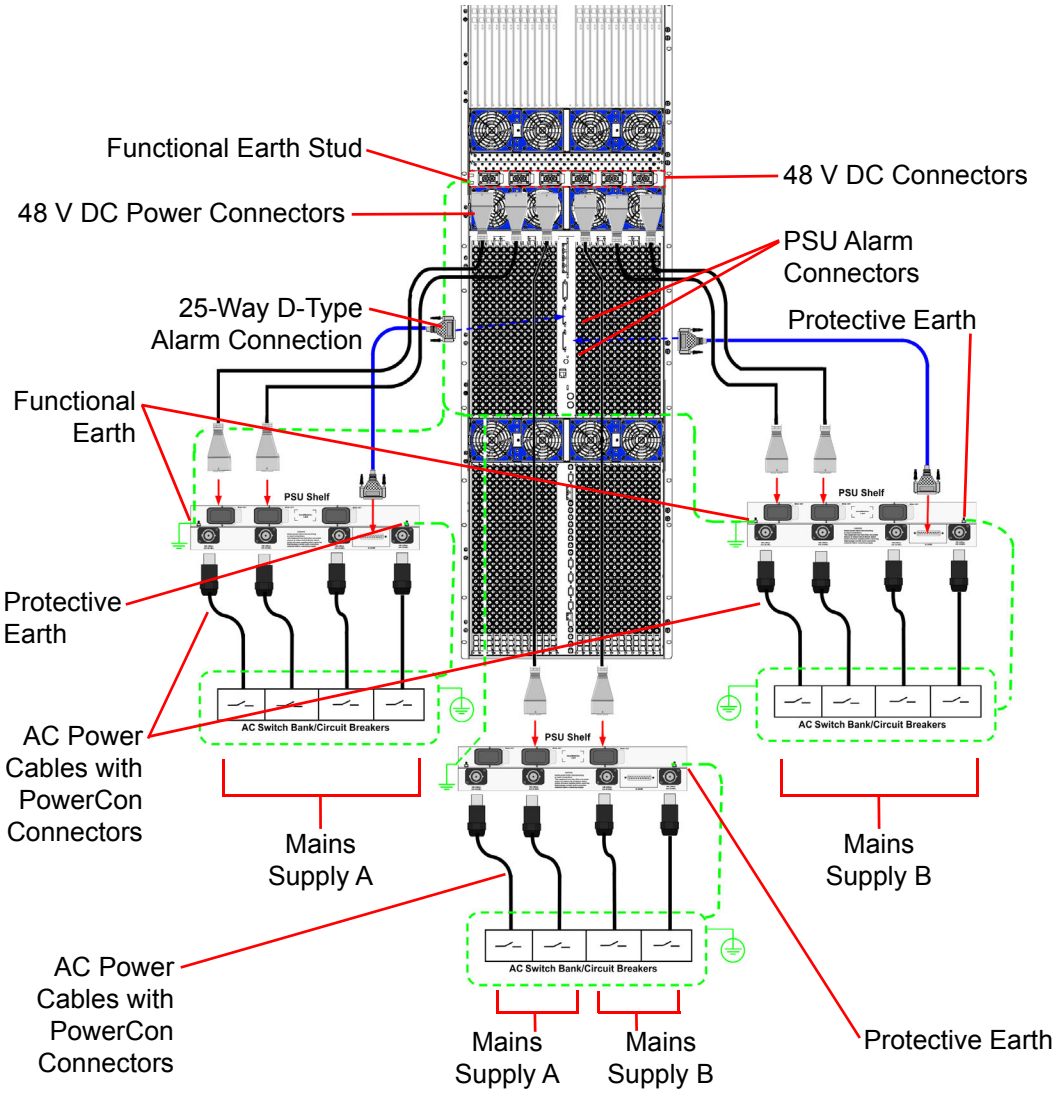


Figure 15 Sirius 850 Triple Power Shelf, 6 DC Cables and Alarm Connections

At least two separate mains supplies should be used to maintain redundancy in the event of one supply failing.

There is one spare 48 V DC connector on each power supply shelf. Do not remove the covers of the unused connectors.

Note:

The three 48 V DC power connectors on each power supply shelf are common. Any two of the three sockets can be used to power the router frame.

3.6.11 Sirius 850: Alternative Triple Power Shelf Connections (6 DC Cables)

This connection method is suitable for systems with three power shelves (fitted with four power supply units each) and six cables.

Note:

- An individual power supply shelf cannot be isolated when connected in this configuration. If you need to be able to isolate an individual power supply shelf each shelf must be supplied with a separate mains supply and connected as described in the note in section 3.6.10.
- The Sirius 850 only has two PSU alarm connectors so the third power supply shelf is not monitored for alarms.

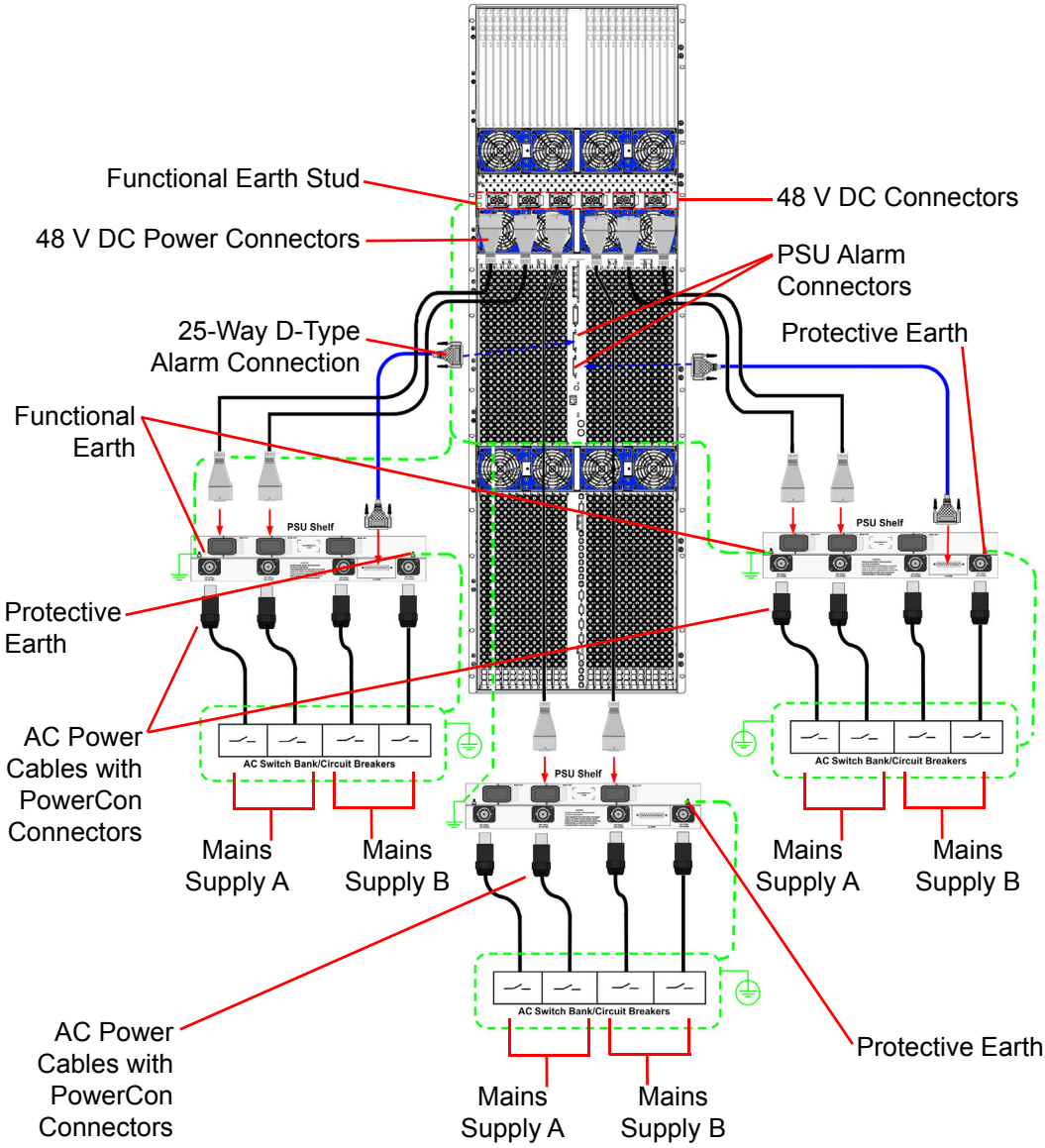


Figure 16 Sirius 850 Alternate Triple Power Shelf, 6 DC Cables and Alarm Connections

At least two separate mains supplies should be used to maintain redundancy in the event of one supply failing.

There is one spare 48 V DC connector on each power supply shelf. Do not remove the covers of the unused connectors.

Note:

The three 48 V DC power connectors on each power supply shelf are common. Any two of the three sockets can be used to power the router frame.

4 Power Supply and Fan Maintenance

Chapter contains:

Power Supply and Fan Maintenance

Before powering the router on ensure that the router has been installed in accordance with the appropriate Sirius 800 Installation and Quick Start guide and local safety regulations.

4.1 Powering Up the Sirius 800

When power is connected to the Sirius 800, the controllers and fans switch on immediately. The main signal modules within the Sirius 800 start to power up one second after the 48 V DC supply has been switched on.

Important: To avoid overloading the individual external power supply units, make sure that you power them all up as quickly as possible and at least half of the power supply units within one second of each other.

4.1.1 Power Sequencing

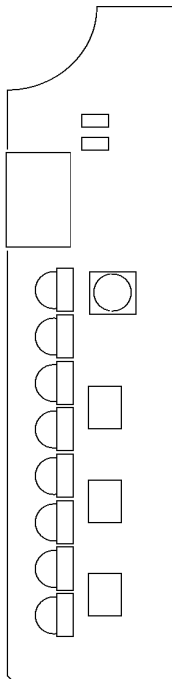
To reduce the inrush current when the whole unit is powered up the modules in the router power up over a period of six seconds starting with the controllers and fans, and ending with the audio crosspoints.

Note: When hot plugging a module into the Sirius 800, there is a delay before the module powers up.

4.1.2 Power Up and Initialization

Once the controller has booted (see Figure 17 for LED states when the controller is running), it is ready to setup. Router Configuration is carried out using Workbench. If the system has already been configured, it returns to the state it was in (all signal routing and monitor settings) when it was last powered.

Nucleus2 Controller



Steady Green - Power OK

Flashing Green = Controller Active, Flashing Blue = Controller Idle - 1

Steady Green = Master Controller, Flashing Blue = Slave Controller - 2

Flashing Green or Orange - 3

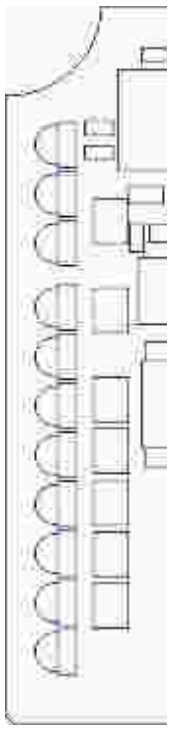
Pulsing Orange = Controller Mismatch - 4

Off or Flashing - 5

Not used - Off - 6

Not used - Off - 7

Nucleus 2450 Controller



Blue = Controller Active, Purple (Blue + Red) = Controller Idle - D4

Green or Off - D5

Flashing Green or Off - D6

Blue or Off - D9

Not used - Off - D10

Not used - Off - D11

Not used - Off - D12

Green or Off - D13

Flashing Green, Steady Blue or Off - D14

Steady Red = Controller Mismatch - D15

Flashing Green = Controller Active, Flashing Red = Controller Idle - D16

Figure 17 Nucleus2 & Nucleus 2450 Controller LED State when Running

Note: For full details of the Controller LED colors see section 9.

4.1.2.1 Configuration Errors

The router controller generates an error if one or more of the configured modules in the router fails to power up. Errors are displayed in Workbench, on the Door screen and by the router controller LEDs (see Table 5 for LED color and Figure 17 for LED location).

Router Controller	LED	LED Color
Nucleus2	4	Pulsing Orange
Nucleus 2450	D15	Steady Red

Table 5 Configuration Errors

If the Door screen and router controller indicate that the configuration is not as expected (i.e. modules added or missing) then this can be resolved using Workbench. For details of how to add modules to the router see section 6.3.

4.1.3 Starting the Door PC Manually

The Door PC starts automatically when the Sirius 800 is powered up. If the Door PC has been shut down and needs starting manually the following procedure should be used.

1. With the Sirius 800 running open the frame door.
2. Inside the back of the door is the power switch for the Door PC (see Figure 18).
3. Switch the Door PC on by pressing and releasing the Door PC power switch (it will not latch in place). Wait until the computer is fully booted up before proceeding further.

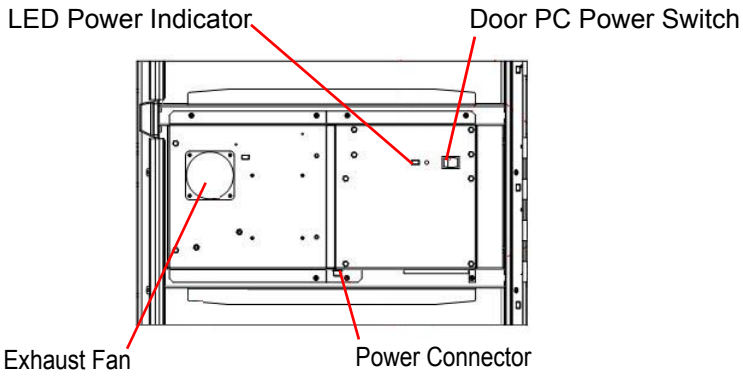


Figure 18 Door PC Rear View

4.2 Powering Down the Sirius 800

Before powering down the Sirius 800 router switch the Door PC off using one of the following methods:

Method 1

1. Navigate to the Door PC main menu and touch the *Exit* button on the screen.
2. A new screen will be displayed with a *Shutdown* button.
3. Touch the *Shutdown* button and the Door PC will shutdown.
4. Wait until Windows closes and the screen goes black, then power down the Sirius 800. Make sure that all the external power supply shelves are switched off as quickly as possible.

Method 2

1. Alternatively open the door and press and release the Door PC power switch (see Figure 18). The power switch does not latch in place.
2. This causes LiveRunner to close and Windows to shut down.
3. Wait until Windows closes and the screen goes black, then power down the Sirius 800. Make sure that all the external power supply shelves are switched off as quickly as possible.

Important: To avoid overloading the individual external power supply units, make sure that all the external power supply shelves are switched off as quickly as possible.

4.3 Hot Swapping the Power Supply Units

- Great care should be taken when removing an individual PSU from a power shelf. This should only be carried out by a qualified engineer.
- Individual PSUs can be hot swapped however if a complete power supply shelf needs to be replaced it must be isolated first. See section 4.4 for details.

Important:

- The power supply unit is heavy weighing 24 Kg (53 lbs). When lifting use the correct local Health and Safety lifting guidelines.

1. Remove the protective mesh cover from the front of the power supply shelf by loosening the four hexagon head screws (2 either side of the mesh cover) using a 2.5 size Hex key or driver. Carefully pull the mesh cover away from the front of the PSU shelf, see Figure 19

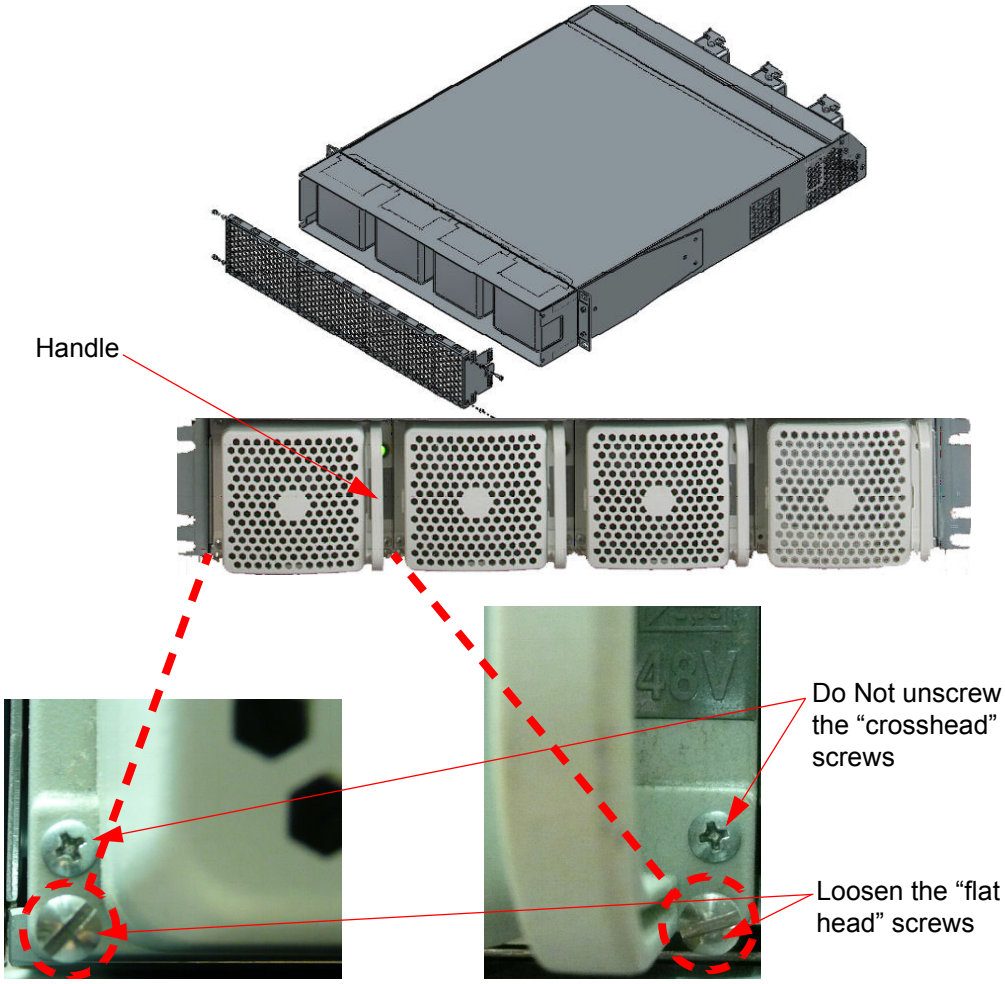


Figure 19 Removing the Power Supply Units

2. To remove an individual PSU loosen the two “flat head” screws at the very bottom of the PSU (see Figure 19).

Important: Do not unscrew the “crosshead” screws marked in Figure 19

3. Take hold of the handle on the right side of the PSU and carefully withdraw it from the frame.
4. When you have removed the PSU, an alarm signal is active until the unit is replaced. If the PSU is removed from a power shelf that doesn’t have an alarm cable fitted the alarm will not be activated. This is the case in Sirius 850 systems equipped with three power supply shelves.

4.4 Isolating a Power Supply shelf

If you need to isolate a power supply shelf (e.g. for PAT testing), one of the shelves can be disconnected:

- Even when the Power Supply shelf is powered down, the 48 Vdc terminals are still active because they are powered from the other Power Supply shelf.
- The power supply shelves must be powered from separate mains supplies, see section 3.6 for details of which mains supply configurations can be isolated.

1. Ensure all PSUs are operational in all shelves
2. Switch off all the AC mains connections to the Power Supply shelf to be isolated
3. Disconnect the two DC power cables from the rear of the Sirius 800. Ensure they are the two from the Power Supply shelf that has been powered down.
4. Disconnect the PSU alarm cable (if fitted) and earth cable. Ensure the Sirius 800 frame is still earthed via the other Power Supply shelf.
5. The PSU shelf is now isolated from the Sirius 800. There is no redundant power supply to the Sirius 800, so care must be taken to ensure there are no other failures.
6. Replacement is the reverse procedure.

4.5 Enabling PSU Alarms for a Second Power Supply Shelf

If a second power supply shelf is added to an existing Sirius 800 router the router must be configured correctly to enable it to report power supply status and alarms for the new power shelf. A jumper on the router alarm rear panel enables/disables alarm and status reporting for the PSU B alarm connector.

- **Sirius 830** - see section 4.5.1 for jumper setting details.
- **Sirius 840** - see section 4.5.2 for jumper setting details.
- **Sirius 850** - Not applicable as minimum configuration for the Sirius 850 is two power supply shelves.

Note:

- If the router was originally supplied with two power supply shelves or the second shelf is being replaced this process is not necessary as the jumper will already be in the correct position
- The jumper setting can be changed while the router is powered but a minimum of four signal modules and their associated rear panels must be removed from the router to allow access to change the jumper setting.
- Before changing the jumper setting read through the procedure for your router type to determine whether the work will disrupt router operation.

4.5.1 Sirius 830

Important:

- The fan assembly should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.
- Rear panels must be fitted and fastened securely to the router frame before inserting the front modules.

Tools required:

- Screwdriver for the Pozidriv Pan head M3 x 6 mm rear panel fixing screws.

Before starting read the following procedure fully to ensure you understand it. This will help to minimize the time the fan doors are left open.

1. Open the router front door and the lower fan door assembly.
2. Partially remove any modules fitted in the slots indicated in Figure 20 They only need to be pulled out approximately 25 mm (1”) to allow the rears to be removed. See section 5.3 for details on removing modules:

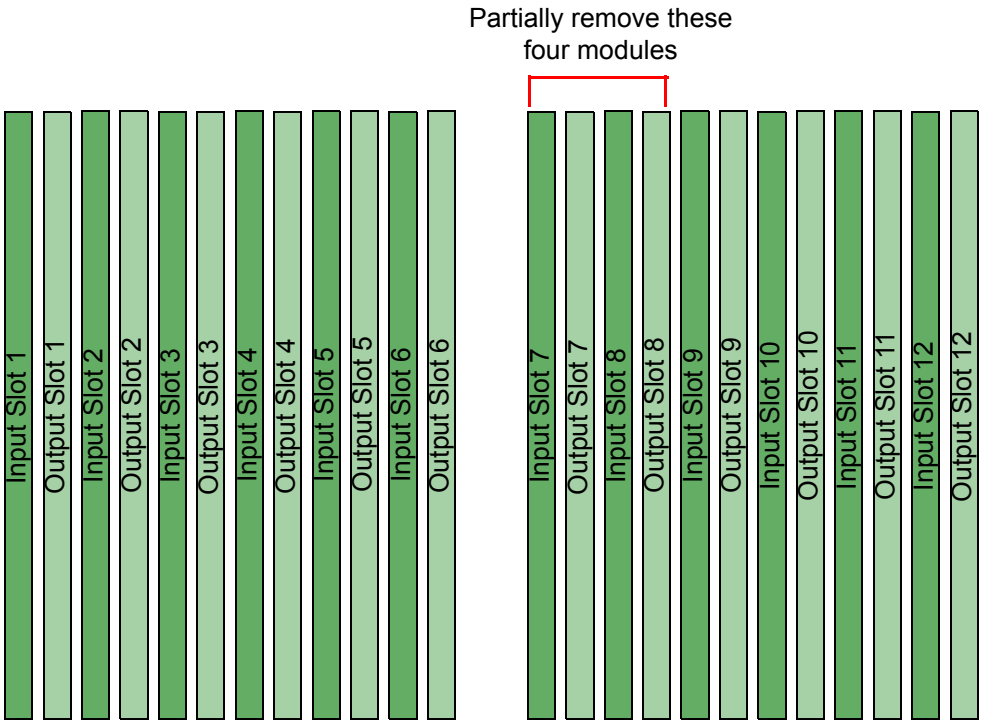


Figure 20 Sirius 830 Input and Output Module Locations (Front View)

3. Make a note of the types and slot locations of the rear panels to be removed (indicated in Figure 21) and then remove the rear panels. See section 5.3 for details on removing rear panels:

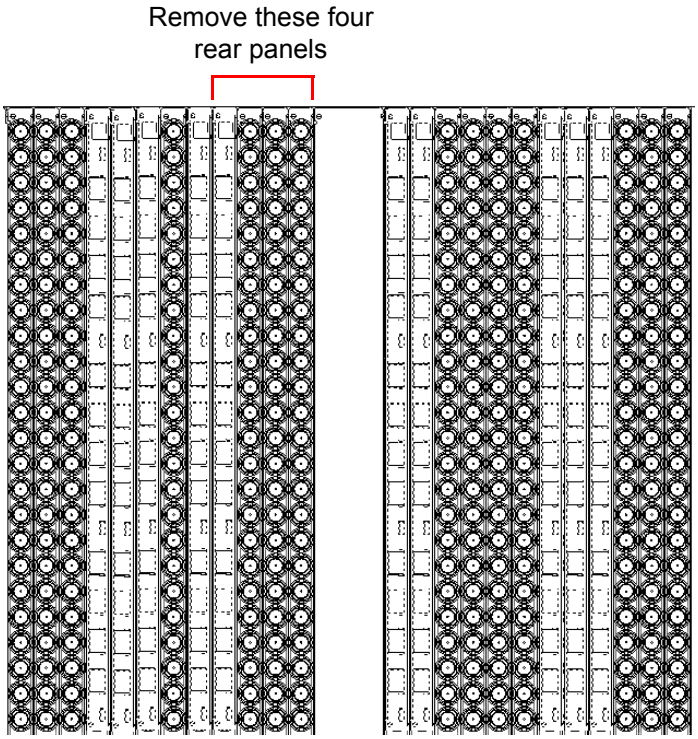


Figure 21 Example: Sirius 830 Slot Positions (Rear View)

4. Locate jumper PL 10 and move it to the position shown in Figure 22

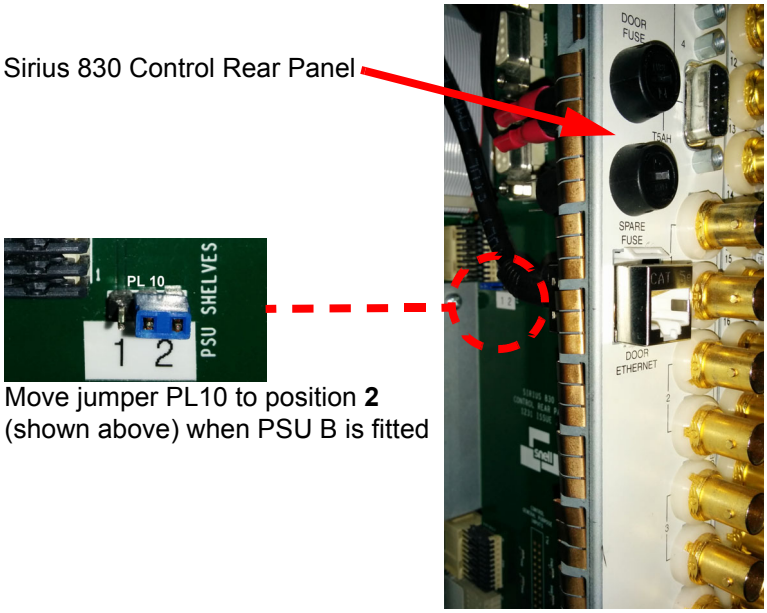


Figure 22 Sirius 830 PSU B Jumper Location

5. Refit the rear panels, ensure they are refitted back in the slots they were originally fitted in. See section 5.3 for details on fitting rear panels.

6. Refit the modules, ensure they are refitted in the slots they were originally fitted in. See section 5.3 for details on fitting modules.

7. Close the front fan frame assembly making sure not to trap any wires.

4.5.2 Sirius 840

Important:

- The fan assembly should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.
- Rear panels must be fitted and fastened securely to the router frame before inserting the front modules.
- **T**he crosspoint fan assembly must also be opened to access the input modules.

Tools required:

- Screwdriver for the Pozidriv Pan head M3 x 6 mm rear panel fixing screws.

Before starting read the following procedure fully to ensure you understand it. This will help to minimize the time the fan doors are left open.

1. Open the router front door. Open the Input module and Crosspoint module fan door assemblies.
2. Partially remove any input modules fitted in the slots indicated in Figure 23 They only need to be pulled out approximately 25 mm (1”) to allow the rears to be removed. See section 5.3 for details on removing modules:

Figure 23 Sirius 840 Input Module Location (Front View)

3. Make a note of the types and slot locations of the rear panels to be removed (indicated in Figure 24) and then remove the rear panels. See section 5.3 for details on removing rear panels:

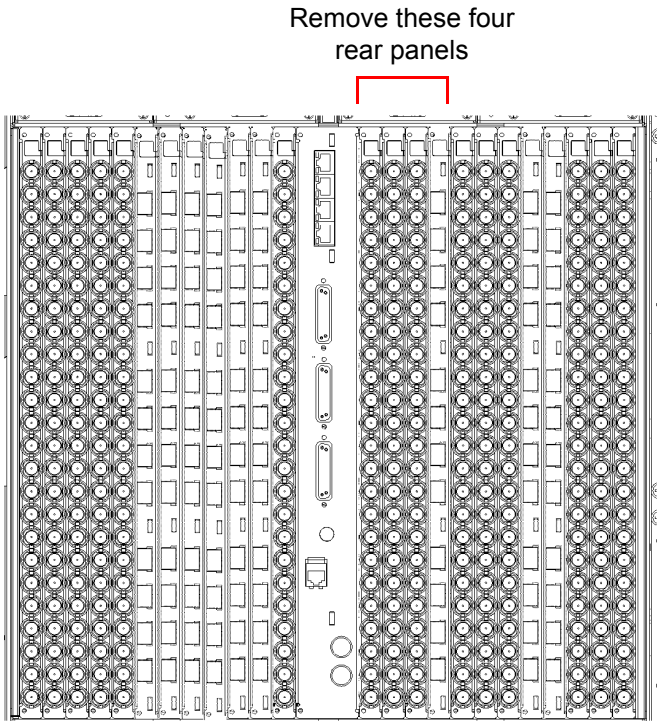


Figure 24 Example: Sirius 840 Slot Positions (Rear View)

4. Locate jumper PL 10 and move it to the position shown in Figure 25:

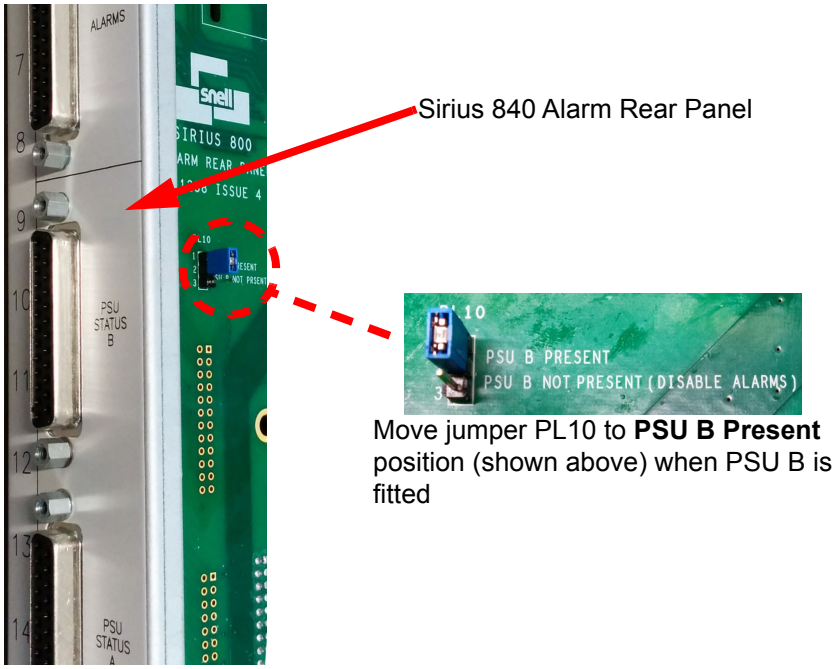


Figure 25 Sirius 840 PSU B Jumper Location

5. Refit the rear panels, ensure they are refitted back in the slots they were originally fitted in. See section 5.3 for details on fitting rear panels.

6. Refit the input modules, ensure they are refitted in the slots they were originally fitted in. See section 5.3 for details on fitting modules.

7. Close the front fan frame assembly making sure not to trap any wires.

4.6 Fan Replacement

4.6.1 Frame Configuration Identification

There are three possible configurations for each Sirius 800 router model in the field. These configurations are listed in Table 6 Each configuration enables the router to work with particular input/output modules and controllers. Each configuration also uses different combinations of front and rear fans.

Table 6 can be used to check if a router frame has been modified and identify which configuration it is. This can then be used in conjunction with the other tables in this section to see which fans are fitted to the router.

Frame Configuration	Mark 1 Frame Configuration	Mark 2 Frame Configuration	Mark 3 Frame Configuration
Description	Standard Unmodified Frame	Original Modified Frame	Standard & Modified Blue Fan Frame
Supported by Frame Configuration	Video Routing Only (no Video or Audio Processing)	Video & Audio Routing, Audio Processing (no Video Processing)	Video & Audio Routing, Video & Audio Processing
Router Controller(s)	Nucleus 2450	Nucleus2 2464/2463	Nucleus2 2464/2463
Fan-Out Controller(s)	**Sirius 830**: 2453 **Sirius 840/850**: 2452	**Sirius 830**: 2455 **Sirius 840/850**: 2456	**Sirius 830**: 2457 (blue boards) **Sirius 840/850**: 2458 (blue boards)
Fans	Silver fan casings (front and rear) with no letters stamped on them	Silver fan casings, rear fan casings stamped with “HF”	Front and rear fans with blue fan casings

Table 6 Frame Configuration Identification

- DO NOT fit Blue Control/Fan Interface modules (2457/2458) in a router equipped with fans with Silver casings as this will damage the router and the router will stop working.
- DO NOT fit Green Control/Fan Interface modules (2455/2456/2452/2453) in a router equipped with fans with Blue casings as this will damage the router and the router will stop working.

4.6.2 Sirius 830 Replacement Fan Part Numbers

The following tables show the replacement fan part numbers for each of the Sirius 830 frame configuration options. To identify which configuration your frame is see Table 6

Sirius 830 Replacement Front Fans

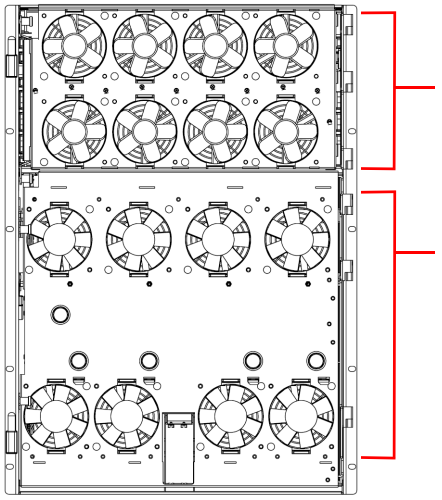
Sirius 830 Front View	Mark 1 Frame Configuration	Mark 2 Frame Configuration	Mark 3 Frame Configuration
	Fan Spare Part Numbers		
	**Crosspoint and Multiviewer Door**		
	8 x FGAEY 1270C	8 x FGAEY 1270C	8 x FGAEY 6081270
	Input/Output Module Door		
	8 x FGAEY 1270C	8 x FGAEY 6080890 Y	8 x FGAEY 6081280

Table 7 Sirius 830 Replacement Front Fan Part Numbers

Sirius 830 Replacement Rear Fans

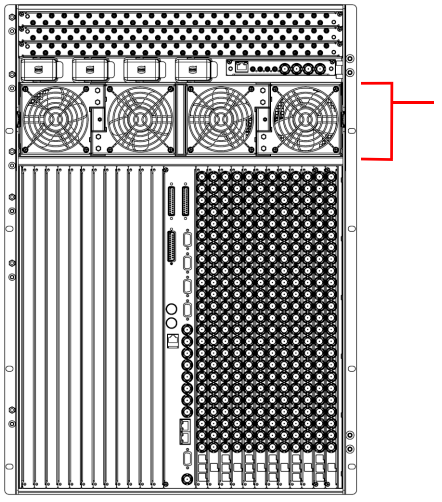
Sirius 830 Rear View	Mark 1 Frame Configuration	Mark 2 Frame Configuration	Mark 3 Frame Configuration
	Fan Spare Part Numbers		
	**Rear Crosspoint Fans**		
	4 x FGAEY 1270C	4 x FGAEY 6080890 Y	4 x FGAEY 6081280

Table 8 Sirius 830 Replacement Rear Fan Part Numbers

4.6.3 Sirius 840/850 Replacement Fan Part Numbers

The following tables show the replacement fan part numbers for each of the Sirius 840/850 frame configuration options. To identify which configuration your frame is see Table 6

Sirius 840/850 Replacement Front Fans

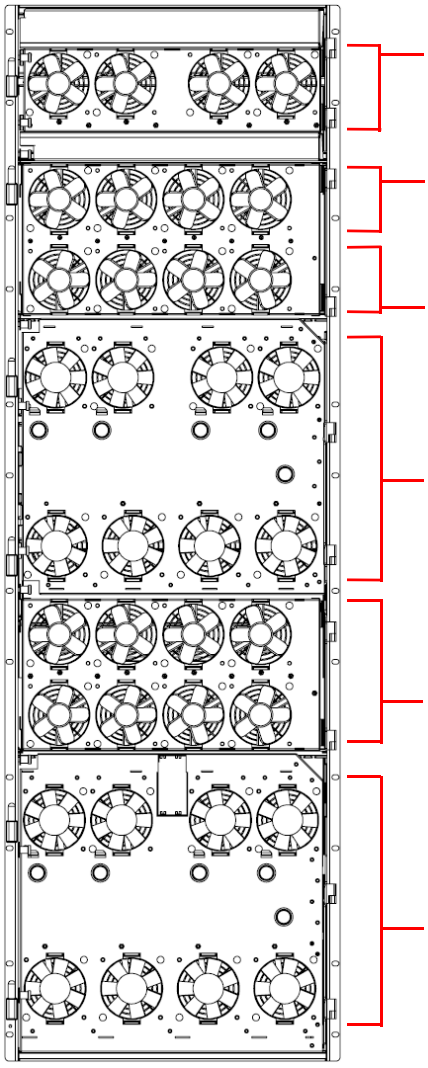
Sirius 840/850 Front View	Mark 1 Frame Configuration	Mark 2 Frame Configuration	Mark 3 Frame Configuration
	Fan Spare Part Numbers		
	**Expansion Door Fans** (Sirius 850 Only)		
	4 x FGAEY 1270C	4 x FGAEY 1270C	4 x FGAEY 6081270
	Upper Crosspoint Door Fans (Sirius 850 Only)		
	4 x FGAEY 1270C	4 x FGAEY 1270C	4 x FGAEY 6081270
	Multiviewer Door Fans (Sirius 840/850)		
	4 x FGAEY 1270C	4 x FGAEY 1270C	4 x FGAEY 6081270
	Input Module Door Fans (Sirius 840/850)		
	8 x FGAEY 1270C	8 x FGAEY 6080890 Y	8 x FGAEY 6081280
	Lower Crosspoint Door Fans (Sirius 840/850)		
	8 x FGAEY 1270C	8 x FGAEY 1270C	8 x FGAEY 6081270
	Output Module Door Fans (Sirius 840/850)		
	8 x FGAEY 1270C	8 x FGAEY 6080890 Y	8 x FGAEY 6081280

Table 9 Sirius 840/850 Replacement Front Fan Part Numbers

Sirius 840/850 Replacement Rear Fans

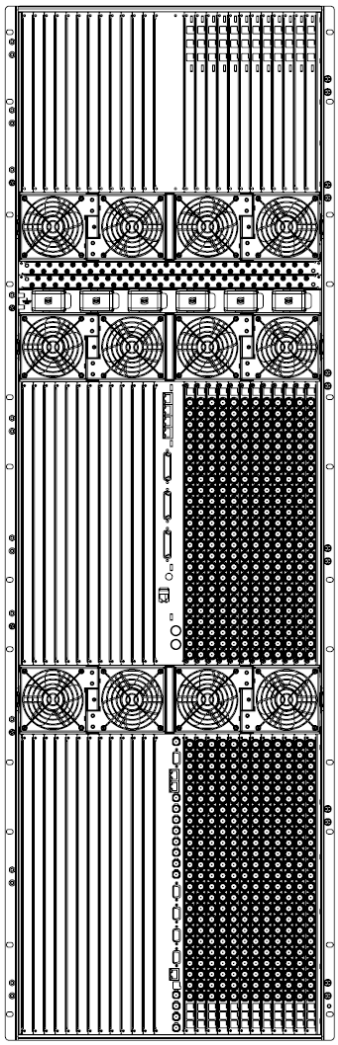
Sirius 840/850 Rear View	Mark 1 Frame Configuration	Mark 2 Frame Configuration	Mark 3 Frame Configuration
	Fan Spare Part Numbers		
			
	Expansion Rear Fans (Sirius 850 only)		
	4 x FGAEY 1270C	4 x FGAEY 1270C	4 x FGAEY 6081270
	Multiviewer Rear Fans (Sirius 840/850)		
	4 x FGAEY 1270C	4 x FGAEY 6080890 Y	4 x FGAEY 6081280
	Lower Crosspoint Rear Fans (Sirius 840/850)		
	4 x FGAEY 1270C	4 x FGAEY 6080890 Y	4 x FGAEY 6081280

Table 10 Sirius 840/50 Replacement Rear Fan Part Numbers

4.6.4 Front Fan Replacement

The fan assemblies comprise of blocks of individual fans mounted within a door. Each fan assembly door can be opened by releasing the top and bottom plungers and swinging the assembly open on its hinges.

Opening the individual fan assemblies provides access to the various modules within the frame. The fans can be safely hot-swapped without the need for the system to be powered down.

Important:

- The fan assemblies should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.
- No service tools are required to replace the fan modules, but the modules should be replaced by qualified personnel.
- Replacement fans modules should be fitted immediately after removal of the faulty fan modules as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- Take care not to trap any cables when opening and closing fan assemblies.

Warning The fan blades can continue to spin for a short time after the fan module has been removed from the frame assembly.

1. Before starting identify the configuration of your frame using Table 6 on page 41.
2. Now identify the part number of the fans that need replacing:

   Sirius 830: see section 4.6.2

   Sirius 840/850: see section 4.6.3

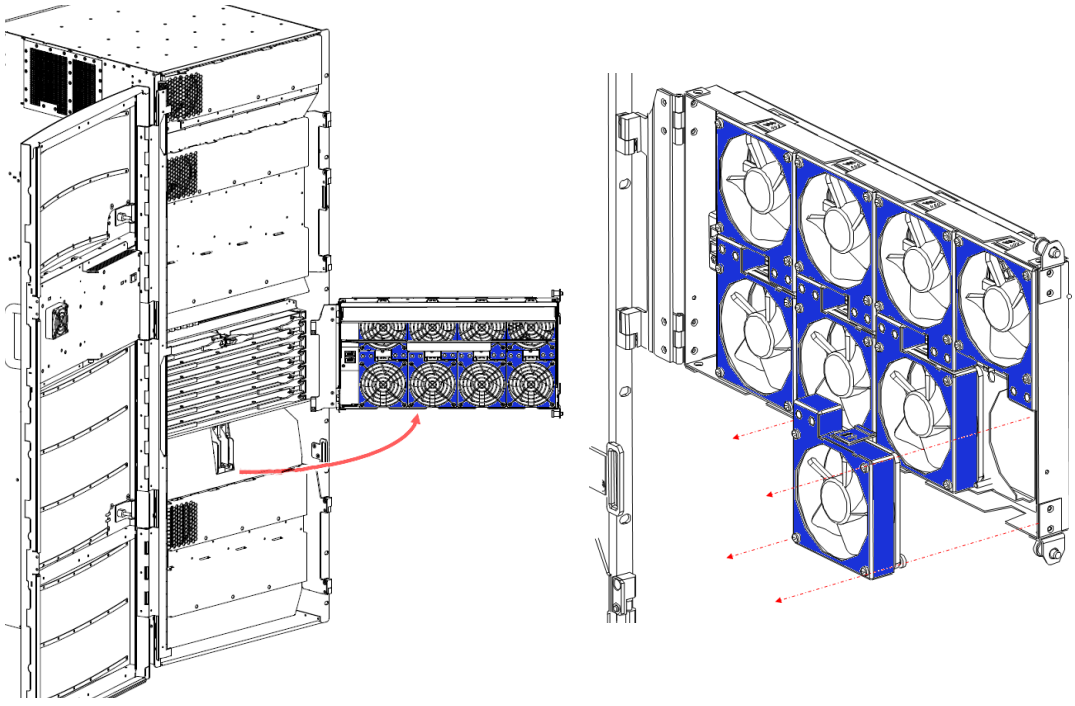


Figure 26 Sirius 840 Fan Assemblies shown

3. Release the two side plungers on the side of the frame assembly and swing the fan frame assembly out, this reveals the rear side of the fan assembly.

Note: The top row of fan modules are mounted the opposite way around to the bottom row of fans. The instructions here detail replacement of fans in the bottom row however removal of fans in the top row is exactly the same method as the bottom row.

4. Hold the fan assembly steady with one hand, and hold the fan modules being removed with the other hand. There are two release tags that free the fan module from the frame assembly, place your thumb on the release tag on one side, and place your finger on the release tag on the other side.
5. Carefully push the fan into the frame, then exert pressure onto the release tags, and withdraw the fan module away from the frame, taking care if the fan is still spinning.
6. Refitting a new fan module is the reverse of removing the fan. Push the fan module into the frame assembly until the release catch clicks into place. Finally, check that the fan module starts up. The fan alarm will signal that there is a problem until the fan is replaced.
7. Close the fan assembly as soon as possible as this ensures correct ventilation of the frame. Failure to do this will result in failure.

4.6.5 Rear Fan Replacement

Each of the rear fan modules is hot swappable and the individual fans can be withdrawn from their mounting directly.

Important:

- No service tools are required to replace the fan modules, but the modules should be replaced by qualified personnel.
- Replacement fans modules should be fitted immediately after removal of the faulty fan modules as this ensures correct ventilation of the frame. Failure to do this will result in failure.

Warning The fan blades can continue to spin after the fan module has been removed from the frame assembly.

1. Before starting identify the configuration of your frame using Table 6
2. Now identify the part number of the fans that need replacing:

   Sirius 830: see section 4.6.2.

   Sirius 840/850: see section 4.6.3.

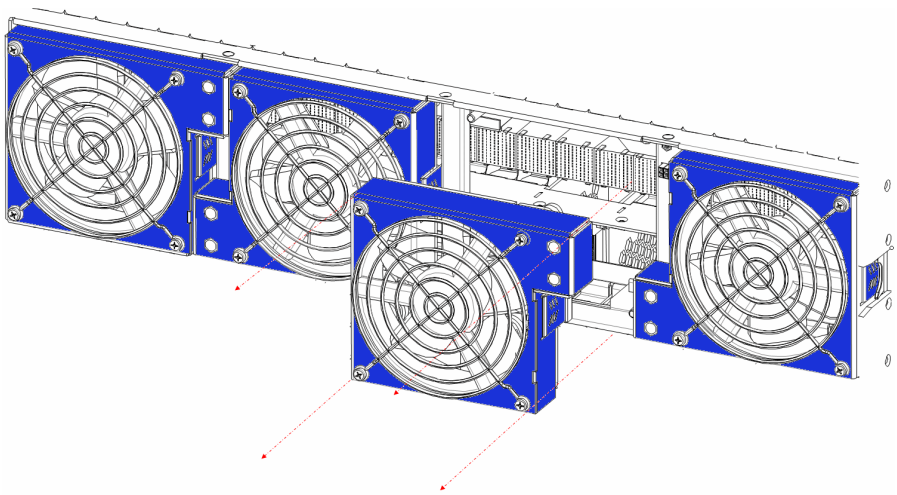


Figure 27 Rear Fan Replacement

3. There are two release tags that free the fan module from the frame assembly, place your thumb on the release tag on one side, and place your finger on the release tag on the other side.
4. Carefully push the fan into the frame, then exert pressure onto the release tags, and withdraw the fan module away from the frame, taking care if the fan is still spinning.
5. Refitting a new fan module is the reverse of removing the fan. Push the fan module into the frame assembly until the release catch clicks into place. Check that the fan module starts up.

4.6.6 Door PC Fan Replacement

The PC on the router door is cooled by a fan that is mounted on the inside of the front door.

To replace the fan:

1. Make sure the Door PC is shutdown and that the fan is stationary, see section 4.2 for details. Do not power down the router.
2. Open the door to a position where the fan can be accessed.

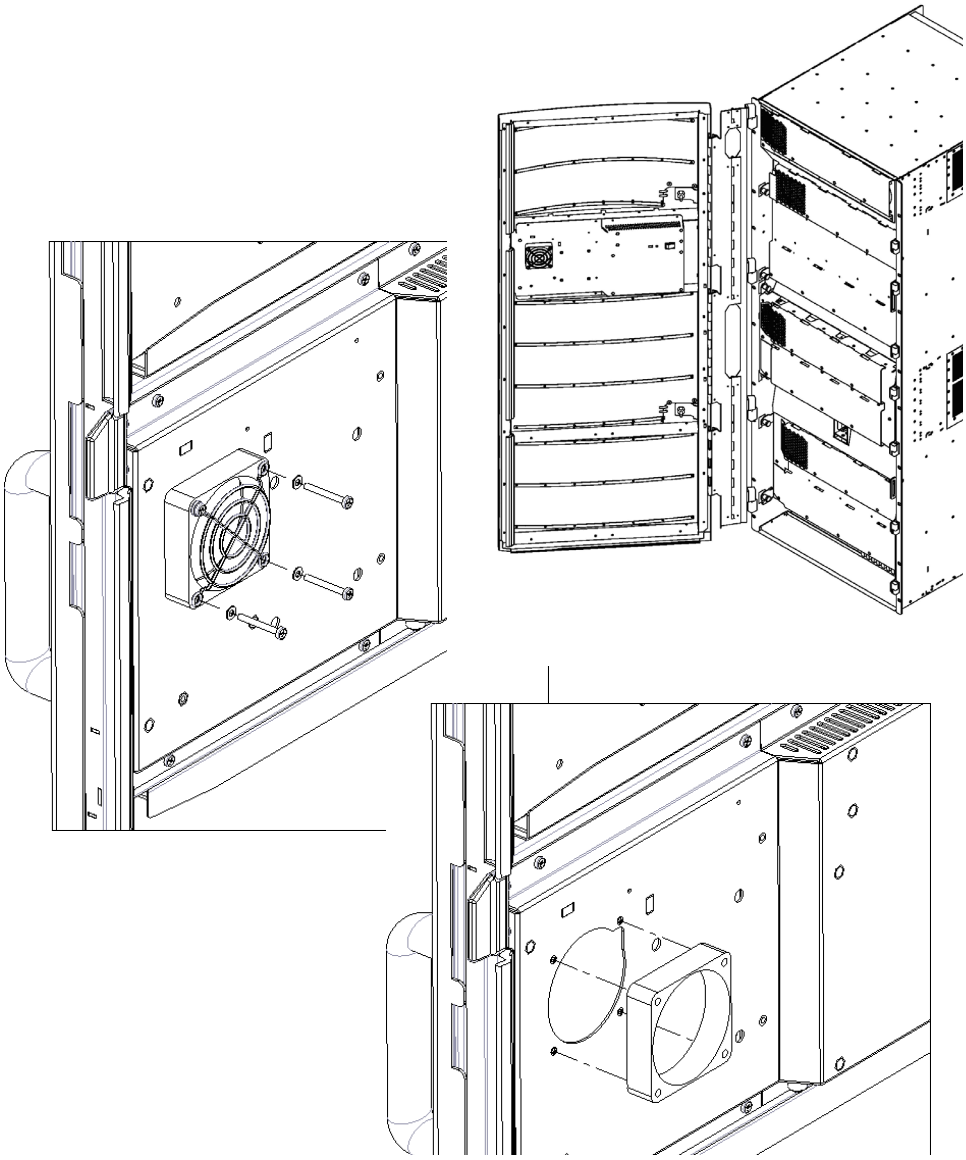


Figure 28 Door PC Fan replacement - Sirius 840 shown

3. Unscrew the four M3 cross-head screws, and take care not to misplace the washers.
4. Remove the finger guard.
5. Gently pull the fan away from the mounting and carefully disconnect the white two pin connector.
6. Connect the new fan, replace the finger guard and four screws, complete with their washers.
7. Power the Door PC back on (see section 4.1.3) and check that the fan is running correctly.

5 Module Compatibility

Chapter contains:

Module Compatibility

For full details of the modules and their locations in the router frames see the Sirius 800 user manual. This section list compatibility between modules and rear panels as well as the router controllers and fan out modules.

5.1 Front Module and Rear Panel Compatibility

Table 11 shows the front module and rear panels that are currently ordered and shipped for new Sirius 800 router systems.

Table 12 shows the front module and rear panels that were originally shipped with earlier Sirius 800 router systems. These can still be supplied for use when expanding the router or as replacements if required.

Note:

- A Sirius 800 router can contain a mix of front modules from Table 11 and Table 12 as long as the correct rear panels are used for each front module.
- All modules in Table 11 and Table 12 will work with any of the video crosspoint modules.
- The 5901 and 5905 video crosspoint module variants can be mixed in a frame.

Modules and Rear Panels Currently Ordered and shipped		
Front Module		**Rear Panel**
4915*	Sirius 800 AES/MADI input module	
	120 AES Pairs and up to 3 MADI Inputs (MADI inputs not supported by 1299 and 1297 rear panels)	**Sirius 830**: 1354 Balanced AES rear panel 1357 Unbalanced AES rear panel 1299 Balanced AES rear panel **Sirius 840/850**: 1352 Balanced AES rear panel 1355 Unbalanced AES rear panel 1297 Balanced AES rear panel
	or 12 MADI (Main & Redundant)	**Sirius 830**: 1303 BNC rear panel 1304 Fiber rear panel
		Sirius 840/850: 1285 BNC rear panel 1286 Fiber rear panel
4929*	Sirius 800 AES/MADI output module with audio delay	
	120 AES Pairs and up to 3 MADI outputs (MADI outputs not supported by 1298 rear panel)	1353 Balanced AES rear panel 1356 Unbalanced AES rear panel 1298 Balanced AES rear panel
	or 12 MADI (Main & Redundant)	1295 BNC rear panel
		1296 Fiber rear panel
5917	Sirius 800 Standard Video BNC/Fiber input module	**Sirius 830**: 1234/1235 BNC rear panel 1236 Fiber rear panel 1372 HD BNC + DS-Link rear panel 1373 Fiber + DS-Link rear panel
		Sirius 840/850: 1349/1289 BNC rear panel 1305 Fiber rear panel 1360 HD BNC + DS-Link rear panel 1361 Fiber + DS-Link rear panel 1362 DS-Link + DS-Link rear panel

Table 11 New Router Systems - Front Module and Rear Panel Compatibility

Modules and Rear Panels Currently Ordered and shipped		
Front Module		**Rear Panel**
5919*	Sirius 800 Video AHP input module with delay and sync capability	**Sirius 830**: 1234/1235 BNC rear panel 1236 Fiber rear panel 1372 HD BNC + DS-Link rear panel 1373 Fiber + DS-Link rear panel
		Sirius 840/850: 1349/1289 BNC rear panel 1305 Fiber rear panel 1360 HD BNC + DS-Link rear panel 1361 Fiber + DS-Link rear panel 1362 DS-Link + DS-Link rear panel
5926	Sirius 800 Standard Video output module (non-expandable)	1294 BNC rear panel
		1302 Fiber rear panel
		1363 HD BNC + DS-Link rear panel
		1364 DS-Link + DS-Link rear panel
5928	Sirius 850 Standard Video Expansion output module Only fitted if expansion of a Sirius 850 frame is required	1365 Expansion Output to a second Sirius 850 frame
		1366 HD BNC rear panel
5938	Sirius 850 Standard Video output module (expandable) Only fitted if expansion is required between two Sirius 850 frames	1294 BNC rear panel
		1302 Fiber rear panel
		1363 HD BNC + DS-Link rear panel
		1364 DS-Link + DS-Link rear panel
5949*	Sirius 800 Video embedding & AHP output module with delay and sync capability	1294 BNC rear panel
		1302 Fiber rear panel
		1363 HD BNC + DS-Link rear panel
		1364 DS-Link + DS-Link rear panel
5931	Sirius 830/840 Multiviewer output module **Sirius 830/840**: up to 3 Modules, **Sirius 850**: up to 2 modules	**Sirius 830/840**: 1369 MV HD BNC rear panel **Sirius 850**: 1370 MV HD BNC rear panel

Table 11 New Router Systems - Front Module and Rear Panel Compatibility

Important: *Early Sirius 800 routers must be modified by Grass Valley before they can be used for audio routing and processing (4915, 5919, 4929, 5949, 4925, 5915, 5925 or 5903 modules in use). See the Sirius 800 User manual for details.

Table 12 shows which front modules and rear panels can be used together on original Sirius 800 router systems.

Modules and Rear Panels shipped with Earlier Router Systems		
Front Module		**Rear Panel**
4925*	Sirius 800 AES/MADI output module (no audio delay)	
	120 AES Pairs and up to 3 MADI outputs (MADI outputs not supported by 1298 rear panel)	1353 Balanced AES rear panel 1356 Unbalanced AES rear panel 1298 Balanced AES rear panel
	or 12 MADI (Main & Redundant)	1295 BNC rear panel
		1296 Fiber rear panel
5913	Sirius 840/850 Standard Video BNC Input module	1285 BNC rear panel
5914	Sirius 840/850 Standard Video Fiber input module	1286 Fiber rear panel
5915*	Sirius 800 Video AHP input module	**Sirius 830**: 1234/1235 BNC rear panel 1236 Fiber rear panel 1372 HD BNC + DS-Link rear panel 1373 Fiber + DS-Link rear panel
		Sirius 840/850: 1349/1289 BNC rear panel 1305 Fiber rear panel 1360 HD BNC + DS-Link rear panel 1361 Fiber + DS-Link rear panel 1362 DS-Link + DS-Link rear panel
5916	Sirius 830 Standard Video BNC/Fiber input module	1234/1235 BNC rear panel
		1236 Fiber rear panel
5923	Sirius 840/850 Standard Video BNC output module	1295 BNC rear panel
5924	Sirius 840/850 Standard Video Fiber output module	1296 Fiber rear panel
5925*	Sirius 800 Video AHP output module	1294 BNC rear panel
		1302 Fiber rear panel
		1363 HD BNC + DS-Link rear panel
		1364 DS-Link + DS-Link rear panel
5937	Sirius 830 Standard Video BNC/Fiber output module	1294 BNC rear panel
		1302 Fiber rear panel
		1363 HD BNC + DS-Link rear panel
		1364 DS-Link + DS-Link rear panel
5928	Sirius 850 Standard Video Expansion output module Only fitted if expansion of a Sirius 850 frame is required	1290 Expansion Output to a second Sirius 850 frame
		1293 DIN 1.0/2.3 Coax rear panel

Table 12 Original Router Systems - Front Module and Rear Panel Compatibility

Modules and Rear Panels shipped with Earlier Router Systems		
Front Module		**Rear Panel**
5931	Sirius 830/840 Multiviewer output module **Sirius 830/840**: up to 3 Modules, **Sirius 850**: up to 2 modules	**Sirius 830/840**: 1309 MV DIN 1.0/2.3 Coax rear panel **Sirius 850**: 1291 MV DIN 1.0/2.3 Coax rear panel

Table 12 Original Router Systems - Front Module and Rear Panel Compatibility

5.2 Nucleus Controller & Control/Fan Interface Module Compatibility

For details on the functions of the Nucleus controllers and control/fan interface modules see the Sirius 800 User manual.

Note:

- When two control/fan interface modules are fitted in the router they must both be the same version. For the Sirius 840/850 for example: either 2 x 2452, 2 x 2456 or 2 x 2458 modules should be fitted.
- The 2452/2453 modules can only be fitted in original unmodified Sirius 800 routers, see Table 6 in see section 4.6.1 for identification details.
- The 2457/2458 modules can only be fitted in Sirius 800 routers built or modified with blue fan casings, see Table 6 in section 4.6.1 for identification details.
- The 2455/2456 modules can only be fitted in Sirius 800 routers modified with silver fan casings stamped with “HF”, see Table 6 in see section 4.6.1 for identification details.

- DO NOT fit Blue Control/Fan Interface modules (2457/2458) in a router equipped with fans with Silver casings as this will damage the router and the router will stop working.
- DO NOT fit Green Control/Fan Interface modules (2455/2456/2452/2453) in a router equipped with fans with Blue casings as this will damage the router and the router will stop working.

Three versions of the router controller card are available for the Sirius 800 router.

- The 2464 Nucleus2 controller supports both audio and video routing (supplied with new Sirius 800 routers).
- The 2463 Nucleus2 controller supports both audio and video routing (no longer supplied with new Sirius 800 routers).
- The 2450 Nucleus controller only supports video routing and cannot be used if any audio signals need to be routed (no longer supplied with new Sirius 800 routers).

Table 13 lists the compatibility between the Sirius 800 modules, control/fan interface modules and Nucleus controllers.

Important:

- Earlier Sirius 800 AHP routers were fitted with Nucleus2 2463 router controllers but new Sirius 800 routers are fitted with the Nucleus2 2464 router controller. Although the Nucleus2 2464 is functionally the same as the Nucleus2 2463 controller they cannot be mixed in a router frame.
- Early Sirius 800 routers must be modified by Grass Valley before they can be used for audio routing and processing (4915, 5919, 4929, 5949, 4925, 5915, 5925 or 5903 modules in use). See the Sirius 800 User manual for details.

Input, Output, Nucleus Controllers and Crosspoint Modules	2457/2458 Control/Fan Interface Module Compatibility	2455/2456 Control/Fan Interface Module Compatibility	2452/2453 Control/Fan Interface Module Compatibility
Nucleus Controllers			
2464/2463 - Nucleus2 Router Control Module	Yes	Yes	Yes
2450 - Nucleus Router Control Module	No	No	Yes

Table 13 Nucleus Controller & Control/Fan Interface Module Compatibility

Input, Output, Nucleus Controllers and Crosspoint Modules	2457/2458 Control/Fan Interface Module Compatibility	2455/2456 Control/Fan Interface Module Compatibility	2452/2453 Control/Fan Interface Module Compatibility
Input Modules			
4915 - Sirius 800 AES/MADI input module - 120 AES Pairs and up to 3 MADI inputs or **4915** - Sirius 800 AES/MADI input module - 12 MADI (Main & Redundant)	Yes	Yes	No
5913 - Sirius 840/850 Standard Video BNC Input module	Yes (not Sirius 830)	Yes (not Sirius 830)	Yes (not Sirius 830)
5914 - Sirius 840/850 Standard Video Fiber input module	Yes (not Sirius 830)	Yes (not Sirius 830)	Yes (not Sirius 830)
5915 - Sirius 800 Video AHP input module	Yes	Yes	No
5916 - Sirius 830 Standard Video BNC/Fiber input module	Yes (not Sirius 840/850)	Yes (not Sirius 840/850)	Yes (not Sirius 840/850)
5917 - Sirius 800 Standard Video BNC/Fiber input module	Yes	Yes	Yes
5919 - Sirius 800 Video AHP input module with delay and sync capability	Yes	No	No
Crosspoint Modules			
5901/5905 - Sirius 800 Series Video crosspoint module	Yes	Yes	Yes
5903 - Sirius 800 Audio crosspoint module	Yes	Yes	No
Multiviewer and Monitoring Modules			
5939 - Sirius 830 Video & Audio, Input & Output Monitoring module (use with 1237 rear panel)	Yes (not Sirius 840/850)	Yes (not Sirius 840/850)	Yes (not Sirius 840/850)
1237 - Sirius 830 Monitoring rear panel (for 5939)	Yes (not Sirius 840/850)	Yes (not Sirius 840/850)	Yes (not Sirius 840/850)
5902 - Sirius 800 series Multiviewer crosspoint	Yes	Yes	Yes
5930 - Sirius 840/850 Input Monitoring crosspoint card (for I/O monitoring)	Yes (not Sirius 830)	Yes (not Sirius 830)	Yes (not Sirius 830)
5931 - Sirius 830/840 Multiviewer output module - 48 channel (uses 1309 rear panel)	Yes (not Sirius 850)	Yes (not Sirius 850)	Yes (not Sirius 850)
5933 - Sirius 840/850 Output Monitoring card	Yes (not Sirius 830)	Yes (not Sirius 830)	Yes (not Sirius 830)

Table 13 Nucleus Controller & Control/Fan Interface Module Compatibility

Input, Output, Nucleus Controllers and Crosspoint Modules	2457/2458 Control/Fan Interface Module Compatibility	2455/2456 Control/Fan Interface Module Compatibility	2452/2453 Control/Fan Interface Module Compatibility
Output Modules			
4925 - Sirius 800 AES/MADI output module (no audio delay) - 120 AES Pairs and up to 3 MADI outputs or **4925** - Sirius 800 AES/MADI output module (no audio delay) - 12 MADI (Main & Redundant)	Yes	Yes	No
4929 - Sirius 800 AES/MADI output module with audio delay - 120 AES Pairs and up to 3 MADI outputs or **4929** - Sirius 800 AES/MADI output module with audio delay - 12 MADI (Main & Redundant)	Yes	Yes	No
5923 - Sirius 840/850 Standard Video BNC output module	Yes (not Sirius 830)	Yes (not Sirius 830)	Yes (not Sirius 830)
5924 - Sirius 840/850 Standard Video Fiber output module	Yes (not Sirius 830)	Yes (not Sirius 830)	Yes (not Sirius 830)
5925 - Sirius 800 Video AHP output module	Yes	Yes	No
5926 - Sirius 800 Standard Video output module (non-expandable)	Yes	Yes	Yes
5937 - Sirius 830 Standard Video BNC/Fiber output module	Yes (not Sirius 840/850)	Yes (not Sirius 840/850)	Yes (not Sirius 840/850)
5938 - Sirius 850 Standard Video output module (expandable) Only fitted if expansion is required between two Sirius 850 frames	Yes (not Sirius 830)	Yes (not Sirius 830)	Yes (not Sirius 830)
5949 - Sirius 800 Video embedding & AHP output module with delay and sync capability	Yes	No	No

Table 13 Nucleus Controller & Control/Fan Interface Module Compatibility

5.3 Inserting and Removing Vertical Modules

The rear panel fastening screws are supplied fitted to the rear panels and the rear panel blanking plates.

- Replacement screw details: Pozidriv Pan head M3 x 6 mm Zinc plated screw

Important:

- Before adding modules to a Sirius 800 router check that the power supplies fitted can supply sufficient power to the router. See the appropriate Sirius 800 Installation and Quick Start guide for router power requirements.
- Rear panels must be fitted and fastened securely to the router frame before inserting the front modules.
- The rear panel fastening screws should not require any pressure when screwing them into the router frame. They should screw in without any resistance until the screw head secures the rear panel to the frame. If a rear panel fastening screw binds up then it should be removed and the screw alignment should be checked before the screw is refitted.
- Do not over-tighten the rear panel fastening screws.

Electrostatic Damage

Static precautions must be observed when inserting and removing all system modules

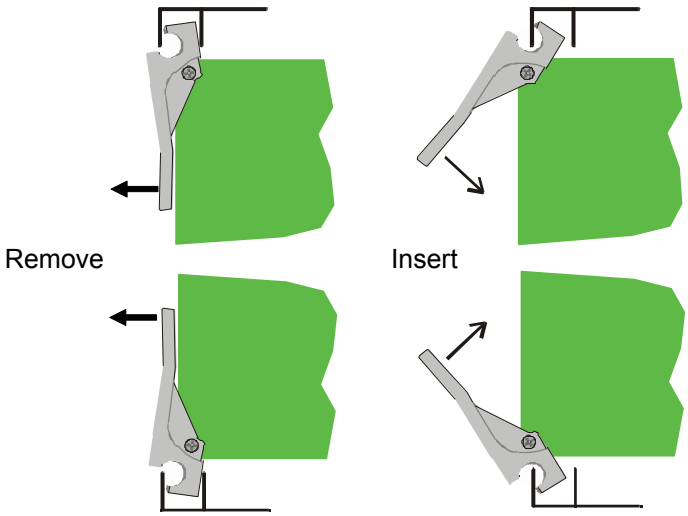


Figure 29 Inserting and Removing Vertical Modules

The vertical module levers locate into the metalwork of the Sirius 800 frame allowing easy insertion and removal.

1. To access the modules the associated front fan assembly must be opened first.

Important:

- The fan assembly should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.
- **Sirius 840/850**: the crosspoint fan assembly must also be opened to access the input modules.

2. To remove the module from its socket, pull on the two levers, and slide the module out of the frame.
3. To insert the module; lift the levers, carefully locate the module in the frame module guide slots and push the module into the frame.
4. Push the levers to fully lock the module.
5. Close the front fan frame assembly making sure not to trap any wires.

5.4 Inserting and Removing Horizontal Modules

Electrostatic Damage

Static precautions must be observed when inserting and removing all system modules

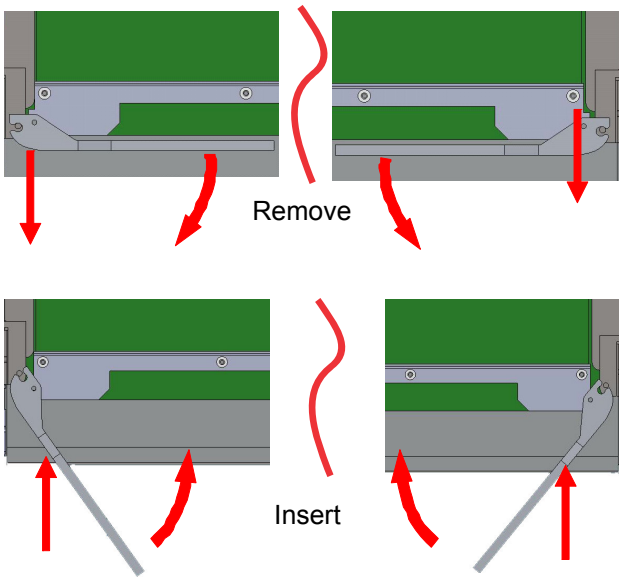


Figure 30 Inserting and Removing Horizontal Modules

The horizontal module levers locate into the metalwork of the Sirius 800 frame allowing easy insertion and removal.

1. To access the modules the associated module front fan assembly must be opened.

Important:

- The fan assembly should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.

2. To remove the module from its socket, pull on the two levers, and slide the module out of the frame.
3. To insert the module; lift the levers, carefully locate the module in the frame module guide slots and push the module into the frame.
4. Push the levers to fully lock the module.
5. Close the front fan frame assembly making sure not to trap any wires.

6 Module Maintenance

Chapter contains:

Module Maintenance

6.1 Upgrading the Licensing SD Card in a Module

The advanced functions, such as video and audio processing, on AHP video/audio input and output modules are enabled by the SAM/Grass Valley Licensing system. Licenses are enabled on a module by module basis allowing you to choose only the functions required for each input and output module in your router. The license information for each module is held on the licensing SD card that is plugged into the front of each module.

Important:

- The fan assembly should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.
- If the SD card is removed from a module for more than 30 minutes the licensed options will cease to function on that module. Routing will not be affected but remember that if any processing functions such as; mixing, shuffle, gain, Frame Sync, Delay, etc are in use they will be reset to their default values. Replacing the licensing SD card will re-instate the licensed options.

Before starting this procedure make sure that you have the correct Licensing SD card(s) ready.

1. Open the router door.
2. Open the front fan assembly to access the modules. This will expose the module the SD card is to be fitted to.
3. Push the SD card currently in the module until it clicks then let go. The card will come out enough for you to pull it out of the carrier.
4. Replace the original SD card with the new licensing SD card by pushing it into the SD card slot until it clicks.
5. Close the fan assembly ensuring that no wires are trapped.
6. Close the router door.
7. Confirm the status of the licenses on the module(s) by looking at the “Module Licensing Status” screen on the door screen, this can be found from the Modules screen. See the Sirius 800 User manual for details.
8. The new licensed features can now be configured in Workbench. For details of the licensed options available for each module see the Sirius 800 User manual.

6.2 Upgrading Firmware on Modules

The firmware installed on input modules (4915, 5919, 5915), output modules (4929, 5949, 4925, 5925) and crosspoint modules (5903, 5905) can be updated if required. Updates are supplied by Grass Valley Customer Support when they are available and if they are required for your system, see section 1.2 for contact details.

Read through the firmware upgrade process before starting to ensure that you understand the process and have everything you need to complete the work.

Note:

- The module being updated will not work while the firmware update is in progress.
- Do not set any routes or change processing settings while performing the module upgrades.
- All of the router modules must be running the same firmware release version.

Equipment and files required before starting the upgrade procedure:

- A computer to write the firmware to the module SD cards.
- An SD card reader to copy the firmware upgrade files to the SD cards.
- Self extracting Firmware update package **PA1250x_update.exe** supplied by Grass Valley Customer Support. The compressed firmware update package contains a folder for each of the supported module/license types, see Table 14 on page 63 for details.

6.2.1 Extracting the Upgrade Folders/Files to your Computer

1. The upgrade package **PA1250x_update.exe** is a self extracting file. Double click on it to extract the upgrade folders and files:

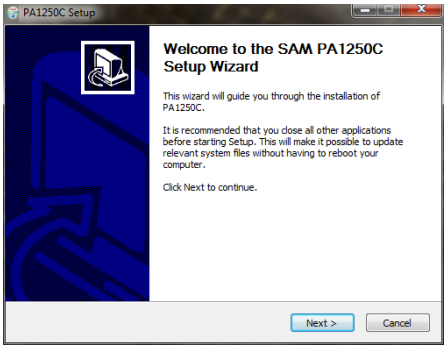


Figure 31 Initial Screen for Self Extracting Firmware Upgrade Package

2. Click on the **Next>** button.

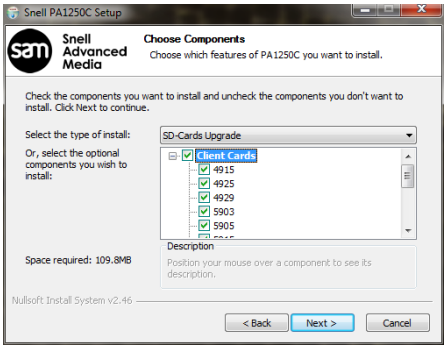


Figure 32 List of Upgrade Folders to be copied to the Computer

3. By default all of the module upgrades are selected to be copied to the computer. Make any changes required and then click on the **Next>** button.

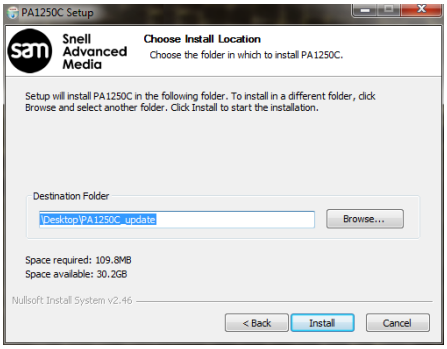


Figure 33 Specify the Location the Upgrade Folders are Copied to

4. By default the upgrade folders are extracted into a folder called **PA1250X_update** within the folder the update package is located in (where **X** is the current software revision). This can be changed by clicking on the **Browse** button.

5. Click on the **Install** button to start the copying process.

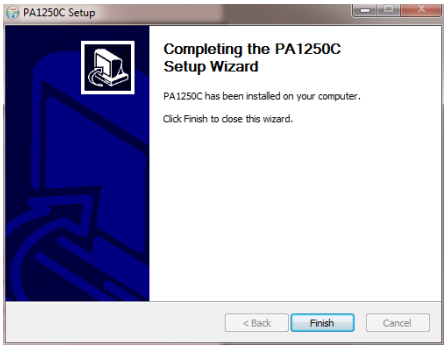


Figure 34 Click the Finish Button to Close

6. When the copying process is complete click on the **Finish** button to close the window.

7. The folders have now all been copied to the computer and are ready to be used for updating the router modules. For folder details for each of the supported module/license types, see the following table (Table 14 on page 63).

6.2.2 Firmware Upgrade Details

The standard firmware licenses are listed in the following table. The upgrade package zip files may also contain firmware upgrade folders that are not listed in the table, these files should only be used when instructed to do so by Grass Valley Customer Support.

Module Firmware	License Order Code	Features Supported by Firmware
4915	**Not Applicable**	Gain, Phase Invert, Left/Right Swap, Left Both, Right Both, Mono Mix.
4929	**S8A-SRC**	Gain, Phase Invert, Left/Right Swap, Left Both, Right Both, Mono Mix, Audio Delay, Sample Rate Convert.
5919: Use the firmware version that matches the license purchased for the module		
5919-Base	**S8AHP-VA**	Audio De-embedding, Gain, Phase Invert, 16 Channel Mix and Channel Swap (Shuffle).
5919-Delay	**S8AHP-VD**	Audio De-embedding, Gain, Phase Invert, 16 Channel Mix and Channel Swap (Shuffle), Audio Delay.
5919-AHP	**S8AHP-VF**	Audio De-embedding, Gain, Phase Invert, 16 Channel Mix and Channel Swap (Shuffle), Audio Delay, Video Delay, Video Frame/Line Sync.
5919-Input-Embed	**S8AHP-VE**	Input Embedding from audio crosspoint. Used in combination with any of the 5919 Licenses. See the Sirius 800 User Manual for details on installing and configuring input embedding.
5949: Use the firmware version that matches the license purchased for the module		
5949-Base	**S8AHP-VA**	16 Channel Mix, Channel Swap (Shuffle), Gain, Phase Invert and Audio Embedding.
5949-Delay	**S8AHP-VD**	16 Channel Mix, Channel Swap (Shuffle), Gain, Phase Invert and Audio Embedding, Audio Delay.
5949-AHP	**S8AHP-VF**	16 Channel Mix, Channel Swap (Shuffle), Gain, Phase Invert and Audio Embedding, Audio Delay, Video Delay, Video Frame/Line Sync.
Crosspoint Modules		
5903	**Not Applicable**	Audio crosspoint operation.
5905	**Not Applicable**	Video crosspoint operation.
Modules no longer supplied with new systems		
4925	**Not Applicable**	Gain, Phase Invert, Left/Right Swap, Left Both, Right Both, Mono Mix.
5915	**S8AHP-VA**	Audio De-embedding, Gain, Phase Invert, 16 Channel Mix and Channel Swap (Shuffle).
5925	**S8AHP-VA**	16 Channel Mix, Channel Swap (Shuffle), Gain, Phase Invert and Audio Embedding.

Table 14 Firmware Upgrade Details

6.2.3 Firmware Upgrade Process

- It is recommended that the modules in the router are updated in a logical manner to ensure that all modules are updated and it is suggested that upgrades are carried out in the following order; output modules, input modules and finally crosspoint modules.
- Update one module at a time and do not remove any SD card for more than 30 minutes.
- Double check that the firmware being copied to the SD card matches the module type that is being upgraded and that it also matches the licensed features purchased for the module.

Important:

- The fan assembly should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.
- If the SD card is removed from a module for more than 30 minutes the licensed options will cease to function on that module. Routing will not be affected but remember that if any processing functions such as; mixing, shuffle, gain, Frame Sync, Delay, etc are in use they will be reset to their default values. Replacing the licensing SD card will re-instate the licensed options.

1. Before starting make sure you have extracted the upgrade folders to your computer, see section 6.2.1 for details.
2. Open the router door.
3. Open the front fan assembly to access the module to be updated.
4. Push the SD card currently in the module until it clicks then let go. The card will be released enough for you to pull it out of the carrier.
5. Remove the SD card and close the fan assembly.
6. Put the SD card into the computer SD card reader.
7. Locate the correct firmware upgrade folder for the module being upgraded, see Table 14 on page 63 for folder details. If upgrading a 5919 or 5949 module also make sure the correct version is selected for the license on the module.
8. Open the upgrade folder.
9. Copy all of the files in the upgrade folder to the root of the SD card. Confirm that the files on the SD card should be overwritten by the new files when prompted.

Note: Do not copy the folder to the SD card, copy the folder contents to the root of the SD card.

10. When the files have finished copying to the SD card click on the **Safely Remove Hardware and Eject Media** icon in the system tray (or equivalent) and select the SD card. Remove the SD card when the system confirms it is safe to do so.
11. Open the fan assembly and push the updated SD card into the module SD card slot until it clicks into place.

12. The FPGA LEDs on the module will indicate the stage the firmware upgrade has reached as it is applied to the module (see Figure 35 for FPGA LED locations and Table 15 for LED status).

Note: Power must not be removed from the router or the module while the module firmware is being updated as this could corrupt the firmware and make the module inoperable.

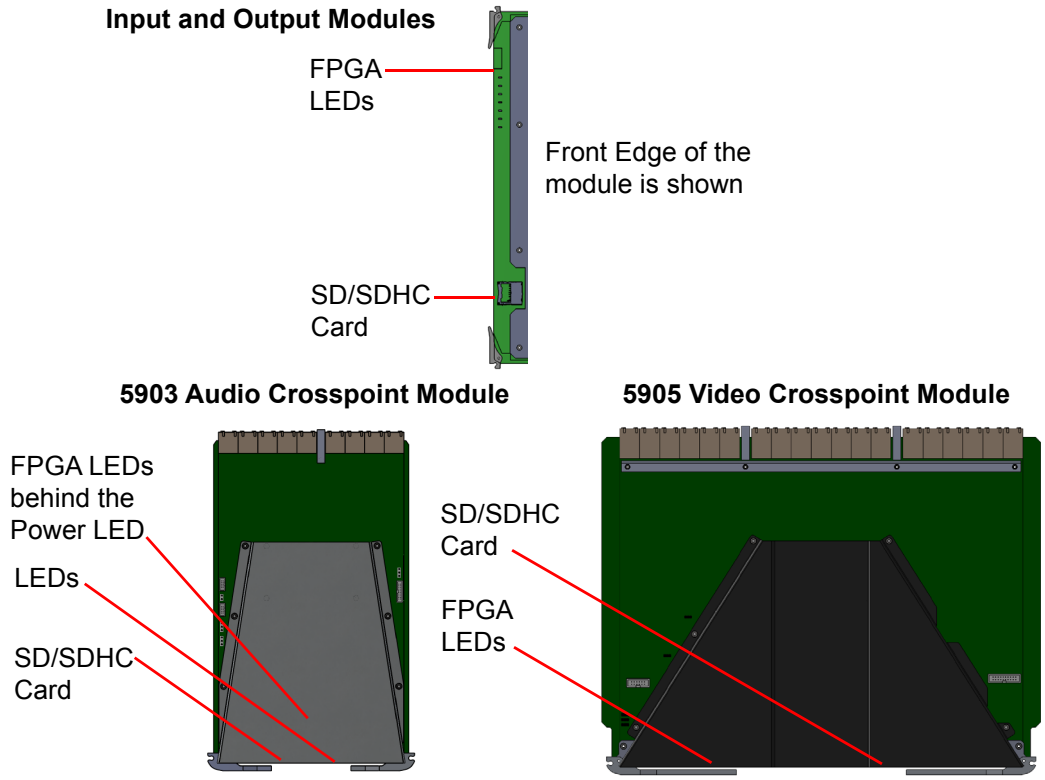


Figure 35 LED and SD/SDHC Card Locations

Step	Module FPGA LED Status	Description
FPGA LED Sequence During Firmware Update		
13.	**Flashing very rapidly between Red & Green (4 Hz each LED)**	Checking the SD card for updated firmware and copying it to the module if updated firmware is found.
14.	**Green LED On & Red LED flashing at 2 Hz**	The FPGA programming files have been updated and the module must be manually rebooted. This will only be seen if the module is not set to automatically reboot. To manually reboot the module remove the module from the router and then refit it back into the same slot in the router. The module will reboot as described in step 16.
15.	**All FPGA LEDs: Red & Green Flashing rapidly in sync (2 Hz each LED)**	At least one application or support file has been changed (NA00884, Config.txt, FPGA_Files.txt, etc.). The FPGA files may also have been updated. This will only be seen if the module is not set to automatically reboot. To manually reboot the module remove the module from the router and then refit it back into the same slot in the router. The module will reboot as described in step 16.

Table 15 Module FPGA LED Status During Software Update

Step	Module FPGA LED Status	Description
16.	**Flashing between Red & Green (2 Hz each LED)**	Module is rebooting and the FPGA is being programmed with the new firmware.
17.	**Green LED On & Red LED Off**	Module has finished rebooting and the FPGA has been programmed successfully.
18.	**Flashing very rapidly between Red & Green (4 Hz each LED)**	Performing a database conversion if the module database is found to be for a previous version of the ARM software. The database contains the settings for the module (Gain, shuffle, Frame Sync, etc.). Once complete the Green LED will be On and the Red LED will be Off. The firmware update is now complete, go to step 19.
Fault Conditions		
	Red LED On & Green LED Off	There has been a problem with the FPGA programing. The module must be rebooted. Remove and refit the module to reboot it.

Table 15 Module FPGA LED Status During Software Update

19. Close the fan assembly ensuring that no wires are trapped and close the router door.

6.3 Adding Input/Output Modules - Example

In some cases it is necessary to expand a Sirius 800 router while it is “On Air”. This section describes the procedure that must be followed when adding input and/or output modules to a router.

Important:

- Before adding modules to a Sirius 800 router check that the power supplies fitted can supply sufficient power to the router. The router power requirements are described in section 3.3.
- Although this is not a difficult task it is very important that these steps are followed to minimize the risk of problems occurring during the upgrade.
- If the router is only fitted with a single controller it will not be possible to change routes or processing while the controller is being updated.

Equipment required:

- A Workbench client computer running Workbench and connected to the same LAN as the router.
- Working Ethernet link to the router controller.
- Door PC with the standard touch screen alarm and router control interface.

Before Starting

To minimize the time the fan assemblies are open during the upgrade:

- Remove all of the modules from their packaging and lay them out in the order they will be fitted.
- **Sirius 840/850**: plan to fit the input modules first followed by the output modules. This ensures that the fan assemblies for each are open for the minimum amount of time.
- Read through the complete procedure before starting work on the router.

6.3.1 Upgrade Procedure

Note:

- Do not insert the new input and/or output modules until you reach step 6. on page 69.
- Microsoft Remote Desktop can be used to view and control the Door PC if required (see section 8.2).

1. Check the Door PC “Modules Present” screen and note the color of each of the module slots that are to be expanded (see Table 16 & Figure 36):

Color	Description
Red	**OK - Configured & Not Present** Once the new Input and/or Output modules have been installed you will need to use the Workbench **Auto Configure** feature so that the Nucleus controller can learn the new router configuration.
Grey	**Error - Not Configured, Not Present** A few additional steps will be required to update the controllers with the new router configuration.

Table 16 Slot Colors

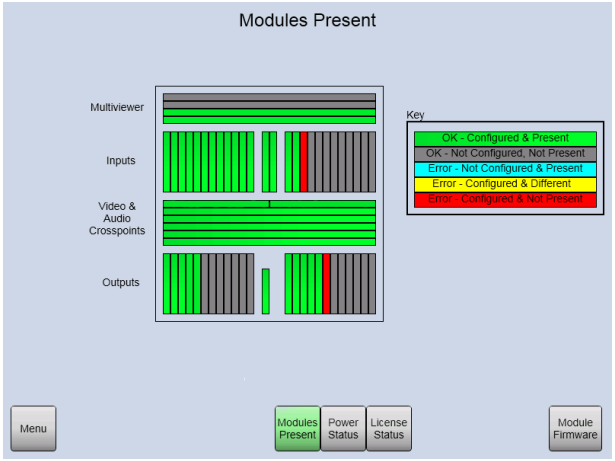


Figure 36 Sirius 840 Module Status shown as an Example

2. Backup the Workbench database, see section 6.4 for details on backing up the database.
3. Once the Workbench database has been backed up fit the new rear panels (see section 5.1 for details on rear panel and front module compatibility).

Important:

- Rear panels must be fitted and fastened securely to the router frame before inserting the front modules.
- The rear panel fastening screws should not require any pressure when screwing them into the router frame. They should screw in without any resistance until the screw head secures the rear panel to the frame. If a rear panel fastening screw binds up then it should be removed and the screw alignment should be checked before the screw is refitted.
- Do not over tighten the rear panel fastening screws.

4. Once the rear panels have all been fitted open the router door.

Important:

- The fan assemblies should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.
- **Sirius 840/850**: the crosspoint fan assembly must also be opened to access the input modules.
- Take care when installing each of the new input/output modules and ensure that each one is inserted slowly and straight so as not to damage the modules that are already installed.

5. Open the front fan assembly to access the area the modules are to be fitted in. **Sirius 840/850**: The input and output fan assemblies should not be opened at the same time. Fitting the input modules followed by the output modules ensures that the fan assemblies for each are open for the minimum amount of time.
6. Insert the new module(s) (see section 5.3 for details).
7. Once the Input/Output module(s) have been fitted close the front fan frame assemblies making sure not to trap any wires and close the router door.

Important:

- Before proceeding ensure all of the new input and output modules have been fitted to the router.

If the Module slot(s) were Red in step 1 of the upgrade procedure:

a Restart Live Runner on the Door screen and check that the newly installed modules are all Green.

b Test the signal path using one of your control devices such as; Grass Valley Hard Panels, Automation or the Door Dial Up Router screen.

c If the signals are passed as expected then the module update procedure is complete

If the Module slot(s) were Grey in step 1 of the upgrade procedure then the following extra steps are required:

8. Start Workbench with administrative privileges. By default these are:
   Username: admin
   Password: admin

9. Click on the Configuration button (green and grey gears, see Figure 37) to open the Controller Configuration screen shown in Figure 38

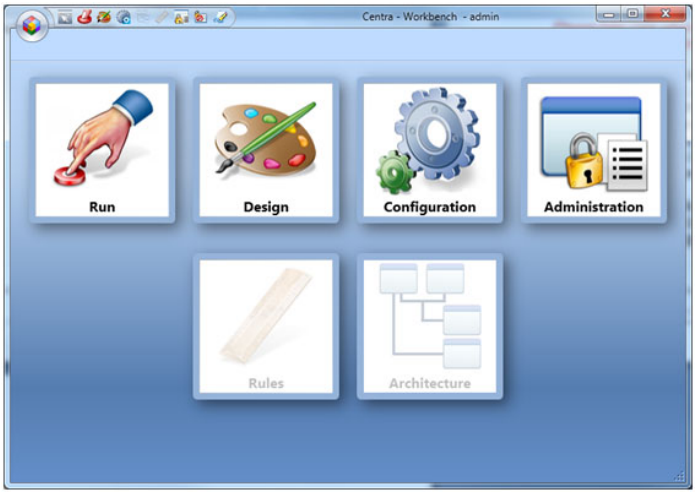


Figure 37 Workbench

Note:

- When using dual Nucleus controllers, the Active status column (Figure 38) shows whether the controller status is Active, Inactive or Unknown.
- It is normal to initially push a new configuration to the Inactive Nucleus controller, test the changes and then either revert to a previous state or update the other Nucleus controller once you are satisfied. This is the method described in this section of the procedure.

10. Double click on the Inactive Nucleus controller to open the configuration screen. If the router is only fitted with a single controller double click on it even though it is Active.

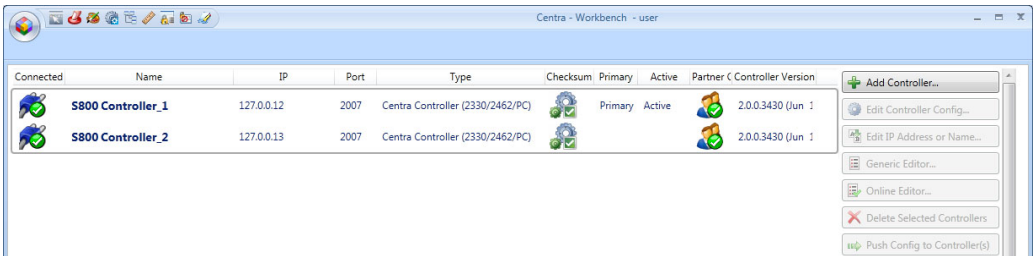


Figure 38 Workbench Controller Screen

11. Click on the **Auto Configure** button in the **Hardware Config** tab (see Figure 39). This will take a few minutes to update.

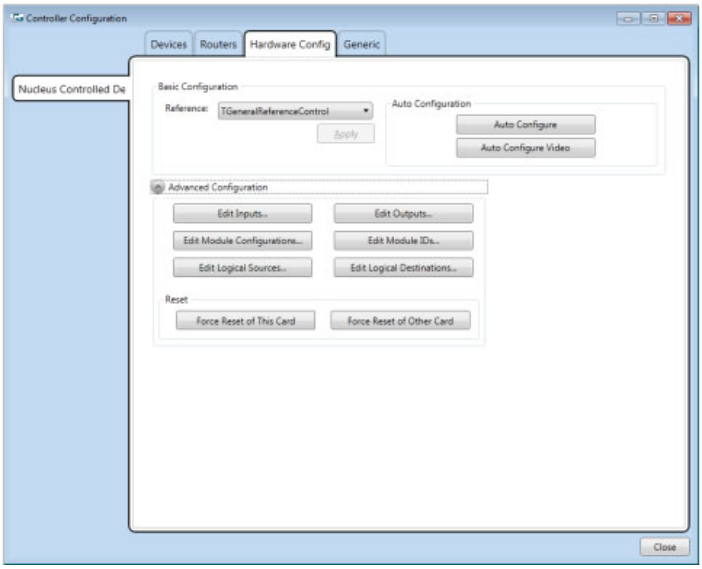


Figure 39 Workbench Hardware Config Tab

12. When the update is complete restart the updated Nucleus controller and wait for it to display as connected (Green) in Workbench and indicate that it is Inactive (Active for single controller systems).

13. If the Checksum for the updated controller is displayed as a White Tick in a green box (see Figure 40) then move on to step 15.

14. If the Checksum for the updated controller is displayed as a Red Exclamation Mark (!):

    a select only the updated controller and click on the **Push Config to Controller(s)** button.

    b Once the configuration has been pushed to the updated Nucleus controller restart it and wait for it to display as connected (Green) in Workbench and indicate that it is Inactive (Active for single controller systems).

    c Verify that the Checksum is displayed as a Green Tick.

Important: Always wait for a controller to come up green and report its state in Workbench before you swap between controllers. Doing this ensures that you get clean and uninterrupted operation of the router with no disturbance to video or external control systems.

15. Make the updated Inactive Nucleus controller the Active controller by using one of the following methods (not applicable to a single controller router):

    - Either reset the Active (non updated) Nucleus controller from the Workbench Controller Configuration interface software.

    or

    - Press the Reset button on the front of the Active (non updated) Nucleus controller.

16. Check Live Runner on the Door PC and verify that the newly installed modules are all Green (OK - Configured & Present, see Figure 36).

17. Test the signal path using one of your control devices such as; Grass Valley Hard Panels, Automation or the Door PC Dial Up Router screen.

18. If the new configuration is working correctly and you have router with a single controller go to step 21.

19. If the new configuration is working correctly on the Active updated Nucleus controller copy the working updated controller's configuration to the Inactive (non updated) Nucleus controller using the following steps:

    a Select the Active updated Nucleus controller from the Workbench controller configuration screen (see Figure 40).

    b Click on the **Copy config to partner** button on the right of the controller configuration screen.

    c Select only the Inactive (non updated) Nucleus controller and click on the **Push Config to Controller(s)** button

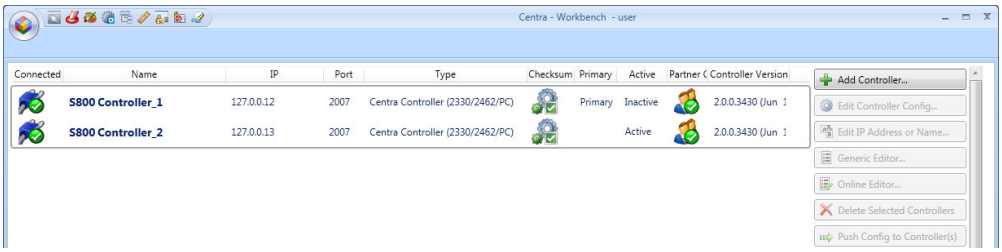


Figure 40 Workbench Controller Screen

20. Once the configuration has been pushed to the Inactive Nucleus controller restart it and wait for it to display as connected (Green) in Workbench and indicate that it is Inactive. Verify that the Checksum is displayed as a White Tick in a green box.

Important: Always wait for a controller to come up green and report its state in Workbench before you swap between controllers. Doing this ensures that you get clean and uninterrupted operation of the router with no disturbance to video or external control systems.

21. The input and/or output modules have now been successfully installed in the router and are ready to be used.

22. The original Active Nucleus controller can now be made Active again if required.

Note: If any Workbench screens are configured to display module; temperature, license status and/or power status check that they are displaying these parameters for the new modules. If the parameters are not being displayed for the new modules the screens will need to be edited in Workbench Designer using the **Choose DCCP Field** window from **Device Explorer** to choose the correct parameters for the new modules.

6.3.2 Additional notes and support

It should not be necessary to make any other changes to the Workbench database however if you have any issues after you have completed the update procedure please supply the following information to Grass Valley Customer Support (see section 1.2 on page 2 for your customer support e-mail address):

- Make a new backup of the current SQL database and Zip it up (this may need to be posted on an FTP site if the files are two large to e-mail)
- Provide details of the original router configuration size and the required new router configuration size.
- List the types and number of new cards being installed and their location in the frame.
- Supply any Workbench log files if they are available.

6.4 Backing Up the Workbench Database

It is important to backup the Workbench Database before making any changes. This section details how the Workbench database is backed up from a Workbench client PC.

1. Backup the current configuration using the Microsoft SQL Management studio tool.
2. Make sure that Workbench is not active and then open Microsoft SQL Server Management Studio from **Start | All Programs | Microsoft SQL Server 2008 R2**
3. Connect to the server using the following:

   Login: S800

   Password: S800
4. Right click on the Workbench database and select **Tasks | Back Up...** (see Figure 41)

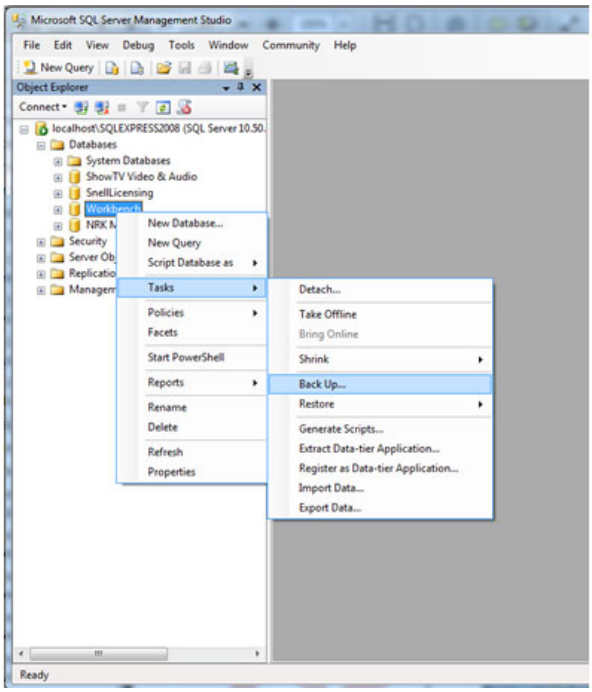


Figure 41 SQL Server Management Studio

5. The Backup Database - Workbench screen is displayed (see Figure 42).

6. Select a database backup destination from the **General** page and if necessary modify the date/name as appropriate.

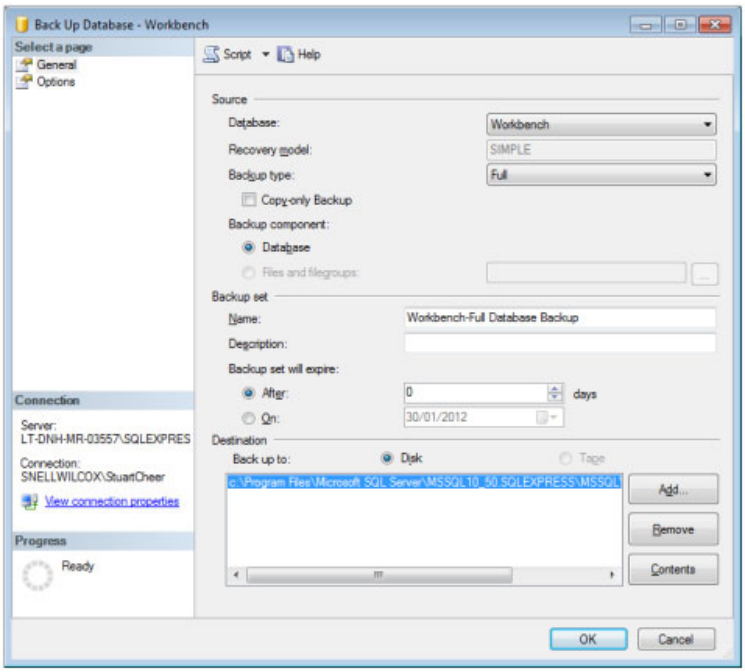


Figure 42 Backup Database - General Page

7. Select **Overwrite an existing backup set** from the **Options** page (see Figure 43) Do not select the default **Append to the existing backup set** option.

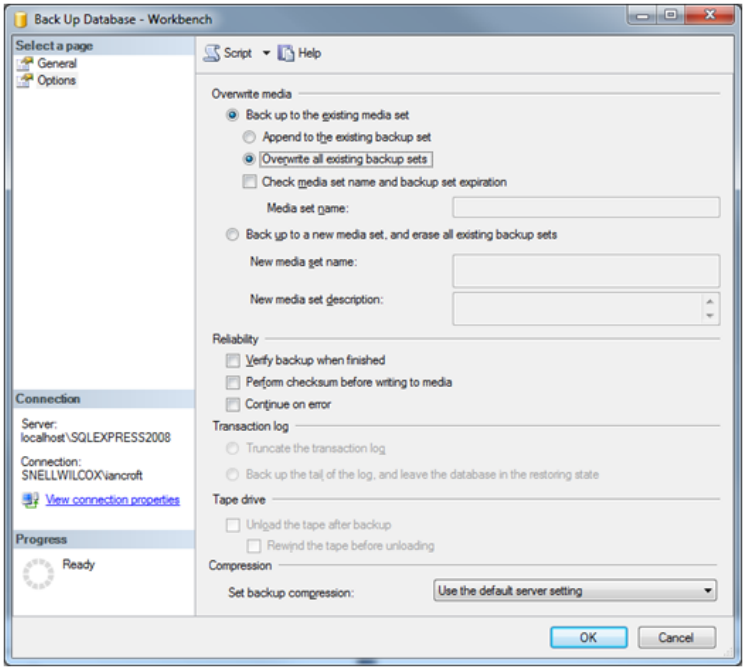


Figure 43 Backup Database - Options Page

8. Click **OK** to complete the backup.

6.5 Restoring a Workbench Database

This section details how to restore the Workbench database from a Workbench client PC.

Important:

- Restoring from an earlier Workbench database backup file will replace your existing database.
- Any changes made since the backup file was made will be lost.

1. Restore a backed up Workbench database using the Microsoft SQL Management studio tool.
2. If necessary, copy the **.bak** file to the computer.
3. Make sure that Workbench is not active and then open Microsoft SQL Server Management Studio from **Start | All Programs | Microsoft SQL Server 2008 R2**
4. Connect to the server using the following:

   Login: S800

   Password: S800

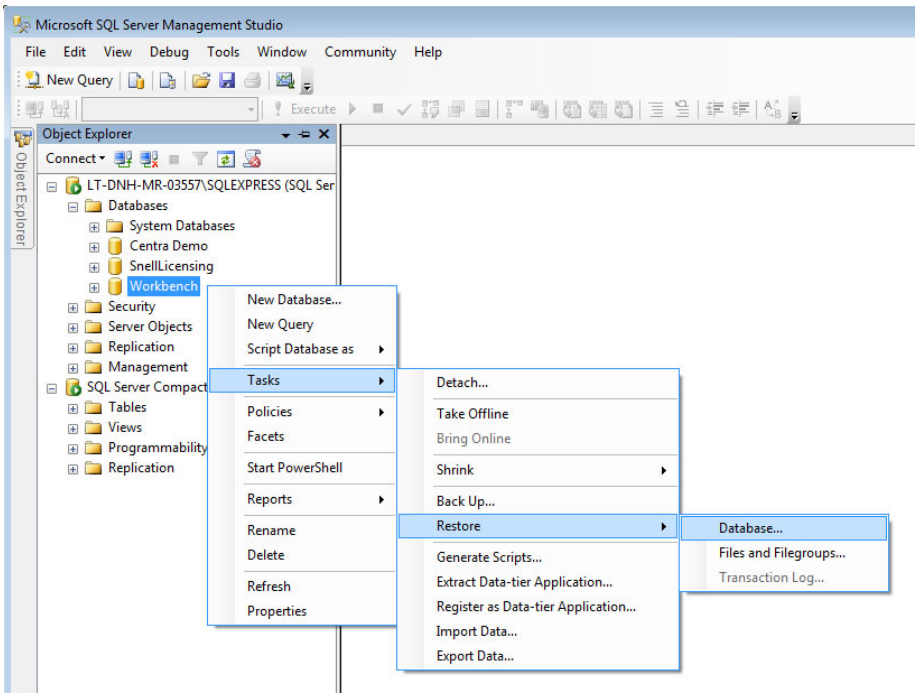


Figure 44 SQL Log-in

5. Right-click on the Workbench database and select **Tasks | Restore | Database**

   The **Restore Database - Workbench** screen displays. This screen has two pages selectable from the Select a page area at the top-left of the screen. By default the **General** page is open on startup.

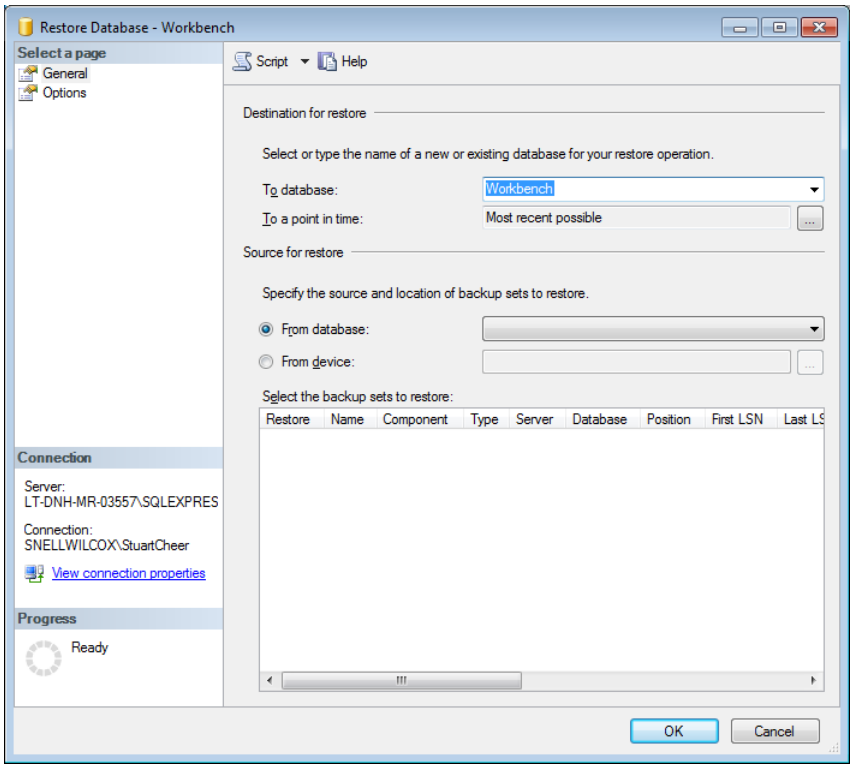


Figure 45 Select Database to Restore

6. In the **Source for restore** section, select **From device** and click the ... (browse) button.

   The **Specify Backup** dialog box is displayed.

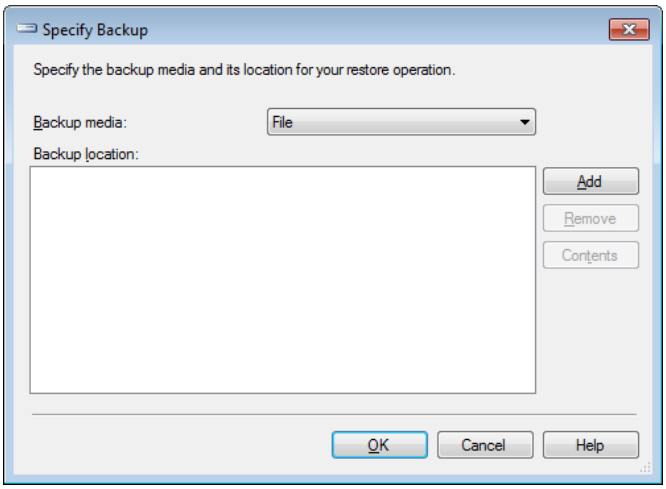


Figure 46 Select Backup File

7. Click **Add**.
8. Locate the backup file, select it and click **OK**.
9. Click **OK**.
10. Check the check box to **Select the backup sets to restore**.

11. Select the **Options** page from the top-left of the screen.

    Select **Overwrite the existing database** and **Leave the database ready to use…**(RESTORE WITH RECOVERY).

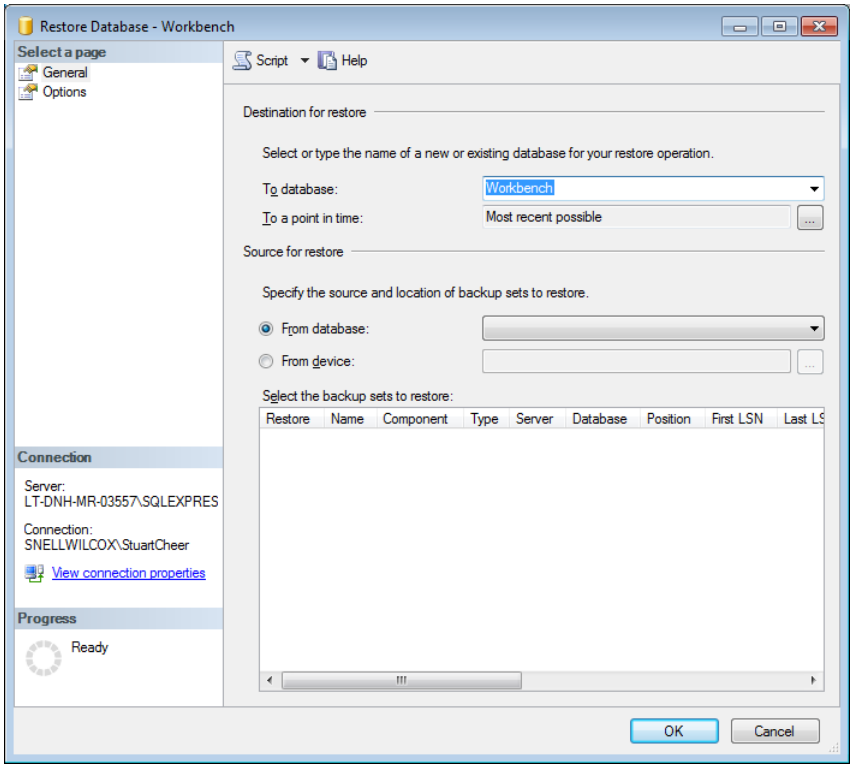


Figure 47 Restore Options

12. Click **OK**.

13. Start Workbench, the database needs to be updated. Figure 48 shows the initial screen.

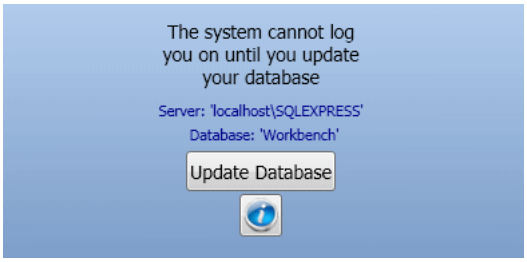


Figure 48 Update Database

14. To view the differences between the databases, click the button. The Database Analyzer displays, indicating the parts of the database that will change when the database is updated, see Figure 49

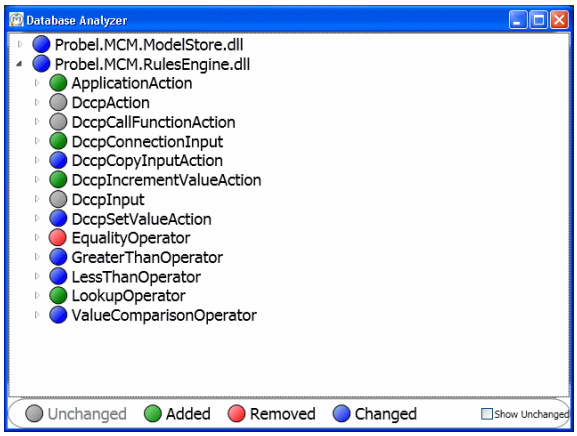


Figure 49 Database Analyzer

15. Close the Database Analyzer screen and click on the **Update Database** button

16. Once the database has been updated Workbench will start.

7 Crosspoint Faults and Replacement

Chapter contains:

7.1 Main Video Crosspoint Matrix Status

The Main Video Crosspoint Matrix Status screen displays the status of the main and redundant video crosspoint modules. The Expansion Video Crosspoint Status screen displays the same information for the expansion video crosspoints (Sirius 850 only). The screens are also used to switch between video crosspoint modules if a video crosspoint module needs to be replaced.

Note:

- The Main Video Crosspoint Matrix screen for the Sirius 830 differs from the Sirius 840 and 850 screen because the Sirius 830 has a maximum of two crosspoint cards compared with the maximum of five crosspoint modules that can be fitted to the 840 and 850 routers.
- The Expansion Video Crosspoint Matrix Status screen displays the expansion video crosspoint modules in the remote frame (expansion frame) when a dual frame Sirius 850 system is being used.
- The operation of the screen is essentially the same for all of the Sirius 800 routers and is described in this section.

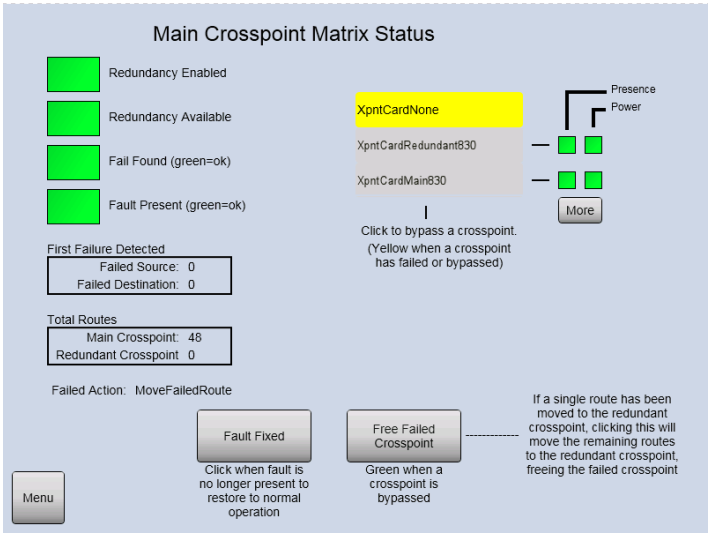


Figure 50 Sirius 830 Crosspoint Matrix Status and Crosspoint Switching

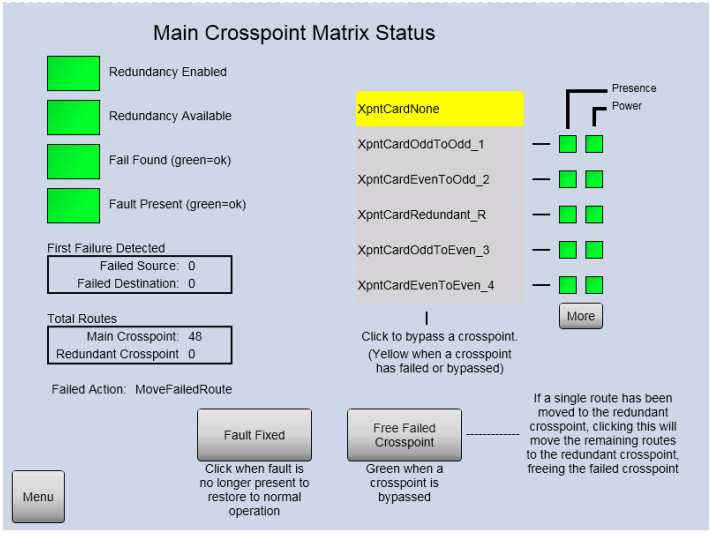


Figure 51 Sirius 840/850 Crosspoint Matrix Status and Crosspoint Switching

Screen Item	Description
Indicators	
Redundancy Enabled	**Green** = Redundant crosspoint checking enabled. **Red** = Redundant crosspoint checking is not enabled. The video crosspoint redundancy algorithm is disabled by default. For details on enabling the video crosspoint redundancy algorithm see section 7.5.
Redundancy Available	**Green** = A full set of crosspoint modules is configured for the matrix. **Sirius 830** - 1 main and 1 redundant **Sirius 840/850** - 4 main and 1 redundant) **Red** = A full set of crosspoint modules is not configured for the matrix and therefore there is no crosspoint redundancy. **Note**: If the Sirius 800 is configured for redundancy and, when powered up, one or more crosspoint modules are missing or faulty the indications displayed will be: **Redundancy Available** displays **Green** **Fail Found** displays **Red**
Fail Found (green = ok)	**Green** = A failure has not occurred in the crosspoint matrix. **Red** = A failure has occurred in the crosspoint matrix. This may be a failure that has now cleared, check the Fault Present status to see if the fault is still present in the crosspoint matrix.
Fault Present (green = ok)	**Green** = The crosspoint matrix is currently working correctly. **Red** = There is currently a fault present in the crosspoint matrix.
First Failure Detected	
Failed Source	The **Failed Source** and **Failed Destination** parameters show the first failed route through the crosspoint that was detected. If both display zero and the Fail Found status is red then an entire crosspoint card has failed. Check the Crosspoint Status of each crosspoint card to determine which card has failed. If both display zero and the Fail Found and Fail Present LEDs are green then no fault has been found.
Failed Destination	
Total Routes	
Main Crosspoint	Displays the total number of routes passing through the Main crosspoint module(s).
Redundant Crosspoint	Displays the total number of routes passing through the Redundant crosspoint module.
Failed Action	Displays the action that will be carried out by the router when a crosspoint fails. This is configured in Workbench, see section 7.6 for configuration details. Configuration options available are: • Move the failed route to the redundant crosspoint (default when shipped). • Move all routes from the crosspoint module with the failure to the redundant crosspoint module • Notify the user and leave them to take appropriate action.

Table 17 Video Crosspoint Matrix Status Screen

Screen Item	Description
Crosspoint Status	
XpntCardNone	**Yellow** = Main and redundant crosspoint modules working correctly. **Grey** = A fault has occurred or a crosspoint has been by-passed.
Fault Fixed button	Switches the routes back to the main crosspoint module once it has been replaced.
Presence	**Green** = Crosspoint module present **Red** = Crosspoint module not present
Power	**Green** = Crosspoint module is powered **Red** = Crosspoint module is not powered
More button	Displays the Modules screen, see the Sirius 800 User manual for details.
Free Failed Crosspoint button	Moves all of the routes from the failed crosspoint module to the redundant crosspoint module allowing the failed crosspoint module to be replaced. The “Active” LED on the failed crosspoint module will go off. The failed crosspoint card can be replaced without interrupting any crosspoint routing once the routes have been switched to the redundant crosspoint module, see section 7.2.1 for details.
Sirius 830 Crosspoint Card Status Buttons	
XpntCardRedundant830 button	Touch the button to bypass the redundant crosspoint card. **Grey** = Redundant crosspoint card is working correctly. **Yellow** = Redundant crosspoint card has failed or been bypassed.
XpntCardMain830 button	Touch the button to bypass the main crosspoint card. **Grey** = Main crosspoint card is working correctly. **Yellow** = Main crosspoint card has failed or been bypassed.
Sirius 840/850 Crosspoint Card Status Buttons	
XpntCardOddToOdd_1 button	Touch the button to bypass crosspoint card 1. **Grey** = Crosspoint card 1 is working correctly. **Yellow** = Crosspoint card 1 has failed or been bypassed.
XpntCardEvenToOdd_2 button	Touch the button to bypass crosspoint card 2. **Grey** = Crosspoint card 2 is working correctly. **Yellow** = Crosspoint card 2 has failed or been bypassed.
XpntCardRedundant_R button	Touch the button to bypass the redundant crosspoint card. **Grey** = Redundant crosspoint card is working correctly. **Yellow** = Redundant crosspoint card has failed or been bypassed.

Table 17 Video Crosspoint Matrix Status Screen

Screen Item	Description
XpntCardOddToEven_3 button	Touch the button to bypass crosspoint card 3. **Grey** = Crosspoint card 3 is working correctly. **Yellow** = Crosspoint card 3 has failed or been bypassed.
XpntCardEvenToEven_4 button	Touch the button to bypass crosspoint card 4. **Grey** = Crosspoint card 4 is working correctly. **Yellow** = Crosspoint card 4 has failed or been bypassed.

Table 17 Video Crosspoint Matrix Status Screen

7.1.1 5901/5905 Video Crosspoint Module LEDs

Table 18 shows the LED color code on the Video Crosspoint Modules, and Figure 52 shows the front edge of the module.

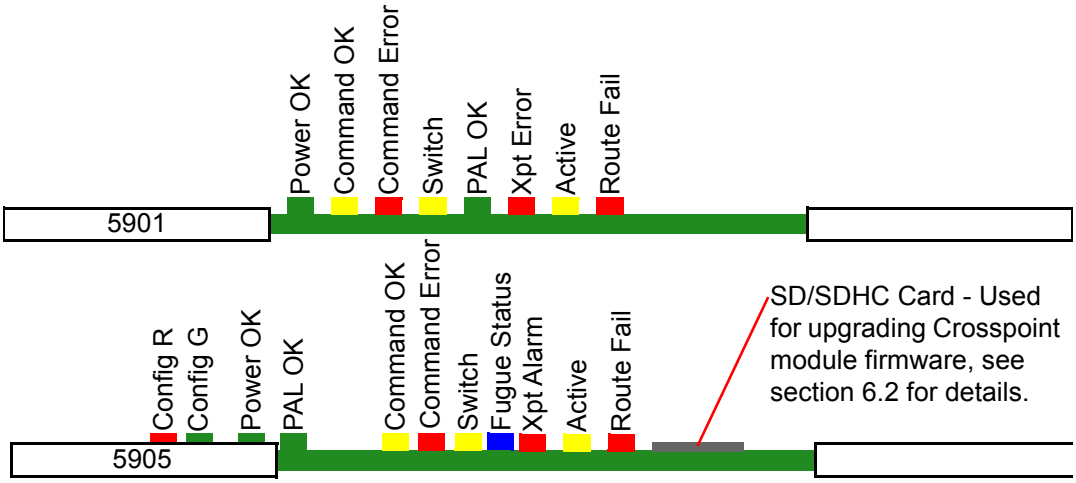


Figure 52 5901/5905 Video Crosspoint Module LEDs

Note: If the Active LED is not illuminated, it is safe to remove the video crosspoint module without affecting any active routes.

LED Color	Label	Detail	Status
Red	Config R (5905 only)	FPGA status	**Flashing rapidly between Red & Green** (2 Hz each LED) - starting up **Green On Solid & Red Off** - normal state working correctly **Green Off & Red On Solid** - FPGA programming fault found. Remove module and refit to force a reboot. **Red & Green Flashing very rapidly in sync** (4 Hz each LED) - A change has been made to the module settings database in RAM but it has not yet been written to flash memory. This is not a fault and the flash memory will be updated after a period of inactivity. Do not remove power from the module while this indication is present as the flash may become corrupted. Other indications are displayed when performing a firmware upgrade, see section 6.2 for details.
Green	Config G (5905 only)		
Green	Power OK	Power to the module	**On Solid** - working correctly
Green	PAL OK	FPGA Working	**Flashing** - the FPGA is working correctly
Yellow	Command OK	Command from the Control module	**Flashing** - receiving information and working correctly
Red	Command Error	Error with command from the Control module	**Off** - normal state **Flashing** - the command message from the router controller is corrupt or hasn't been received. If all of the crosspoint modules indicate a Command Error check that the router controller is operating correctly. If only one of the crosspoint modules indicates the error contact Grass Valley Customer Support (see section 1.2 for contact details).
Yellow	Switch	Flashes on a take signal when switching a route	**Off** - normal state **Flashes** - each time a route is set
Blue/Green	Fugue Status (5905 only)	CPU status The LED is approximately 25 mm (1 Inch) from the edge of the board.	**Flashing Green**, **Green**, **Blue** - normal operation, the CPU is programmed and running **Brief Flash Red** at startup - normal **Flashing Red** - CPU error. Remove module and refit to force a reboot.
Red	Xpt Alarm (5905 only) Xpt Error (5901 only)	Displays if there is a problem with any crosspoints	**Off** - normal state **On solid** - problem with one or more crosspoints on the module. **Flashing** - Crosspoint module overheating, make sure the fan assemblies are all closed and the fans are all operating correctly.

Table 18 Video Crosspoint Module LED Information

LED Color	Label	Detail	Status
Yellow	Active	Route is active on crosspoint	**Flashing** - when this module is routing one or more signals to live outputs. Removing the crosspoint module will disturb the signal(s) passing through the crosspoint module.
Red	Route Fail	Illuminated if a route failure has been detected on this crosspoint	**Off** - normal state **Flashing** - receiving error messages related to a route failure

Table 18 Video Crosspoint Module LED Information

7.2 Video Crosspoint Failure

If Video Redundancy is enabled (see section 7.5) and a video crosspoint routing failure is detected by the redundant crosspoint checking algorithm the Nucleus router controller performs one of the following actions based on the configuration in Workbench (see section 7.6 for details on changing this setting):

- Move the failed route to the redundant crosspoint card (default when shipped).
- Move all routes from the crosspoint module with the failure to the redundant crosspoint module.
- Just notify the user and leave them to take appropriate action.

Note:

- Any failure needs addressing immediately to retain protection
- For information on replacing the failed crosspoint card see section 7.2.1.
- Following a change in source for a given output (routing change) it can take several seconds to check the Sirius 800 redundancy. It is assumed that it is okay until this is done and so no alarm is flagged during this checking period.

7.2.1 Replacing a Failed Video Crosspoint Module using the Door PC

Note:

- The fan assembly should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.
- Take care not to trap any cables when opening and closing the fan door.

If one or more routes fail on a video crosspoint module this will be displayed on the Main or Expansion Video Crosspoint Matrix Status screen.

- **Sirius 830** - see Figure 50 on page 80 for button and parameter locations.
- **Sirius 840/850** - see Figure 51 on page 80 for button and parameter locations.

A typical example of how the buttons will look is listed below:

- **Fail Found indicator** - Red
- **Fault Present indicator** - Red
- **First Failure Detected** - **Failed Source** and **Destinations** will display the first failed route
- **XpntCardNone** - Grey

- **Sirius 830**
  - **XpntCardMain830** Yellow (indicates the crosspoint has failed)
- **Sirius 840/850**
  - **XpntCardxxxToxxx_x** - Yellow (where xxx is the failed crosspoint module)

1. Touch the **Free Failed Crosspoint** button to move all of the routes from the failed video crosspoint module to the redundant video crosspoint module if Workbench has not been configured to do this automatically.
2. Check that the “Active” LED on the failed video crosspoint module is off and then remove the failed video crosspoint module (see section 7.1.1 for the location of the Active LED).
3. Replace the failed video crosspoint module with a replacement working crosspoint module.
4. The replacement video crosspoint module is automatically tested and the **Fault Present** indicator will change back to Green if the replacement is fully working.
5. Touch the **Fault Fixed** button to move all of the routes from the redundant video crosspoint module to the fixed video crosspoint module.

- The Main or Expansion Video Crosspoint Matrix Status screen should now return to its working state.

  Sirius 830 - see Figure 48 on page 79 for button and parameter locations.

  Sirius 840/850 - see Figure 49 on page 79 for button and parameter locations.

  - **Fail Found indicator** - Green
  - **Fault Present indicator** - Green
  - **First Failure Detected** - **Failed Source** and **Destinations** will both be reset to Zero
  - **XpntCardNone** - Yellow

- **Sirius 830**
  - **XpntCardRedundant830** - Grey
  - **XpntCardMain830** - Grey
- **Sirius 840/850**
  - **XpntCardOddToOdd_1** - Grey
  - **XpntCardEvenToOdd_2** - Grey
  - **XpntCardRedundant_R** - Grey
  - **XpntCardOddToEven_3** - Grey
  - **XpntCardEvenToEven_4** - Grey

7.3 Audio Crosspoint Matrix Status Screens

The Main Audio Crosspoint Matrix Status screen displays the status of the main and redundant audio crosspoint modules. The screen is also used to switch between audio crosspoint modules if an audio crosspoint module needs to be replaced.

Note:

- For information on replacing a failed crosspoint card see section 7.4.1.

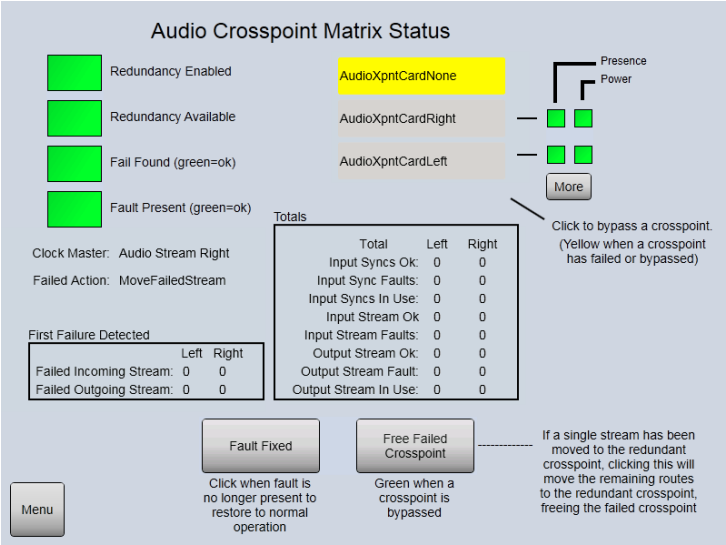


Figure 53 Sirius 800 Audio Crosspoint Matrix Status and Crosspoint Switching

Screen Item	Description
Indicators	
Redundancy Enabled	**Green** = Redundant crosspoint checking enabled. **Red** = Redundant crosspoint checking is not enabled. The audio crosspoint redundancy algorithm is enabled by default. For details on disabling the audio crosspoint redundancy algorithm see section 7.5.
Redundancy Available	**Green** = The crosspoint modules are configured for the matrix. 1 main and 1 redundant **Red** = The crosspoint modules are not configured for the matrix and therefore there is no crosspoint redundancy. **Note**: If the Sirius 800 is configured for redundancy and, when powered up, one or more crosspoint modules are missing or faulty the indications displayed will be: **Redundancy Available** displays **Green** **Fail Found** displays **Red**
Fail Found (green = ok)	**Green** = A failure has not occurred in the crosspoint matrix. **Red** = A failure has occurred in the crosspoint matrix. This may be a failure that has now cleared, check the **Fault Present** status to see if the fault is still present in the crosspoint matrix.
Fault Present (green = ok)	**Green** = The crosspoint matrix is currently working correctly. **Red** = There is currently a fault present in the crosspoint matrix.

Table 19 Audio Crosspoint Matrix Status Screen

Screen Item	Description
Clock Master	Displays the Audio Crosspoint module that is supplying the audio system clock (Left or Right). The Audio Crosspoint module either generates the audio system clock (Clock Master) or uses the clock generated on the other crosspoint (if fitted). In normal operation the main crosspoint module generates the audio system clock and the redundant crosspoint module is slaved to that.
Failed Action	Displays the action taken when a crosspoint fails. Configured in Workbench, see section 7.6 for details. Displays the action that will be carried out by the router when a crosspoint fails. This is configured in Workbench, see section 7.6 for configuration details. Configuration options available are: • Move the failed stream to the redundant crosspoint (default when shipped). • Move all streams from the crosspoint module with the failure to the redundant crosspoint module
First Failure Detected (shown for Left and Right Audio Crosspoint Modules)	
Failed Incoming Stream **Failed Outgoing Stream**	Displays the first incoming and first outgoing streams to fail on each Audio Crosspoint module. If all display zero and the Fail Found status is red then an entire crosspoint module has failed. Check the Crosspoint Status of crosspoint modules to determine which card has failed. If both display zero and the **Fail Found** and **Fail Present** LEDs are green then no fault has been found.
Totals (shown for Left and Right Audio Crosspoint Modules)	
Input Syncs OK	Displays the total number of successful input syncs for the audio crosspoint module.
Input Sync Faults	Displays the total number of failed input syncs for the audio crosspoint module. 0 = No input sync faults (good)
Input Syncs in Use	Displays the total number of input syncs in use on the audio crosspoint module.
Input Stream OK	Displays the total number of input streams without faults on the audio crosspoint module.
Input Stream Faults	Displays the total number of input stream faults for the audio crosspoint module. 0 = No failed input streams (good)
Output Stream OK	Displays the total number of output streams without faults on the audio crosspoint module.
Output Stream Fault	Displays the total number of output stream faults for the audio crosspoint module. 0 = No failed output streams (good)
Output Stream in Use	Displays the total number of output streams in use on the audio crosspoint module.

Table 19 Audio Crosspoint Matrix Status Screen

Screen Item	Description
Crosspoint Status	
XpntCardNone	**Yellow** = Main and redundant crosspoint modules working correctly. **Grey** = A fault has occurred or a crosspoint has been by-passed.
XpntCardRedundant button	Touch the button to bypass the redundant crosspoint card. **Grey** = Redundant crosspoint card is working correctly. **Yellow** = Redundant crosspoint card has failed or been bypassed.
XpntCardMain button	Touch the button to bypass the main crosspoint card. **Grey** = Main crosspoint card is working correctly **Yellow** = Main crosspoint card has failed or been bypassed.
Presence	**Green** = Crosspoint module present **Red** = Crosspoint module not present
Power	**Green** = Crosspoint module is powered **Red** = Crosspoint module is not powered
More button	Displays the Modules screen, see the S800 User Manual for details.
Fault Fixed button	Switches the routes back to the main crosspoint module once it has been replaced.
Free Failed Crosspoint button	Moves all of the routes from the failed crosspoint module to the redundant crosspoint module. Also makes the redundant crosspoint module the Clock Master allowing the failed crosspoint module to be replaced. The “Route Active” LED on the failed crosspoint module will go off. The failed crosspoint module can be replaced without interrupting any crosspoint routing once the routes have been switched to the redundant crosspoint module, see section 7.4.1.

Table 19 Audio Crosspoint Matrix Status Screen

7.3.1 5903 Audio Crosspoint Module LED Information

Table 20 shows the LED color code for the LEDs at the front of the 5903 Audio Crosspoint module, and Figure 54 shows the front edge of the module.

Note: If the Route Active LED is not illuminated, it is safe to remove the crosspoint module without affecting any active routes (see section 7.4.1 for details).

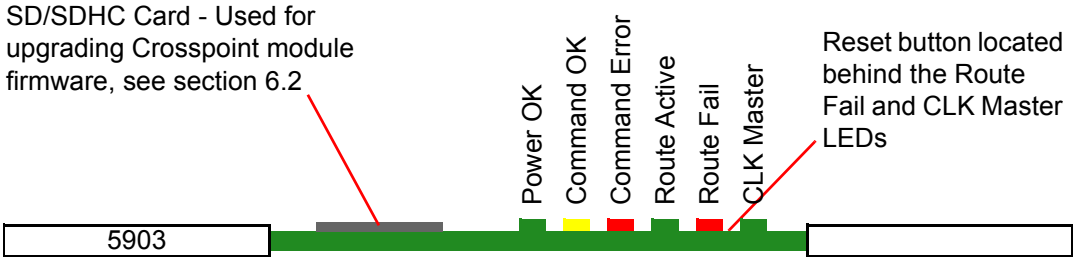


Figure 54 5903 Sirius 800 Audio Crosspoint Module LEDs

LED Color	Function	Detail	Status
Green	Power OK	Power to the module	**On Solid** - working correctly
Red	Config R (located behind the Power OK LED)	FPGA status	**Flashing rapidly between Red & Green** (2 Hz each LED) - starting up **Green On Solid & Red Off** - normal state working correctly **Green Off & Red On Solid** - FPGA programming fault found. Remove module and refit to force a reboot. Other indications are displayed when performing a firmware upgrade, see section 6.2 for details.
Green	Config G (located behind the Power OK LED)		
Yellow	Command OK	Command from the Control module	**Flashing** - receiving information and working correctly
Red	Command Error	Error with command from the Control module	**Off** - normal state. **Flashing** - the command message from the router controller is corrupt or hasn't been received.
Green	Route Active	Route is active on crosspoint	**On** - if any signal is routed through this crosspoint module. Removing the crosspoint module will disturb the signal(s) passing through the crosspoint module. **Off** - no signal is present on this crosspoint module.
Red	Route Fail	One or more audio transport streams have failed	**Off** - normal state **Flashing** - there is a fault with one or more audio transport streams passing through the crosspoint module. For details on replacing the crosspoint module see section 7.4.1.
Green	CLK Master	Clock Master	The 5903 module either generates the audio system clock or uses the clock generated on the other crosspoint (if fitted). In normal operation the main crosspoint module generates the audio system clock and the redundant crosspoint module is slaved to that. **On** - this crosspoint module is supplying the audio system clock. **Off** - this crosspoint module's clock is slaved to the other crosspoint module. **Note**: If the 5903 module supplying the audio system clock fails then it is important that clock generation is moved to the working crosspoint before the failed crosspoint is replaced (see section 7.4.1 for details).

Table 20 5903 Audio Crosspoint Module LED Information

7.4 Audio Crosspoint Failure

If an output module detects an error in the audio transport stream from the main audio crosspoint module or if the stream is not present it will use the transport stream from the redundant audio crosspoint module. The Route Fail LED on the audio crosspoint module with the failure will flash red, see section 7.3.1 for the location of the status LEDs.

At this point the crosspoint matrix is still capable of setting all audio routes but redundancy protection has been lost. This failure must be addressed immediately to regain redundancy for the crosspoint matrix.

Note:

- Any failure needs addressing immediately to retain protection.
- For information on replacing the failed crosspoint card see section 7.4.1 below.

7.4.1 Replacing a Failed Audio Crosspoint Module

A failed audio crosspoint module can be replaced by either using the Door PC to move the routes from the failed module to the working module or without using the Door screen. Both methods are described in this section.

- Replacing an audio crosspoint module using the Door PC, see section 7.4.1.1.

or

- Replacing an audio crosspoint module without using the Door PC, see section 7.4.1.2.

7.4.1.1 Replacing an Audio Crosspoint Module using the Door PC

If one or more routes fail on an audio crosspoint module this will be displayed on the Audio Crosspoint Matrix Status screen. A typical example of how the buttons will look is listed below (see Figure 53 on page 88 for button and parameter locations):

- **Fail Found indicator** - Red
- **Fault Present indicator** - Red
- **First Failure Detected** - **Failed Incoming Stream** and/or **Failed Outgoing Stream** will display the first failed stream(s)
- **XpntCardNone** - Grey
- **XpntCardRedundant**: Grey
- **XpntCardMain**: Yellow (indicates the main audio crosspoint has failed)

1. Touch the **Free Failed Crosspoint** button to move all of the routes from the failed audio crosspoint module to the other audio crosspoint module.

Note:

- The fan assembly should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.
- Take care not to trap any cables when opening and closing the fan door.

2. Open the router door and then open the fan door to locate the audio crosspoint modules.

3. Check that the “Route Active” LED on the failed audio crosspoint module is off and then remove the failed audio crosspoint module (see section 7.3.1 for the location of the Route Active LED).
4. Replace the failed audio crosspoint module with a replacement working crosspoint module and close and secure the fan door and router door.
5. The replacement audio crosspoint module is automatically tested and the Fault Present indicator will change back to Green if the replacement is fully working.
6. Touch the **Fault Fixed** button to move all of the routes from the redundant crosspoint module to the fixed audio crosspoint module.
7. The Audio Crosspoint Matrix Status screen should now return to its working state (see Figure 53 on page 88 for button and parameter locations):
   - **Fail Found indicator** - Green
   - **Fault Present indicator** - Green
   - **First Failure Detected** - **Failed Incoming Stream** and **Failed Outgoing Stream** will be reset to 0
   - **XpntCardNone** - Yellow
   - **XpntCardRedundant** - Grey
   - **XpntCardMain** - Grey

7.4.1.2 Replacing an Audio Crosspoint Module without using the Door PC

Note:

- The fan assembly should be placed back into the closed position as soon as possible after opening, as this ensures correct ventilation of the frame. Failure to do this will result in failure.
- In practice the maximum time that a fan assembly can be left open will depend on a number of factors such as; ambient temperature, frame loading, crosspoint routings, etc. To ensure correct operation under all conditions the fan assemblies should be left open for no more than 4 minutes at a time.
- Take care not to trap any cables when opening and closing the fan door.

1. Open the router door and then open the fan door to locate the audio crosspoint modules. Identify the faulty audio crosspoint module, the “Route Fail” LED will be flashing Red (see section 7.3.1 for the location of the status LEDs).
2. Press the **Reset** button on the failed audio crosspoint module (Figure 54 on page 90) so that the working crosspoint module uses its own audio system clock.

   CLK Master LED = On for the working audio crosspoint module, see section 7.3.1 for the location of the “CLK Master” LED.
3. The faulty audio crosspoint module can be hot swapped for a working audio crosspoint module without causing any disturbance to audio on the router.
4. Close and secure the fan door and router door.

7.5 Enabling/Disabling Video/Audio Redundancy

7.5.1 Video Redundancy

The video redundant crosspoint algorithm is enabled or disabled by using the Generic Configuration Editor. See the Workbench manual for information on using the Generic Configuration editor.

Nucleus2 Controller Navigate to:

```
Devices | Devices[1]: LocalRouterDevice | LocalRouterControl |
RouterSpecificControl: Sirius800Control | RedundantXpntControl |
Enable = True
```

Nucleus (2450) Controller Navigate to:

```
Control2450| CommonControl|RouterSpecificControl: Sirius800Control |
RedundantXpntControl | Enable = True
```

Select the required action from the drop down menu:

- Redundant crosspoint algorithm enabled = `True`
- Redundant crosspoint algorithm disabled = `False`

Note:

- **Sirius 850 single frame**: Enabling video redundancy will enable redundancy for the main and expansion crosspoint modules in the router (if fitted).
- **Sirius 850 dual frame systems**: Enabling video redundancy in frame one will enable redundancy for the main crosspoint modules mounted in frame one and the expansion crosspoint modules mounted in frame two. The reverse is true for frame two. In a dual frame system if redundancy is enabled in one frame it must also be enabled in the other frame.

Important:

- If video redundancy is enabled or disabled the configuration must be pushed by Workbench to the controller for the new setting to take effect.
- If the action on fail setting (see section 7.6) for video or audio needs to be changed make these changes at the same time and only one push is then required.
- In a dual controller system use the **Push Config to Controller(s)** button in Workbench to make sure both controllers are set the same.

7.5.2 Audio Redundancy - Nucleus2 2464/2463 Controller Only

The audio redundant crosspoint algorithm is enabled or disabled by using the Online Editor. See the Workbench manual for information on using the Online Editor.

Nucleus2 Controller Navigate to:

```
Devices | Devices[1]: LocalRouterDevice | LocalRouterControl |
RouterSpecificControl: Sirius800Control | RedundantAudioXpntControl
| Enabled = True
```

Select the required action from the drop down menu:

- Redundant crosspoint algorithm enabled = `True`
- Redundant crosspoint algorithm disabled = `False`

Important:

- If audio redundancy is enabled or disabled the controller must be reset for the new setting to take effect.
- If the action on fail setting (see section 7.6) for video or audio needs to be changed make these changes at the same time and only one database push is then required.
- In a dual controller system both controllers must have the same redundancy settings.

7.6 Configuring Video/Audio Crosspoint Failure Action

The action on crosspoint failure for video and audio are set from the Workbench controller Online Editor. See the Workbench manual for information on using the on-line editor.

Nucleus2 Controller Navigate to:
`Devices | Devices[1]: LocalRouterDevice | LocalRouterControl | RouterSpecificControl: Sirius800Control`

Nucleus (2450) Controller Navigate to:
`Control2450| CommonControl|RouterSpecificControl: Sirius800Control |`

Nucleus2 & Nucleus (2450) Controllers

`Video` **navigate to**:
`| RedundantXpntControl | ActionOnFail = MoveFailedRoute|`

Select the required action from the drop down menu:

- `NoAction =` Notify the user and leave them to take appropriate action
- `MoveFailedRoute =` Move the failed route to the redundant crosspoint (default when shipped)
- `MoveAllRoutes` = Move all routes from the crosspoint with the failure to the redundant crosspoint

`Audio` **(Nucleus2 only) navigate to**:
`| RedundantAudioXpntControl | FailedAction = MoveFailedStream|`

Select the required action from the drop down menu:

- `MoveFailedStream =` Move the failed stream to the redundant crosspoint (default when shipped)
- `MoveAllStreams` = Move all streams from the crosspoint with the failure to the redundant crosspoint

Important:

- If the video or audio action on fail setting is changed the controller must be reset for the new settings to take effect.
- If video or audio redundancy is enabled or disabled (see section 7.5) make these changes at the same time and push the configuration to the controller using Workbench, a reset is not be required after the push.
- In a dual controller system both controllers must have the same redundancy settings.

8 Door PC Maintenance

Chapter contains:

Door PC Maintenance

8.1 Door PC Fan Replacement

Door PC fan replacement is described in Section 4.6.6 on page 48.

8.2 Remote Desktop Connection to the Door PC

Note:

Before starting:

- Microsoft Remote Desktop Connection software must be installed on the computer.
- The computer must be connected to the same network and sub LAN as the Door PC.
- You will need to know the IP address of the Door PC to connect to it. The default IP address of the door PC is 172.31.9.207.
- For a dual Sirius 850 system the default IP address of the door PC in frame 2 of 2 is 172.31.9.210

The recommended method of accessing the Door PC is by using the Microsoft Remote Desktop Connection software from a PC with a large screen that is connected to the same network as the Door PC.

8.2.1 Starting a Remote Desktop Session with a Door PC

To remotely connect to a Door PC through a network:

1. From the Windows **Start** menu, select **All Programs | Accessories | Remote Desktop Connection**.
2. Type the **IP Address** of the door PC.

   The default IP address of the door PC is:
   172.31.9.207
3. Click **Connect**.
4. Once connected to the Door PC enter the username and password:

   Username: S800
   Password: S800

8.2.2 Ending a Remote Desktop Session with a Door PC

To disconnect from the Door PC and leave Live Runner running on the Door PC:

1. If the door PC Windows **Start** menu button is not visible press the Windows key on your keyboard and it will be displayed.
2. Click on the **Remote Desktop Release** shortcut in the Windows **Start** menu.
3. The Remote Desktop session will be terminated and Live Runner will continue running on the Door PC.

Note: Do not Log out of the Door PC or simply disconnect the Remote Desktop session or the Door PC will be left displaying the Windows Login screen.

8.2.3 Connecting a Keyboard, Mouse and Monitor

If for some reason you can't connect to the Door PC using Microsoft Remote Desktop Connection (see section 8.2) then connect a keyboard, mouse and monitor to the Door PC (see Figure 55).

Note:

- Grass Valley recommends that Microsoft Remote Desktop Connection should be used if possible.
- There are two versions of Door PC hardware, see Figure 55. Earlier routers have a DVI port and later routers have an HDMI and VGA port. The Door PCs are functionally identical.

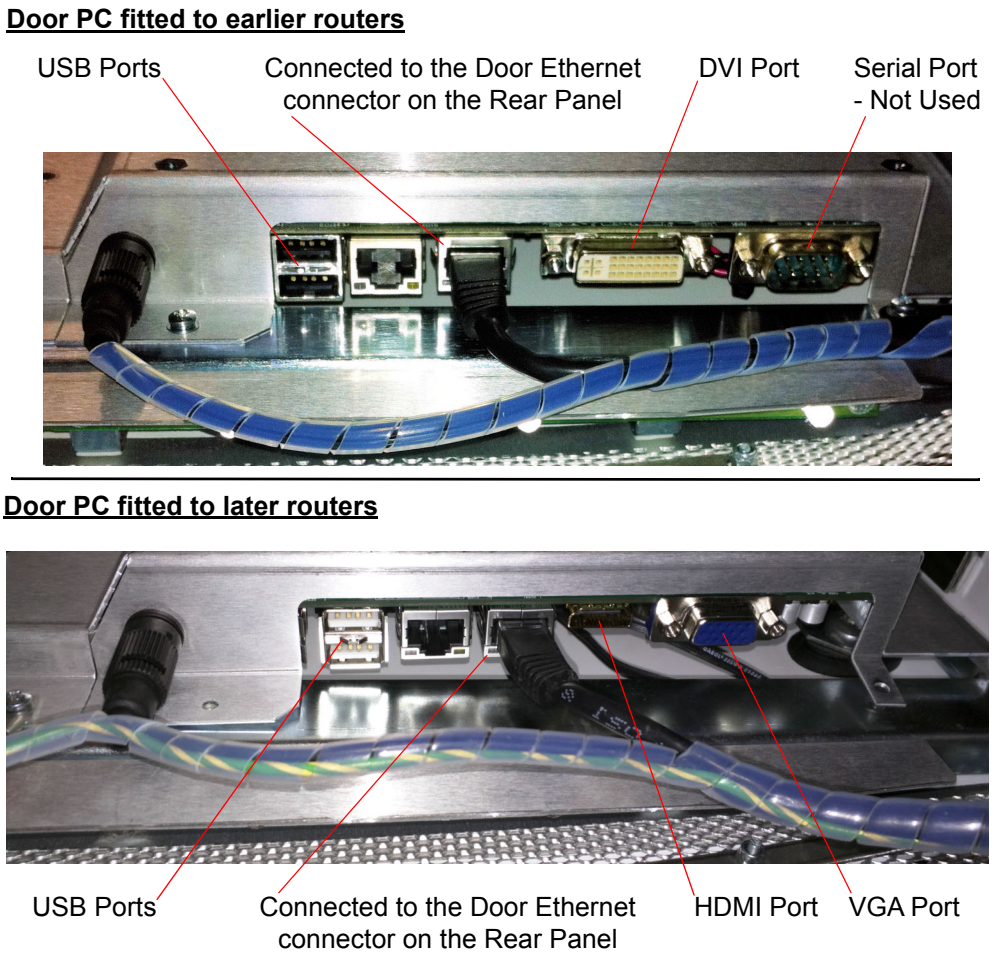


Figure 55 Door PC Ports

8.3 Upgrading the Workbench Version of the Door PC

The Workbench software running on the router Door PC can be upgraded as new versions of the Workbench software are released. This section describes the upgrade process. The upgrade can be performed while the router is “On Air”. Crosspoints can be set using external controllers during the upgrade process.

Important: Although upgrading the Workbench software is not a difficult task it is very important that these steps are followed to minimize the risk of problems occurring during the upgrade.

Note:

Upgrading Workbench to Version 3.10

- The upgrade will result in the loss of router ports. Use the Port Editor after the upgrade to setup the appropriate ports.
  See the Workbench user manual for full details of using the Port Editor.
- The router controller association for all Tieline controllers will be lost during the upgrade. After the upgrade use the Tieline Editor and select the appropriate router controller from the list at the top right of the editor. Remember to re synchronize the Tieline Tally Table using the button at the bottom of the Tieline Editor.
  See the Workbench user manual for full details of using the Tieline Editor.
- Port Mappings should be unaffected but they must be checked after the upgrade to confirm this.
  See the Workbench user manual for full details of checking port mappings.
- Copy any existing keypad device configurations from the router controllers to the tieline controllers because in Workbench Version 3.10 and above Multi-Matrix behaviors now reference a keypad device stored on the associated tieline device. Previously a multi-matrix behavior referenced a keypad device stored on a router controller referenced by the tieline device.
  See the Workbench user manual for full details.
- Router dial-up behaviors do not support routing via tielines in Workbench version 3.10 or later.

Before Starting:

- Allow sufficient time to upgrade Workbench on the Door PC. The upgrade process will take around 30 Minutes.
- Copy the entire Workbench installation disk to a USB memory stick of at least 2Gb in size.

Note: The USB memory stick containing the Workbench installation file will need to be plugged into the Door PC.

Equipment required:

- Workbench client computer to backup the Workbench database if the database is stored on the Door PC.
- USB Memory stick containing the entire Workbench installation disc.
- A USB mouse.
- USB hub and USB keyboard (only required if the installation doesn’t use the default install settings)

8.3.1 Upgrade Procedure

Important:

- If the Database is stored on the Door PC disk drive it must be backed-up before starting the upgrade procedure. See Section 6.4 for details on backing-up the Workbench database.

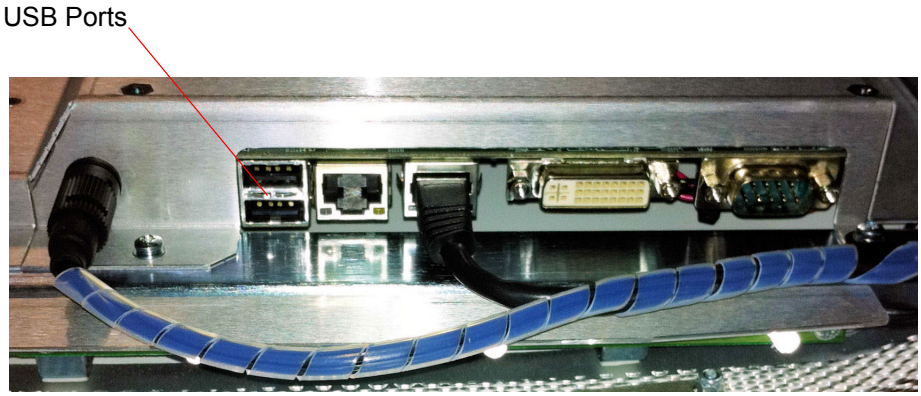
1. Open the router door and locate the rear of the Door PC (see Figure 56).
2. Plug the USB Memory stick containing the Workbench installation disc into one of the Door PC USB ports.

Note:

- If the Workbench installation doesn't use the default install location a USB hub and keyboard will be required. Plug the USB hub into the spare USB port in the Door PC and plug the keyboard into the USB hub.
- There are two versions of Door PC hardware, see Figure 56. Earlier routers have a DVI port and later routers have an HDMI and VGA port. The Door PCs are functionally identical.

3. Plug the mouse into the spare USB port in the Door PC or into the USB hub if a keyboard and USB hub have been fitted.

Door PC fitted to earlier routers



Door PC fitted to later routers

Figure 56 Door USB Ports

Note: If Workbench is being installed to a different location than the existing version of Workbench the Live Runner shortcut in the Windows Startup folder must be edited before starting the installation.

a Copy the original Live Runner shortcut in the Startup folder to your desktop in case you make a mistake editing the original.

b Right click on the **Live Runner** shortcut in the **Startup** folder and select **Properties**.

c Edit the **Target** path to match the new installation location for Workbench. Ensure you keep the "-f" switch at the end of the **Target** path as this ensures that Live Runner starts in fullscreen mode.

d Once the installation is complete check that Live Runner automatically restarts when the Door PC is powered up. If Live Runner restarts correctly the copy of the Live Runner shortcut on the desktop can be deleted.

4. Open Microsoft Windows Explorer on the Door PC and navigate to the USB memory stick.

Note: Microsoft Remote Desktop can be used (see section 8.2) for the Workbench upgrade if required but the USB memory stick containing the Workbench installation files must be plugged into the Door PC.

5. Double click on the **Workbenchinstaller.exe** file on the USB memory stick to start the upgrade and follow the installation instructions.

6. Once the upgrade is complete remove the USB memory stick and start Workbench.

7. If the database needs to be updated the screen shown in Figure 57 will be displayed. If this screen is not displayed move on to step 11.

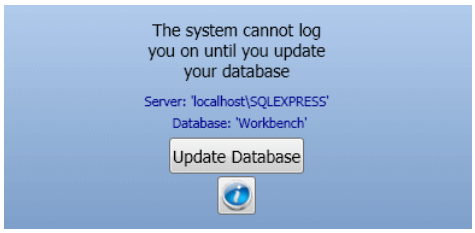


Figure 57 Update Database

8. To view the differences between the databases, click the button. The Database Analyzer displays, indicating the parts of the database that will change when the database is updated, see Figure 58

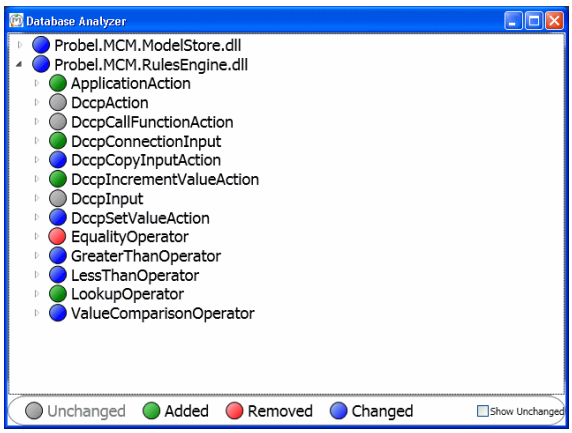


Figure 58 Database Analyzer

9. Close the Database Analyzer screen and click on the **Update Database** button
10. Once the database has been updated Workbench will start.
11. Click on the Configuration button (green and grey gears, see Figure 59) to open the Controller Configuration screen shown in Figure 60

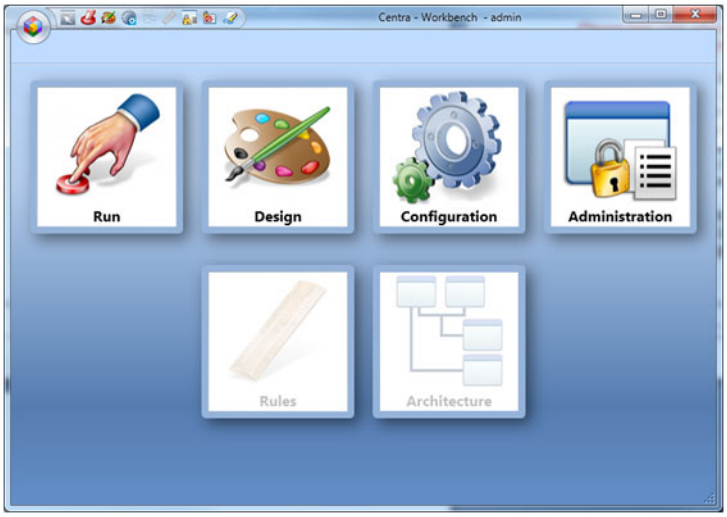


Figure 59 Workbench

12. Check that the Nucleus controllers are connected to Workbench and are running correctly. The example in Figure 60 shows a dual controller system.

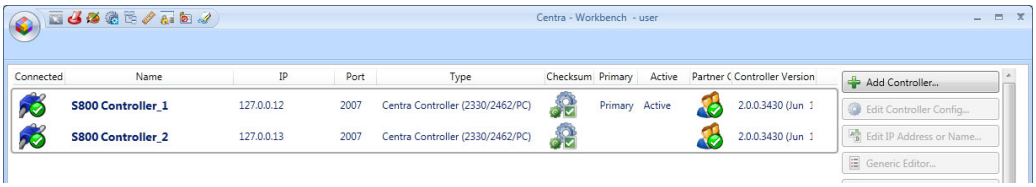


Figure 60 Workbench Controller Screen

13. Close Workbench and restart Live Runner. Check that Live Runner is working correctly.
14. Remove the USB mouse and keyboard from the Door PC to complete the upgrade.

8.4 Replacing the Door PC

In the unlikely event of hardware failure the Door PC can be replaced while the router is “On Air”. Crosspoints can be set from external controllers during the upgrade process. This section describes the process that needs to be followed to remove the old Door PC and fit a new Door PC. The Door PC comes with Windows and Workbench pre-installed.

Important:

- Although replacing the Door PC is not a difficult task it is very important that these steps are followed to minimize the risk of problems occurring during the process.
- If the Database is stored on the Door PC disk drive contact Grass Valley support before proceeding with the Door PC replacement.
- There are two versions of Door PC hardware, see Figure 61. The Door PCs are functionally identical and the replacement Door PC can be used to replace either.

Before starting

- Allow sufficient time to replace the Door PC. The replacement process will take around 1 hour.

Equipment Required

- Replacement Door PC - Grass Valley Part Number - RMYS HWPCS800C/SAAEY 1912B
- Pozidriv Screwdriver suitable for M3 x 10 mm Pozidriv screws

8.4.1 Procedure

1. Open the router door.
2. Unplug the Power connector, the Network connector and any other cables that are plugged into the Door PC (see Figure 61). Remove the Earth cable from the Spade connector to the left of the Door PC power connector.

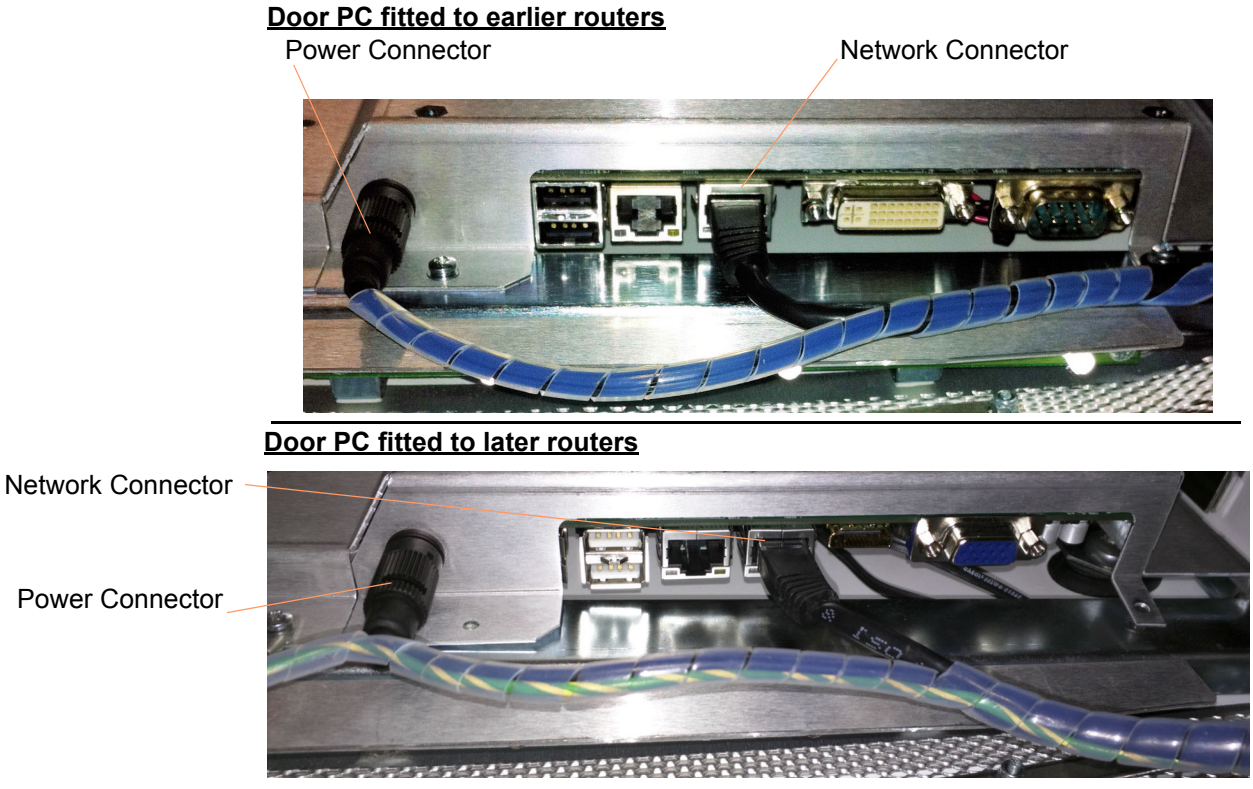


Figure 61Door PC connectors

3. Support the Door PC and remove the 8 screws that fix the Door PC to the router door (see Figure 62). Keep the screws, the spade connector and plastic cable clip for when the new Door PC is fitted.

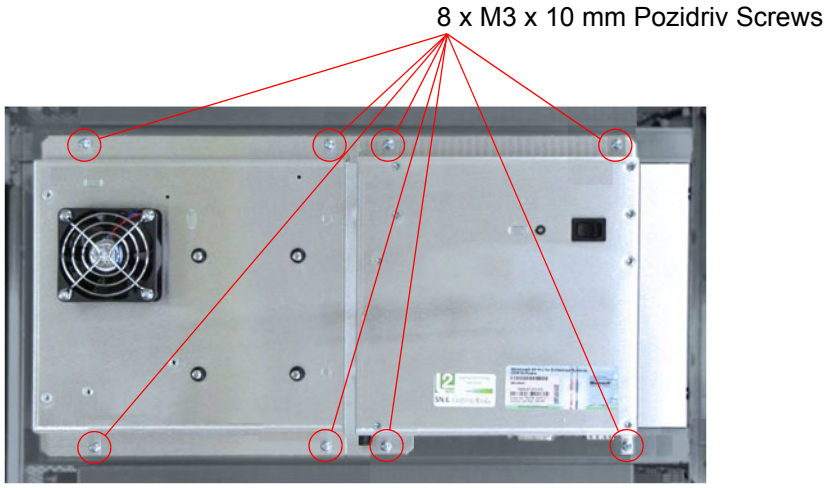


Figure 62 8 x Door PC Fixing Screws

4. Pull the right side of the Door PC away from the router door and then slide the Door PC to the right slightly to expose the final wires still connected to the Door PC power supply (see Figure 63 and Figure 64).

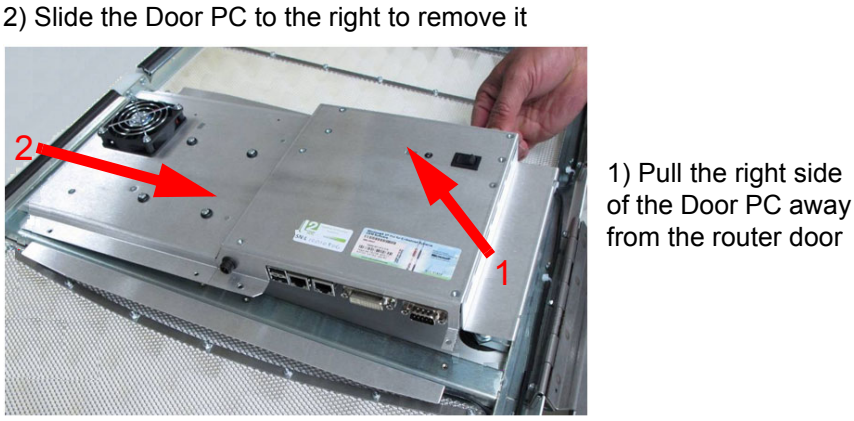


Figure 63 Door PC Removal

5. The LEDs in the router door are powered from the Door PC power supply board (see Figure 64). Remove the plugs from the Door PC PSU.

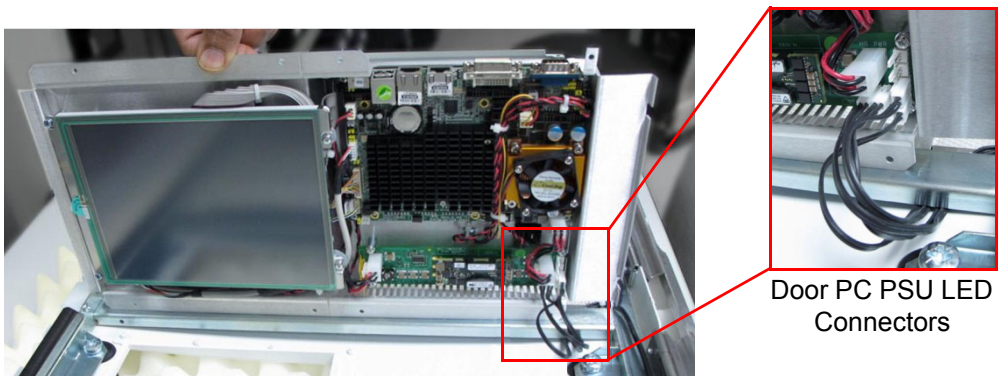


Figure 64 Door LED Connections

6. Put the old Door PC to one side.

7. Pick up the new Door PC and reconnect the door LED plugs to the Door PC PSU connectors (see Figure 64).

Note: It doesn't matter which connector is used for which door LED plug as the outputs are all the same.

8. When installing the Door PC locate the left edge of the Door PC assembly first and then push the right edge of the Door PC towards the router door (see Figure 65).

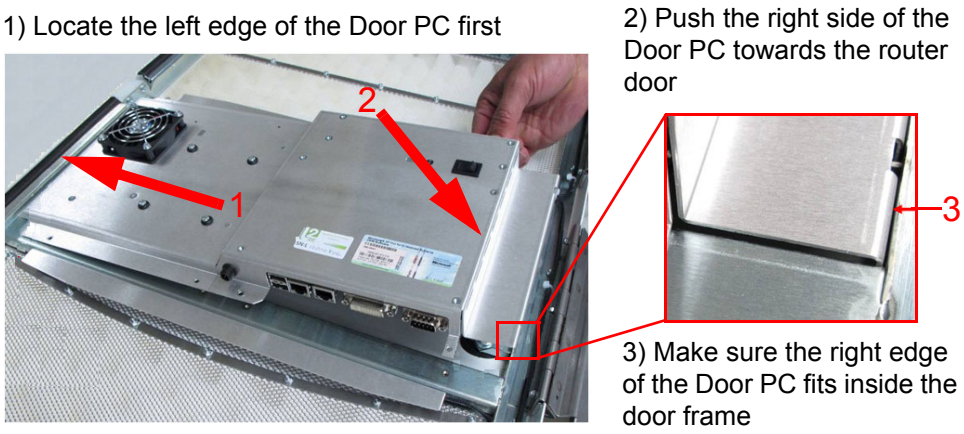


Figure 65 Door PC Installation

Important: Ensure that the right edge of the Door PC fits inside the router door (see Figure 65).

9. Refit the 8 x M3 x 10 mm screws (see Figure 66). Make sure the spade connector and plastic cable clip are fitted.

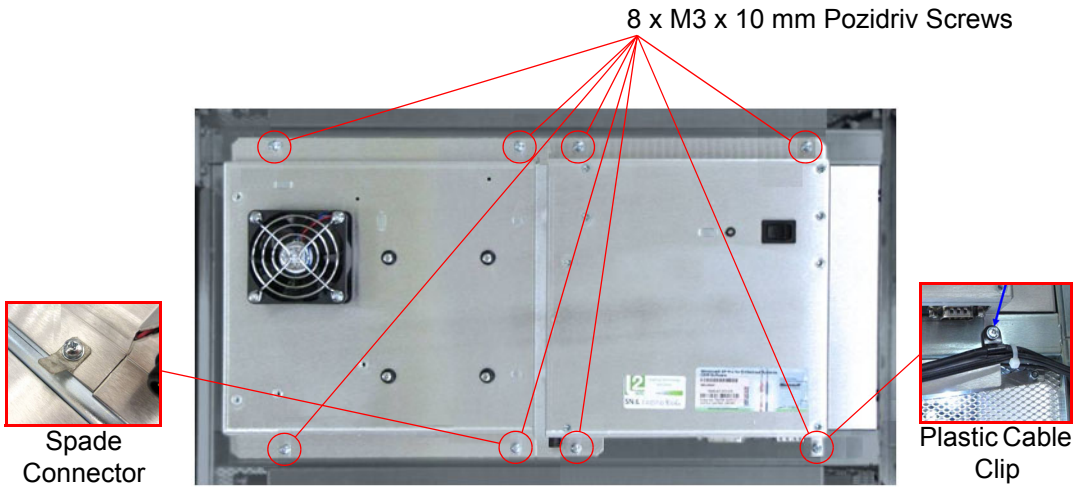


Figure 66 Refit the Door PC Fixing Screws

10. Refit the Earth cable to the Spade connector and then fit the Power and Network connectors (see Figure 67).

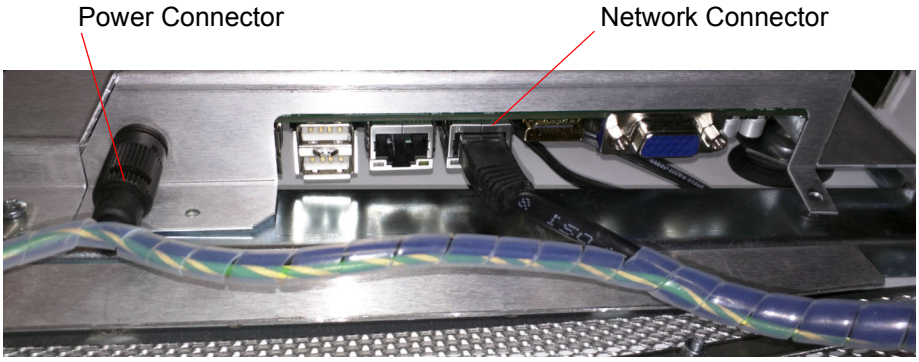


Figure 67 Door PC Power and Network Connectors

11. Power the Door PC on by pressing and releasing the On/Off switch on the rear of the Door PC (see Figure 68)

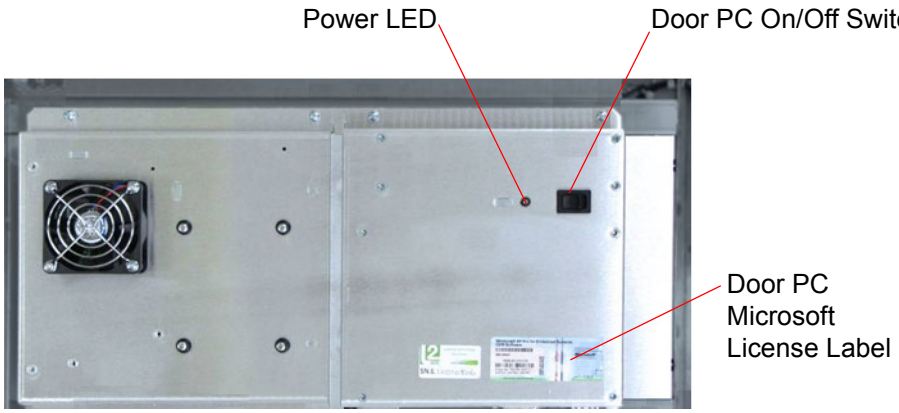


Figure 68 Door PC Rear

12. Check that the Door PC starts up correctly and that Live Runner starts in the usual way.

13. Check the Workbench version on the Door PC matches the Workbench version used on the site. If the versions don't match the Door PC Workbench software can be updated (see section 8.3 for details).

9 Nucleus Upgrade (RollCall) and Maintenance

Chapter contains:

Nucleus Upgrade (RollCall) and Maintenance

9.1 Nucleus Router Control Module Overview

The Nucleus router control modules are real-time router control cards which perform the following functions:

- Interface to all the external devices (control system, panels and so on), through Ethernet and serial port connections.
- Provides redundant control connections on RS422/485 and Ethernet.
- Store the local configuration of the router.
- Contain all circuitry to manage multiple reference inputs.
- Set video and audio crosspoints in response to external commands and responds with tally information (audio crosspoints - Nucleus2 controllers only)
- Monitor the status of the system components and reports this to the door PC and the external systems as required.

Up to two router controllers can be fitted to the router in a main and backup configuration. When two controllers are fitted the controller in the left slot is the main controller and will be active when the router is powered up. This is the default power up setting but this setting can be changed from Workbench if required. See the Workbench manual for details. The controller mounted in the left slot is Controller A and the controller in the right slot is Controller B.

Note:

- Earlier Sirius 800 AHP routers were fitted with Nucleus2 2463 router controllers but new Sirius 800 routers are fitted with the Nucleus2 2464 router controller. Although the Nucleus2 2464 is functionally the same as the Nucleus2 2463 controller they cannot be mixed in a router frame.
- When two controllers are fitted in the router they must both be the same type running the same software version. For example: either 2 x 2464, 2 x 2463 or 2 x 2450 controllers should be fitted.
- When two controllers are fitted in the router they must both have a network connection (Ethernet A and Ethernet B) The controller Ethernet connections are located on the rear of the Sirius 800 routers.

9.2 Nucleus2 & Nucleus 2450 Router Control Module Compatibility

See section 5.2 for details.

9.3 Nucleus2 & Nucleus 2450 Router Control Module Snapshot

Router Snapshot uses the RollMechanic Backup and Restore functions to backup the current router video crosspoints (video routes) and AHP module audio processing settings. The snapshot can then be restored to the router at a later date to reproduce the video routes and audio processing settings (audio settings **Nucleus2** only) from the point in time the snapshot was taken.

Important:

Router Snapshot Pre-requisites:

- RollMechanic installed and working on the same network as the router controllers (see the RollMechanic Operator's Manual for details).
- RollCall must be enabled on the Nucleus controller(s).
  RollCall is enabled by default, to check:
  - Nucleus2, see section 9.5.7

  or
  - Nucleus 2450, see section 9.6.6
- The Nucleus controller must have the RollCall Command Set and Webcontent files from Workbench version 3.14.2 or later installed.
  - Nucleus2, see section 10.2.4

  or
  - Nucleus 2450, see section 10.5

Router Snapshot Notes:

- Nucleus2 snapshots are not compatible with Nucleus 2450 controllers and vice versa.
- Audio crosspoints are not backed up.
- If the input/output module types or positions are changed after a snapshot has been taken a subsequent restore will only be made for those modules that have not changed their slot position in the router.

See the RollMechanic Operator's Manual for details on how to take router snapshots and how to restore snapshots (backup and restore).

9.4 Nucleus2 & Nucleus 2450: Upgrade With RollCall

The Nucleus router control module software, firmware, RollCall and web content files can be upgraded using the RollCall Control Panel Java applet. The upgrade package is supplied by Grass Valley in the form of a zip file (Workbench version 3.14.2 or later is required, see the RollCall Pre-requisites in the following note).

This is the preferred upgrade method for the Nucleus2 and Nucleus 2450 router control modules.

Important: **Nucleus2 Controller Only:**

Before upgrading the Nucleus2 controller it is recommended that the controller Persistence and Localrouter files are backed-up, see section 10.2.7.
In the unlikely event that the files are corrupted during the upgrade the back-up can be restored to the controller.

The upgrade software packages contain the following files:

- **RTB** file - the Nucleus controller operating system
- **FPGA** file - the Nucleus firmware
- **RollCall Command Set** files - the files that allow RollCall to connect to the Nucleus controller
- **Web content** files - the files that allow a web browser to connect to the Nucleus controller

Important: **RollCall Update Pre-requisites**:

- Working network connection to the Nucleus router control module(s).
- Java must be installed on the computer. If Java isn't installed RollCall will display a link to download and install Java from.
- RollCall must be enabled on the Nucleus controller(s).
  RollCall is enabled by default, to check:
  - Nucleus2, see section 9.5.7

  or
  - Nucleus 2450, see section 9.6.6
- The Nucleus controller must have the RollCall Command Set and Webcontent files from Workbench version 3.14.2 or later installed.
  - Nucleus2, see section 10.2.4

  or
  - Nucleus 2450, see section 10.5
- The Nucleus controller must be running an RTB file from Workbench version 3.14.2 or later. If the Nucleus controller is running an earlier version of the RTB the controller must be updated. Once updated RollCall update can be used to update the rest of the files now and in the future.
  - Nucleus2 - use Pbak Deploy, see section 10.2.1.

  or
  - Nucleus 2450 - use FTP or Pbak Deploy, see section 10.3.2.

9.4.1 Importing The Nucleus Upgrade Package

1. The Nucleus upgrade package is located in the directory structure of the computer running Workbench. Upgrade packages are supplied in a compressed file format (zip) and they should not be extracted.

2. Open Workbench and open the Configuration page. This will display the connected controllers including their IP address and status (see Figure 69).

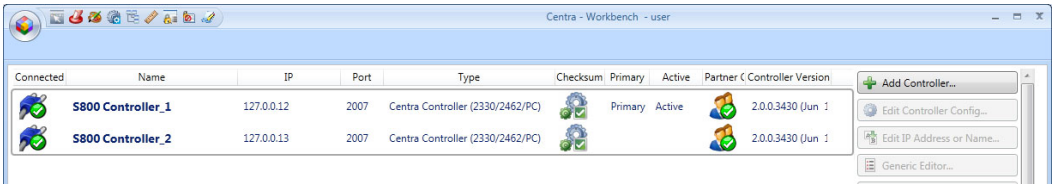


Figure 69 Workbench Controller Screen

3. Open a web browser on the same computer and type:
`http://xxx.xxx.xxx.xxx/` and press the **Enter** key
where xxx.xxx.xxx.xxx is the IP address of the Active Nucleus controller.

Figure 70 Router Home Page

4. Click on the **RollCall Control** tab.

- If a popup warning is displayed select the option that always allows popups from this site. The option name varies depending on the web browser in use.

- If a dialogue box is displayed indicating that a newer version of Java should be installed, click the **Download** button in the browser window. A security warning screen will be displayed.

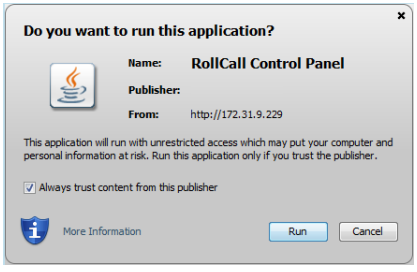


Figure 71 Security Warning

5. Select the **Always trust content from this publisher** check box, and click the **Run** button.

6. Click on the **Import New Upgrades** button ( ) in the main tool bar (see Figure 72).

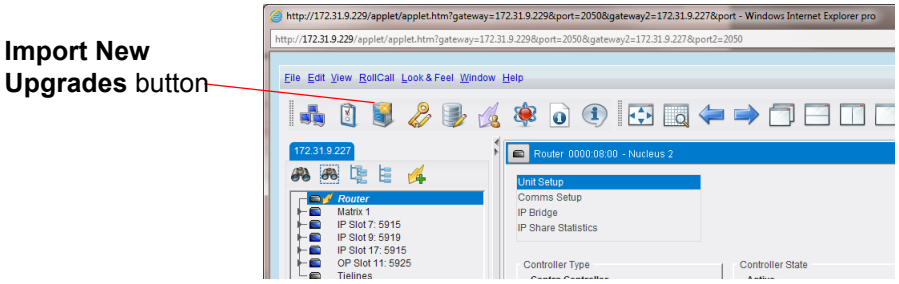


Figure 72 Import New Upgrades Screen

7. The RollCall Upgrade Packages Screen is displayed.

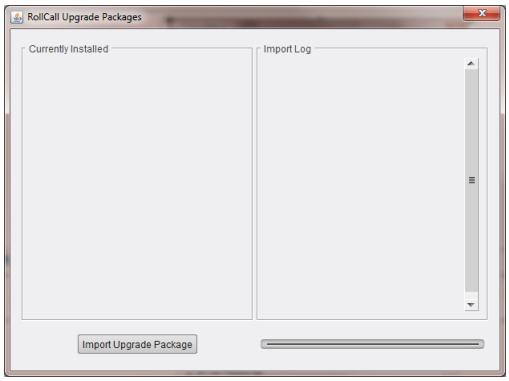


Figure 73 RollCall Upgrade Packages Screen

8. Click on the **Import Upgrade Packages** button.

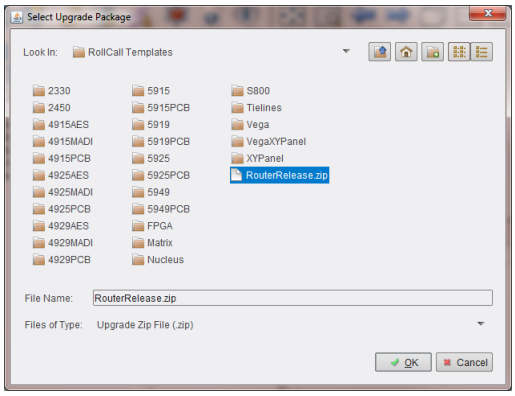


Figure 74 Select Upgrade Package Screen

9. Browse to the directory containing the `RouterRelease.zip` upgrade package, see below:

   By default this is located in: `C:\Program Files\Snell\MCM\Controllers\RollCall_Templates\`

Note:

- The default directory shown assumes Workbench was installed in the default directory.
- If Workbench is installed in the default location on a 64 bit Windows computer then it will be located in the "`Program Files (x86)`" directory.

10. Select the `RouterRelease.zip` upgrade package and click **OK**.

11. The upgrade package will be imported and router controllers can then be upgraded.

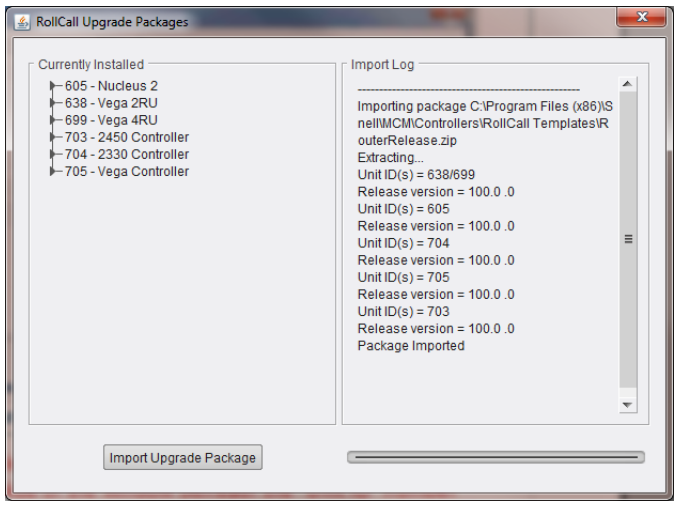


Figure 75 Software Version Numbers

12. Make a note of the software Version number being imported. The Software version number is shown in the right side of the window beneath the “Unit ID” number (see Figure 75):

    - Nucleus2 2464 Unit ID = XXX

    - Nucleus2 2463 Unit ID = 605

    - Nucleus 2450 Unit ID = 703

13. Click on the **Close** button ( ) in the top right of the screen to close it.

Note:

- On a dual redundant controller system the router controllers can be updated while the router is on-air, if required.
- If the router only has a single controller the upgrade can be performed while the router is on-air but all communication with the router controller will be lost during the upgrade. Because of this the crosspoints cannot be switched and tallies are not reported during the upgrade. Video and audio processing is unaffected.

- If dual controllers are fitted to the router, the inactive controller should be updated first. This can then be made the active controller, and the other controller (now inactive) can be updated.

  - See Upgrade the Inactive Controller on page 115.

- If only one controller is fitted the router can be left on-air but communication with the controller and control of the router will be lost during the upgrade.

  - See Upgrade the Active Controller on page 118.

9.4.1.1 Upgrade the Inactive Controller

Important:

Nucleus2 Controller Only:

Before upgrading the Nucleus2 controller it is recommended that the controller Persistence and Localrouter files are backed-up, see section 10.2.7.
In the unlikely event that the files are corrupted during the upgrade the back-up can be restored to the controller.

1. Connect to the inactive secondary controller. To do this, click on the **Connect to RollCall Network** button ( ) in the main tool bar.

Connect to RollCall Network button

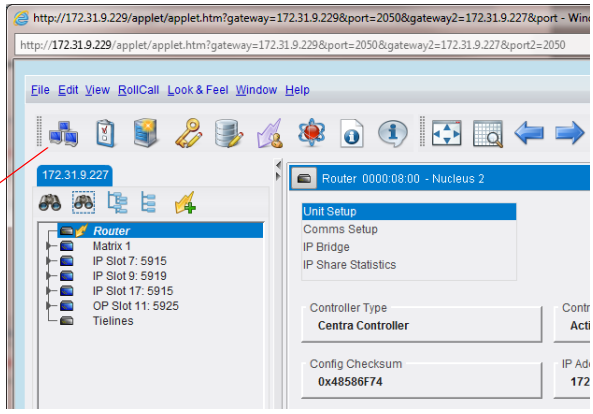


Figure 76 Build Network

2. The Build Network screen is displayed.

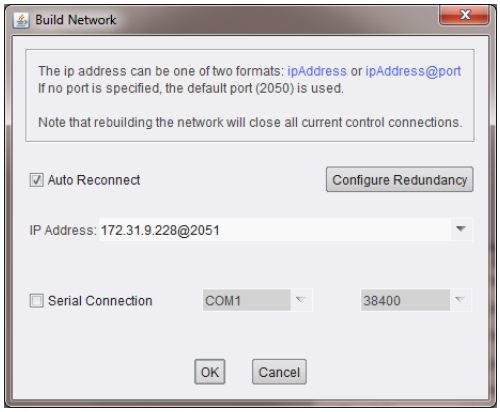


Figure 77 Build Network Screen

3. Type the IP address of the inactive controller, and append the following: @2051.

   For example: 172.32.9.11@2051

4. The inactive controller is displayed in the network tree.

5. Right-click on the **Router** and select **Unit Upgrade** from the menu.

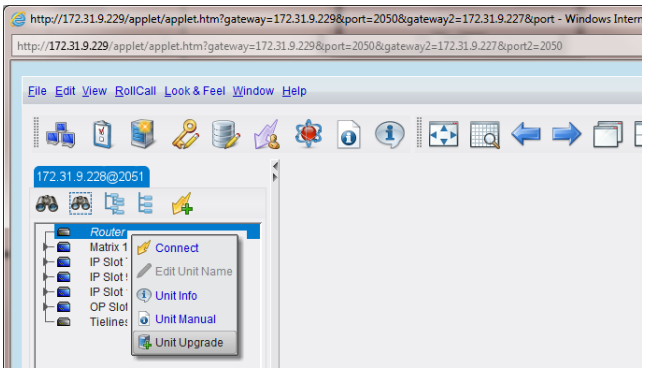


Figure 78 Network Tree

6. Click on the **Software Releases** drop-down list and select the required upgrade package (Figure 79).

Note: Check the Unit ID and the selected software version (Figure 79) match those noted in step 12. on page 114.

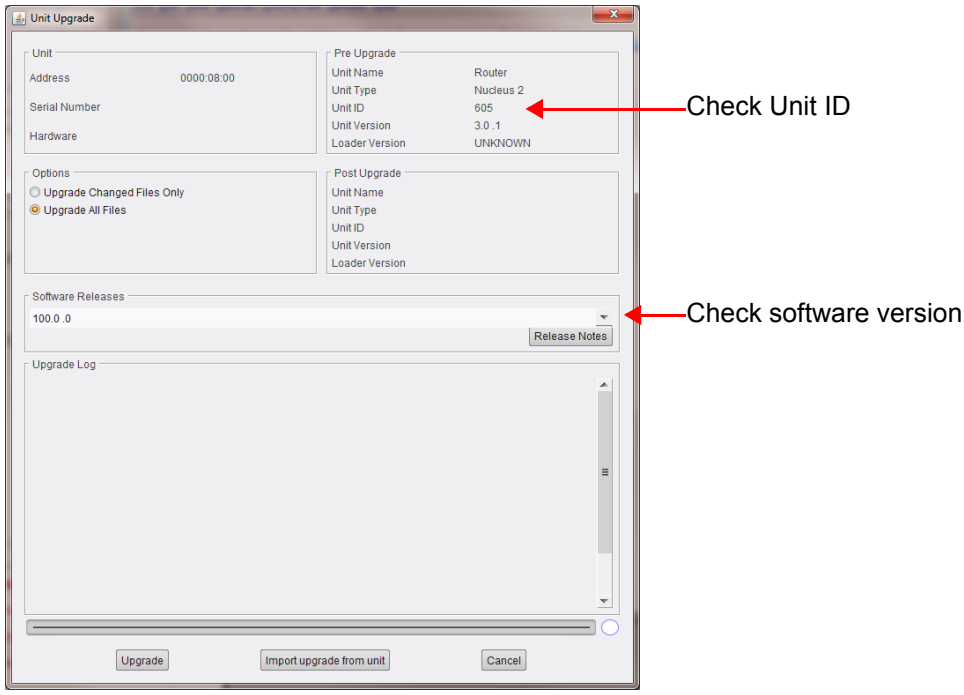


Figure 79 Controller Unit Upgrade Screen

7. Select the **Upgrade All Files** option, and click on the **Upgrade** button.
8. The controller will now be upgraded. Follow the on screen prompts.

   Once the upgrade is complete the controller is automatically restarted.

Important: Wait for at least two minutes once the updated controller has finished rebooting before moving on to the next step (see section 9.5.3 for the Nucleus2 and section 9.6.3 for the 2450 controller LED state displayed once it's rebooted).

9. When upgrading a Nucleus 2450 router controller move on to step 10.

   When upgrading a Nucleus2 it is important to check that LED 5 on the upgraded (Idle) controller is flashing green before moving on to step 10.

10. Use the controller **Reset** button to reset the other (active controller) making this upgraded controller active, see Figure 80 on page 117 for the location of the **Reset** button.

Important:

Nucleus2 Only:

Do not fail-over to the idle controller if LED 5 on the idle controller is flashing orange (data synchronization in progress). Failing over to the idle controller before data synchronization is complete may corrupt the data files being synchronized and affect the operation of the router. When LED 5 on the idle controller flashes green (data synchronization complete) it is safe to fail over the controller.

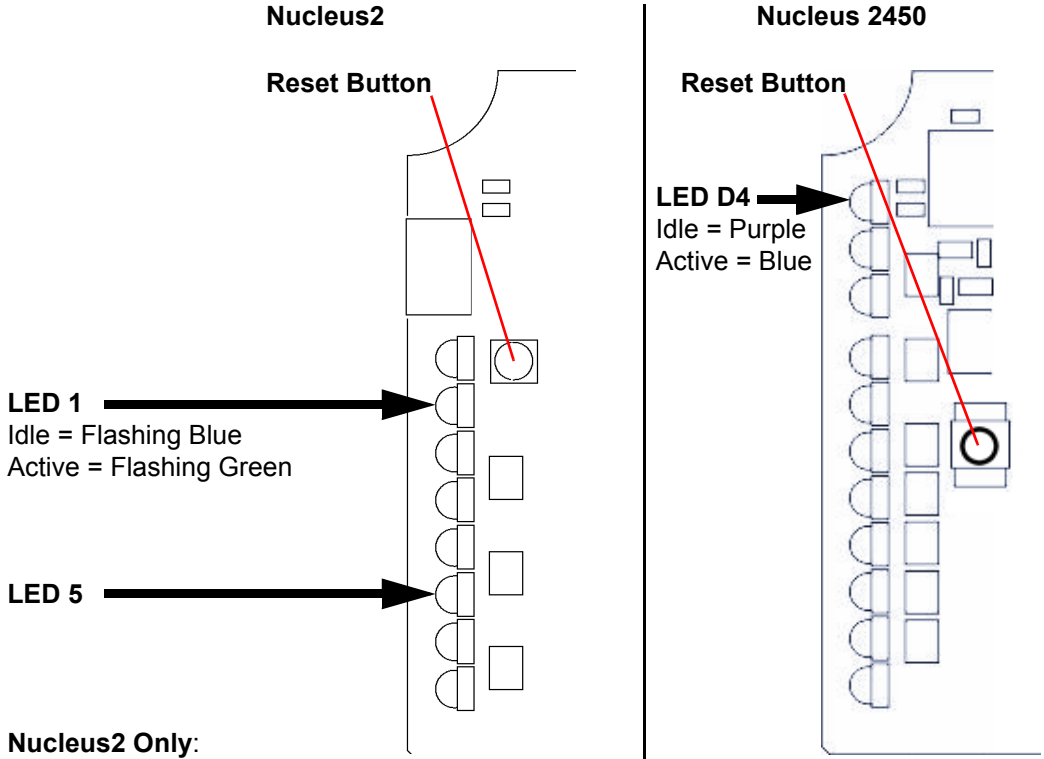


Figure 80 Router Controller Reset Button Location (Front Edge of Modules Shown)

11. Confirm that the router is working correctly.

12. Repeat the process for the now inactive controller so that it is also upgraded to the same version of software.

9.4.1.2 Upgrade the Active Controller

Important:

Nucleus2 Controller Only:

Before upgrading the Nucleus2 controller it is recommended that the controller Persistence and Localrouter files are backed-up, see section 10.2.7.
In the unlikely event that the files are corrupted during the upgrade the back-up can be restored to the controller.

1. Right-click on **Router** in the network tree, and select **Unit Upgrade** from the menu.

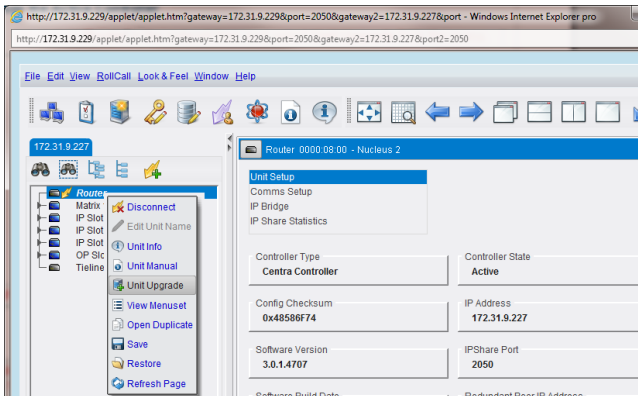


Figure 81 Network Tree

2. Click on the **Software Releases** drop-down list and select the required upgrade package.

Note:

Check the Unit ID and the selected software version (Figure 82) match those noted in step 12. on page 114.

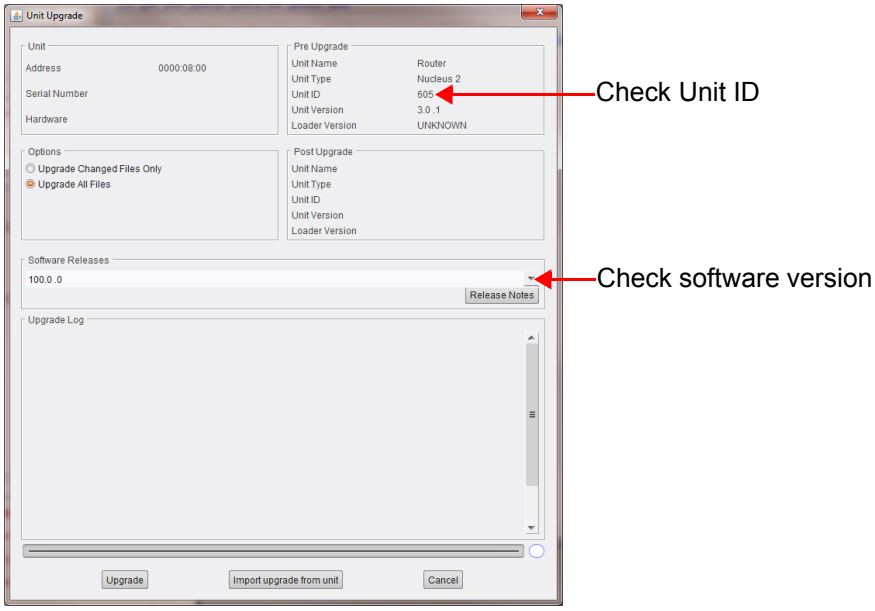


Figure 82 Controller Unit Upgrade Screen

3. Select the **Upgrade All Files** option, and click on the **Upgrade** button.

Note:

During the active controller upgrade the main fans will run at full speed. This is normal and the fan speed will return to normal once the upgrade is complete.

4. The controller will now be upgraded. Follow the on screen prompts.
5. Once the upgrade is complete the controller is automatically restarted.
6. Confirm that the router is working correctly.

9.5 Nucleus2 2464/2463 Router Control Module

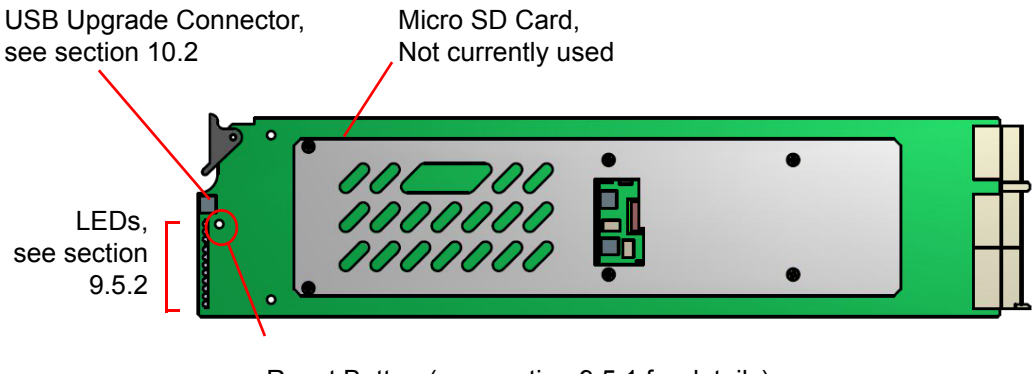


Figure 83 Nucleus2 Router Control Module

Refer to the Workbench manual for details on configuring the Nucleus2 router control module.

Note: The Nucleus2 controller has a default database, use Workbench's Auto Config function to match the cards in the Sirius 800 with the Workbench software database.

9.5.1 Reset Button

The Reset button resets the Nucleus2 router control module and will also fail-over control to the second router control module in a dual-redundant controller system. See Figure 83 above for reset button location details.

Nucleus2 Router control modules can be reset remotely using Workbench or a third party control system.

After fitting a replacement controller, the active controller synchronizes persistence (AHP audio settings) and crosspoint tally table files with it. This process (replication) is indicated on the idle controller by LED 5 flashing orange. When replication is complete, LED 5 will flash green. Failing over to the idle controller before data synchronization is complete may corrupt the data files being synchronized and affect the operation of the router.

Important:

Dual-Redundant Nucleus2 Router Control Modules:

- Do not fail-over to the idle controller if LED 5 on the idle controller is flashing orange (data synchronization in progress). Failing over to the idle controller before data synchronization is complete may corrupt the data files being synchronized and affect the operation of the router. When LED 5 on the idle controller flashes green (data synchronization complete) it is safe to fail over the controller.
- If resetting the Nucleus2 router control module remotely check the value of OID 2.5.6 for the active controller.
  True = Replication is complete (Safe to Reset)
  False = Replication is not complete (Do Not Reset)

Single Nucleus2 Router Control Module:

- All communication with the Nucleus2 router control module will be lost during a reset. Because of this the crosspoints cannot be switched and tallies are not reported during this process. Video and audio processing is unaffected.

9.5.2 Nucleus2 Router Control Module LEDs

The LEDs on the Nucleus2 controller card are shown in Figure 84 and Table 21 lists the Nucleus2 Controller LED functions.

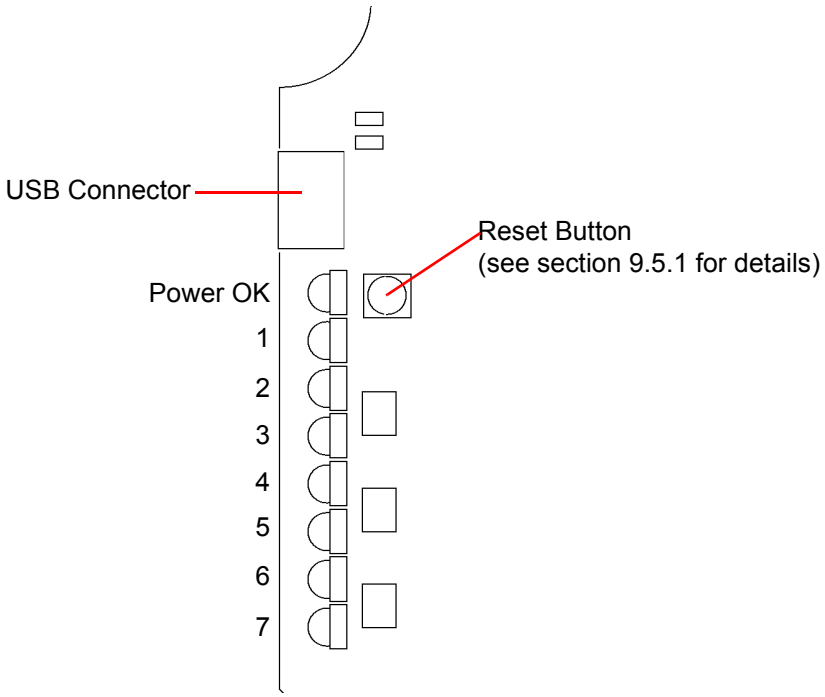


Figure 84 Nucleus2 Controller LEDs

LED	Description
Power OK	**Power OK** • Green = Power is connected and okay • Off = Power not connected or not okay
1	**Active/Idle** • Flashing Green = Active • Flashing Blue = Idle
2	**Master/Slave** • Green = Master Controller • Blue = Slave Controller
3	**Watchdog Status** • Flashing Green = Watchdog enabled and running • Flashing Orange = Watchdog disabled

Table 21 Nucleus2 Router Control Module LEDs

LED	Description
4	**Serial Link Between Controllers** Displays the status of the serial link between the active and idle controllers. See LED 5 for further information. • Blue pulsing Green = Link okay, data is being transferred. • Green pulsing Blue = Link okay, no data is being transferred. • Magenta pulsing Blue = Link error, no connection with the other controller. Indicates; the other controller is not present/not running or the serial link is not working. • Orange Pulses = Error, received data for unconfigured device Indicates; the other controller is configured differently from the controller receiving the data or it has no configuration. • Red Pulses = Error, received data with invalid format. Check both controllers are running the same version of CentraController.rtb software. Workbench can be used to check the controller software versions loaded.
5	**Serial Data Replication (Local Router Device)** The Serial Link is used to replicate LocalRouter device data between the active and idle controllers. Replicated data includes; crosspoint status, module configuration and port configuration. • Off = Active Controller • Flashing Green = Idle controller, receiving background update data. • Flashing Orange = Idle controller, data synchronization with Active controller in progress. **Note**: Do not fail-over to the idle controller until data synchronization is complete and the LED is flashing green on the idle controller as there is a risk that data will become corrupted and affect the operation of the router.
6	Not used
7	Not used

Table 21 Nucleus2 Router Control Module LEDs

9.5.3 Nucleus2 Router Control Module LEDs at Startup/Reset

When the controller starts up or is reset the Power OK LED will illuminate first and then LEDs 1 to 6 will start to flash as the controller goes through its boot process. They will reach the state shown in Table 22 when the first part of the boot process is complete. The controller will be ready to communicate with the control system and control the router up to two minutes after this. This will be indicated by the Grass Valley control system connected to the router.

	Dual Controllers		Single Controller
LED	**Active Controller**	**Inactive Controller**	**Active Controller**
Power OK	Solid Green	Solid Green	Solid Green
1 - Active/Idle	Flashing Green	Flashing Blue	Flashing Green
2 - Master/Slave	Solid Green	Solid Blue	Solid Green
3 - Watchdog Status	Flashing Green	Flashing Green	Flashing Green
4 - Serial Link Between Controllers	Blue Pulsing Green	Blue Pulsing Green	Magenta Pulsing Blue
5 - Serial Data Replication	Off	Flashing Green	Off
6 - Not Used	Off	Off	Off
7 - Not Used	Off	Off	Off

Table 22 Nucleus2 LED Status at Startup/Reset

9.5.4 Nucleus2 Router Control Module LEDs on Database Push

When a Workbench database is pushed to a controller in a frame with two controllers it should be pushed to the inactive controller first. This means that route changes and processing can be controlled while the inactive controller is being updated. The inactive controller can then be made active for the user to test the database. If the test is successful the database is then pushed to the other (now inactive) controller so that the databases in both controllers match.

In a frame with a single controller this is not possible and the database must be pushed to the single active controller. All communication with the router controller will be lost during the database push of the configuration changes and subsequent reset. Because of this the crosspoints cannot be switched and tallies are not reported during this process. Video and audio processing is unaffected.

The following description assumes that the controllers are set to automatically reset after a database push. This can be checked and changed by using the Workbench Online Editor. In a dual controller system remember to check that both controllers are set the same:

Nucleus2 Router Control Module Navigate to:
`ConfigurationItems | MiscellaneousFeatures | ResetControllerAfterConfigurationPush`

- Reset after database push enabled = `True`
- Reset after database push disabled = `False`

While the database is being pushed the LEDs will operate as normal, see Table 22. Pushing a large database can take up to 5 minutes. Once the push is complete the controller will automatically reset and the LEDs will operate as they do during a normal reset (described in section 9.5.3). The exception to this is when the database is pushed to the first controller of a pair. In this case the database will not match the database in the active controller and so LED 4 will be Pulsing Orange showing there is a mismatch between the databases in the two controllers. The mismatch will be corrected as soon as the database is pushed to the other controller in the pair.

9.5.5 Changing the IP Address of a Nucleus2 Controller

If the current IP Address of the Nucleus2 controller is known then it can be changed by using the Workbench on-line editor.

If the controller IP address is not available a new one can be set (see section 10.2.5 for details).

Nucleus2 Router Control Module Navigate to:
`ConfigurationItems | IP | IP[1]`

- `Number = 0`
- `DHCP` = False - set to false for a fixed IP address
- `Address` = `enter the new IP address of the controller`
- `Port` = if blank then the network port will be the default value which is 2007
- `SubnetMask` = set to match the network
- `DefaultGateway` = if unknown or not required enter 0.0.0.0

Note:

- Changes will not take effect until the Nucleus2 controller has been reset. This forces it to read the new IP Address from its config.xml file.
- If the controller is part of a replicated pair ensure that the other controller is edited so that it has the new IP Address of it's partner (see section 9.5.6 for details).

9.5.6 Configuring Nucleus2 Controller Replication

When two router controllers are fitted in a Sirius 800 router they work as a main and redundant pair. The active controller in the pair sends the inactive controller data such as; crosspoint status, module configuration and port configuration. This means if the active controller fails the other controller in the pair has the latest information available to it at all times. To enable this function each controller must be configured with the details of the other.

Nucleus2 Router Control Module Navigate to:
`ConfigurationItems | ReplicatedPeer`

- `Name` = `enter the name of the controller that will be the replicated peer as shown on the Workbench configuration screen`
- `IPAddress` = `enter the IP address of the controller that will be the replicated peer as shown on the Workbench configuration screen`
- `IPPort` = if blank then the network port will be the default value which is 2007
- `ConnectionState` = True or False - this is a status and is read only
- `Active` = True or False - this is a status and is read only

Note:

- Changes will not take effect until the controller has been reset.
- If two Nucleus2 controllers are fitted in a router then the second one must also be configured for controller replication.

9.5.7 Enable/Disable RollCall on a Nucleus2 Controller Using the Online Editor

RollCall is enabled by default on the Nucleus2 router control module and can be disabled using the Workbench Online Editor if RollCall if required.

To connect computer to the Nucleus2 controller using RollCall the RollCall Command Set Files must be transferred to the controller (see section 10.2.4 for details) and RollCall must be enabled (see below).

Nucleus2 Router Control Module Navigate to:
`ConfigurationItems | RollCall`

- `Enabled = set to True to enable RollCall and False to disable RollCall. The other settings are shown with their default values and they need not be changed unless instructed to do so by Grass Valley Support.`
- `StartupDelay` = 5
- `SharePort` = 2050
- `BridgePort` = 2600
- `BridgeRemoteAddress` = 128.1.1.1
- `BridgeAutoConnect` = False
- `Name` = Router
- `Information1` = Info1
- `Information2` = Info2
- `NetNibbles` = 1000
- `UseLongNames` = False

Note:

- Changes will not take effect until the controller has been reset.
- If two Nucleus2 controllers are fitted in a router then the second one must also be enabled for RollCall.

Connect to the controller by typing the controller IP address into the address bar of your web browser. When the Nucleus2 web page is displayed click on the **RollCall Control** tab and the RollCall web applet will start.

9.5.8 Enable/Disable Auto Change Over of Controller Ethernet Connection

If a Nucleus2 controller looses its Ethernet connection the system will auto change over to the second Nucleus2 controller (if a second controller is fitted and auto change over is enabled). The auto change over function using the Generic Online Editor. Auto change over is disabled by default.

Nucleus2 Router Control Module Navigate to:
`ConfigurationItems | MiscellaneousFeatures`

- `AutoChangeoverIfNoNetworkTime = -1 (see below for details)`

Auto change over can be enabled by setting the parameter to a number greater than or equal to Zero, This number is the time, in seconds, that the controller will wait after loosing network connection before changing over to the second controller.

Note:

- The default Auto Change Over Time is -1 = disabled.
- Changes will not take effect until the controller has been reset.
- If two Nucleus2 controllers are fitted in a router then the second one must also be configured with the same auto changeover settings.
- The `AutoChangeOverIfNoNetworkTime` setting under the Features node is not used.

9.6 Nucleus 2450 Router Control Module

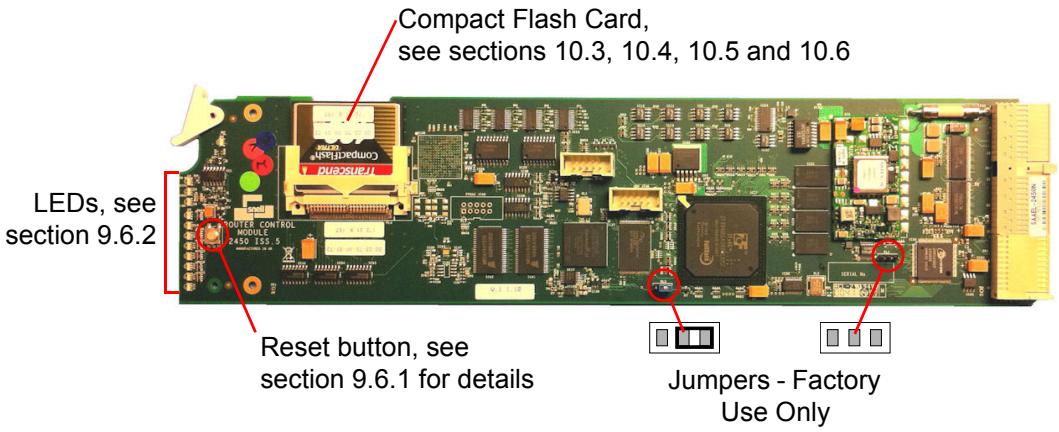


Figure 85 Nucleus 2450 Control Module

Refer to the Workbench manual for details about configuring the Nucleus 2450 controller.

Note:

- The Nucleus controller has a default database, use Workbench's Auto Config function to match the cards in the Sirius 800 with the Workbench software database.
- The IP address of the Nucleus controller is found in the .ini file, see section 10.6.

9.6.1 Reset Button

The Reset button resets the 2450 router control module and will also fail-over control to the second router control module in a dual-redundant controller system. See Figure 85 above for reset button location details.

2450 Router control modules can be reset remotely using Workbench or a third party control system.

9.6.2 Nucleus 2450 Controller LEDs

The LEDs on the Nucleus controller card are shown in Figure 86 and Table 23 lists the Nucleus 2450 controller LED functions.

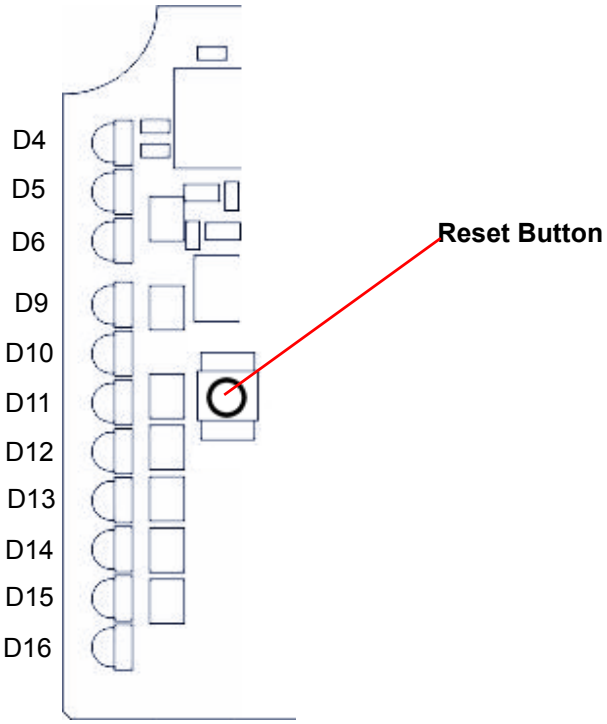


Figure 86 Nucleus 2450 Controller LEDs

Table 23 lists the Nucleus 2450 Controller LEDs.

LED	Description
D4	Active/Idle • Blue = Active • Purple (Blue + Red) = Idle
D5	100Mb Ethernet • Green = 100 Mb (Ethernet) • Off = 10Mb Ethernet/No activity
D6	Ethernet Link • Flashes = Ethernet activity
D9	Crosspoint Switch • Toggles between Blue and Off each time a Crosspoint is switched
D10	Not used
D11	Not used
D12	Not used
D13	Communications to other processor • Green = Communications to other processor • Off = No communications to other processor

Table 23 Nucleus 2450 Controller LEDs

LED	Description
D14	LTC • Flashes Blue = 625 TC present • Green = 525 TC present, • Off = TC not present
D15	When the Nucleus Controller powers up, if it detects a difference between what was configured last and the current configuration, it applies the new configuration and the D15 LED shows an FPGA validation error. The next time the Nucleus Controller is rebooted there is no mismatch and therefore the D15 LED is off. If the D15 LED remains on, it could indicate a fault in the interface to the modules. An FPGA interface validation error occurs if the software detects a difference between the modules configured in the database and the configuration last written to the modules in the frame. This can happen when a reconfigure is done to recognize new cards and the Nucleus Controller is rebooted. On a dual processor system, the D15 LED can indicate a mismatch between the databases on the two controllers. • Red = FPGA interface validation error • Off = no error
D16	Active/Idle • Flashes Green = Active • Flashes Red = Idle

Table 23 Nucleus 2450 Controller LEDs

9.6.3 Nucleus 2450 Router Control Module LEDs at Startup/Reset

When the controller starts up or is reset the LEDs will flash as the controller goes through its boot process. They will reach the state shown in Table 24 when the first part of the boot process is complete. The controller will be ready to communicate with the control system and control the router up to two minutes after this. This will be indicated by the Grass Valley control system connected to the router.

	Dual Controllers		Single Controller
LED	**Active Controller**	**Inactive Controller**	**Active Controller**
D4 - Active/Idle	Blue	Purple (Blue + Red)	Blue
D5 - 100Mb/10Mb	Green or Off	Green or Off	Green or Off
D6 - Ethernet Link	Flashing Green or Off	Flashing Green or Off	Flashing Green or Off
D9 - Crosspoint Switch	Blue or Off	Blue or Off	Blue or Off
D10 - Not Used	Off	Off	Off
D11 - Not Used	Off	Off	Off
D12 - Not Used	Off	Off	Off
D13 - Comms to other 2450	Green or Off	Green or Off	Off
D14 - LTC	Flashing Blue, Steady Green or Off	Flashing Blue, Steady Green or Off	Flashing Blue, Green or Off
D15 - Controller Mismatch	Steady Red or Off	Steady Red or Off	Steady Red or Off
D16 - Active/Idle	Flashing Green	Flashing Red	Flashing Green

Table 24 Nucleus 2450 LED Status at Startup/Reset

9.6.4 Nucleus 2450 Router Control Module LEDs on Database Push

When a Workbench database is pushed to a controller in a frame with two controllers it should be pushed to the inactive controller first. This means that route changes and processing can be controlled while the inactive controller is being updated. The inactive controller can then be made active for the user to test the database. If the test is successful the database is then pushed to the other (now inactive) controller so that the databases in both controllers match.

In a frame with a single controller this is not possible and the database must be pushed to the single active controller. All communication with the router controller will be lost during the database push of the configuration changes and subsequent reset. Because of this the crosspoints cannot be switched and tallies are not reported during this process. Video and audio processing is unaffected.

The following description assumes that the controllers are set to automatically reset after a database push. This can be checked and changed in the Config.ini file on the controller Compact Flash card, see section 10.6 for details. In a dual controller system remember to check that both controllers are set the same:

Nucleus 2450 Router Control Module Config.ini:

```
[CONFIG]
ResetAfterConfigPush=1
```

- Reset after database push enabled = `1`
- Reset after database push disabled = `0`

While the database is being pushed the LEDs will operate as normal, see Table 24 Pushing a large database can take up to 5 minutes. Once the push is complete the controller will automatically reset and the LEDs will operate as they do during a normal reset (described in section 9.6.3). The exception to this is when the database is pushed to the first controller of a pair. In this case the database will not match the database in the active controller and so LED D15 will be Red showing there is a mismatch between the databases in the two controllers. The mismatch will be corrected as soon as the database is pushed to the other controller in the pair.

9.6.5 Changing the IP Address of a Nucleus 2450 Router Control Module

The Nucleus controller IP address and network connection information is stored in the Network.ini file on the Compact Flash card on the Nucleus controller, see the Sirius 800 user manual for details of the contents of the Network.ini file.

The Network.ini can be opened by using a text editor such as Microsoft Notepad at which point it can be viewed, backed up and modified as required. If the IP address is known then this can be done remotely via FTP software or if it is not known then the Compact Flash card can be removed from the controller and read locally on a computer. See section 10.6 for details on both methods.

Note:

- If the router is only fitted with a single controller the controller will be Active rather than Idle.
- If the controller IP address is changed remember to use the new IP address to connecting.

9.6.6 Enable/Disable RollCall on a Nucleus 2450 Router Control Module

RollCall is enabled by default on the Nucleus 2450 router control module and can be disabled if required.

To connect computer to the Nucleus2450 controller using RollCall the RollCall Command Set Files must be transferred to the controller (see section 10.5 for details) and RollCall must be enabled (see below).

In the **[RollCall]** section of the ini file:

Disable RollCall set - **Enabled=0**

Enable RollCall set - **Enabled=1**.

For full details on editing the Network.ini please see the Sirius 800 User manual.

Note: If two Nucleus controllers are fitted in a router then the second one must also be enabled for RollCall.

9.6.7 Enable/Disable Auto Change Over of Controller Ethernet Connection

If a Nucleus 2450 controller looses its Ethernet connection the system will auto change over to the second Nucleus controller (if a second controller is fitted and auto change over is enabled). The auto change over function using the Generic Online Editor. Auto change over is disabled by default.

2450 Nucleus Router Control Module Navigate to:
`Config2450 | Features | AutoChangeOverIfNoNetworkTime`

- `AutoChangeoverIfNoNetworkTime = -1 (see below for details)`

Auto change over can be enabled by setting the parameter to a number greater than or equal to Zero, This number is the time, in seconds, that the controller will wait after loosing network connection before changing over to the second controller.

Note:

- The default Auto Change Over Time is -1 = disabled.
- Changes will not take effect until the controller has been reset.
- If two Nucleus controllers are fitted in a router then the second one must also be configured with the same auto changeover settings.

In a dual controller system make the updated controller active, select it and click on the **Copy to Partner** button to update the second controller.

9.6.8 Nucleus 2450: Setting Parity for SW-P-02 & SW-P-08 Protocols

Note:

- The default parity settings for the SW-P-02 and SW-P-08 protocol are correct when used with Grass Valley products and need not be changed.
- Some third party products use a parity that is different from the default parity. In this case the parity used by the Grass Valley router controller can be changed to match the third party product.

Parity can be changed for communication ports configured with SW-P-02 or SW-P-08 protocols (Nucleus 2450 only). Parity is set using the Workbench Generic Editor and can be; Default, None, Even or Odd.

Note:

- For a dual controller router systems select the inactive controller and set that one first.
- The new Parity setting will only take effect after the controller has been restarted.

1. Using the Generic Editor Navigate to:

`RouterController | Comms | Comms[1] to [4] (as required) | CommsType: Serial | Parity=`

Parity options are:

- `Default`:
  - SW-P-02 - Even
  - SW-P-08 - None
- `None`
- `Even`
- `Odd`

2. Push the new configuration to the controller (see the Workbench user manual for details).
3. In a dual controller system make the updated controller active, select it and click on the **Copy to Partner** button to update the second controller.

10 Nucleus Advanced Functions and Upgrades

Chapter contains:

10.1 Nucleus2 Router Control Module Software Update (Web Browser)

Note: If the Nucleus2 router control module is running an RTB file from Workbench release 3.14.2 or later the preferred upgrade process is to use RollCall update and this is described in section 9.4. The preferred upgrade method updates the controller software, firmware, RollCall Command Set files and Webcontent files from a single zip file.

The CentraController.RTB file is the operating system file for the Nucleus2 controller. The CentraController.RTB file can be updated from a web page running on the Nucleus2 controller which gives the user the ability to remotely upgrade the Nucleus2 controllers.

Note:

- Only available in Workbench version 3.14 and later.
- The RTB file version must be compatible with the version of Workbench that is installed.
- If the router has only one controller then crosspoints will not be able to be switched while the Nucleus2 router control module is being updated.
- If dual router controllers are fitted to the router the Inactive router controller should be updated first. This can then be made Active and the other Nucleus2 controller can be updated.

1. Open Workbench and open the Configuration page. This will display the connected controllers including their IP address and status (see Figure 87).

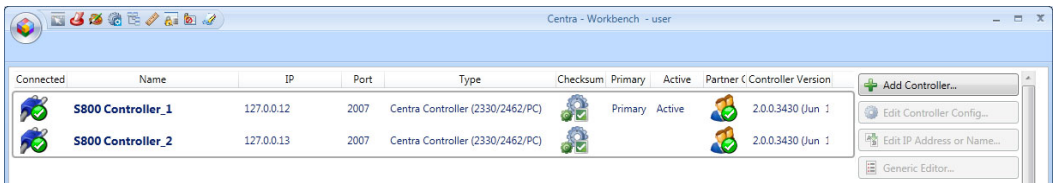


Figure 87 Workbench Controller Screen

Updating the Nucleus2 Router Control Module

2. Open a web browser on the same computer and type:
`http://xxx.xxx.xxx.xxx/` and press the **Enter** key
where xxx.xxx.xxx.xxx is the IP address of the Inactive Nucleus2 controller.
If the router is only fitted with a single controller then enter its IP address it even though it is Active.

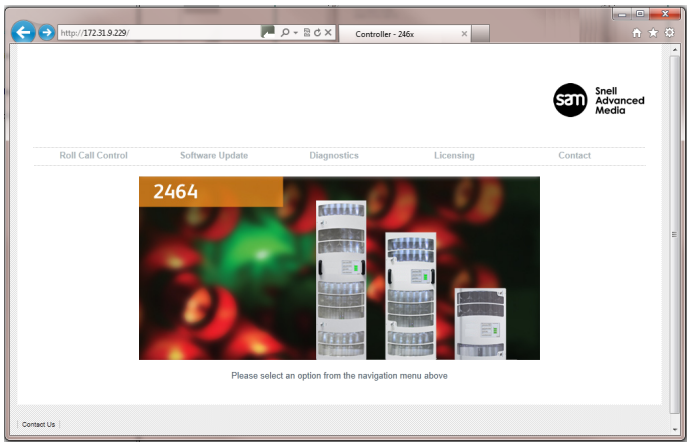


Figure 88 Router Home Page

3. Click on the **Software Update** tab.
4. The Software Update page opens.

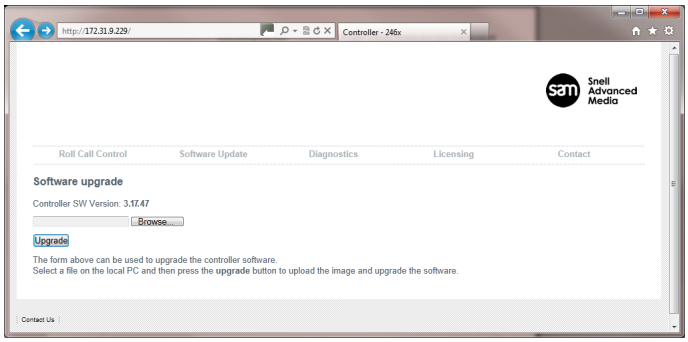


Figure 89 Software Update Page

5. Click on the **Browse** button and browse to `C:\Program Files\Snell\MCM\Controllers\Centra\` and select the **CentraController.RTB** file (assuming Workbench was installed in the default directory).

Note:

- If Workbench is installed in the default location on a 64 bit Windows computer then it will be located in the “Program Files (x86)” directory.

6. Click on the **Open** button to return to the web page.
7. Click on the **Upgrade** button to upload the RTB file to the Inactive Nucleus2 controller.
8. Once the RTB file has been uploaded to the controller it will automatically reboot. You can follow the progress from Workbench (see Figure 87).
9. When the updated Nucleus2 controller has finished rebooting it’s status will be shown as green in Workbench and the update is complete.
   If the router is fitted with a single Nucleus2 controller go to step 11.
10. Make the updated Nucleus2 controller the Active controller by using one of the following methods:

    - Either reset the Active Nucleus2 controller from the Workbench Controller Configuration interface software.

    or

    - Press the **Reset** button on the front of the Active Nucleus2 controller, see Figure 90 for the location of the **Reset** button.

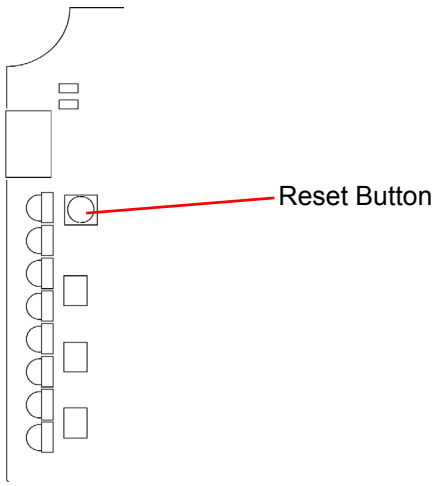


Figure 90 Nucleus2 Router Controller Reset Button Location (Front Edge Shown)

11. Check that you can set routes on the updated Nucleus2 controller.

12. Leave the controller Active.

13. If the router is fitted with a single Nucleus2 controller the update is complete. If the router is fitted with two Nucleus2 controllers go to step 14.

Updating the Other Nucleus2 Controller

14. Having tested the updated Nucleus2 controller the other Nucleus2 controller should still be Inactive. If not repeat step 10. on page 134 to make the updated controller Active.

15. Repeat steps 2. to 8. starting on page 133 to update the Nucleus2 controller.

16. When the Nucleus2 controller has finished rebooting it's status will be shown as green in Workbench and the update is complete (see Figure 87).

17. Make the Inactive Nucleus2 controller the Active controller by using one of the following methods:

    - Either reset the Active Nucleus2 controller from the Workbench Controller Configuration interface software.

    or

    - Press the Reset button on the front of the Active Nucleus2 controller, see Figure 90 for the location of the **Reset** button.

18. Check that you can set routes on the Active Nucleus2 router control module.

19. The update is now complete for both controllers.

10.2 Nucleus2 Router Control Module Advanced Operations (USB)

The following sections describe how to perform upgrade and housekeeping operations on a Nucleus2 router control modules using a USB memory stick. As these operations involve plugging a USB memory stick into the controller they must be carried out at the router.

The USB memory stick is usually only used for controller housekeeping operations as controller upgrades can be carried out from any computer on the controller network using the RollCall Java web applet (see section 9.4 for details).

Controller Housekeeping

Controller housekeeping operations include:

- Assigning controller IP address(es)
- Setting the controller replicated peer
- Purging the controller DCCP Config, Persisted Data and Config files
- Updating the controller Config.xml file
- Listing the controller file system structure to the USB memory stick
- Deleting controller files
- Copying files and directories from the USB memory stick to the controller
- Enabling/Disabling the controller watchdog
- Moving the controller logs from the controller to the USB memory stick

Controller Upgrade

Upgrade operations include:

- Updating controller software and firmware
- Copying RollCall command set files and Web Content files to the controller

Note: If the Nucleus2 router control module is running an RTB file from Workbench release 3.14.2 or later the preferred upgrade process is to use RollCall update and this is described in section 9.4. The preferred upgrade method updates the controller software, firmware, RollCall Command Set files and Webcontent files from a single zip file.

The following steps are carried out when performing any upgrade or housekeeping operation on a controller using a USB memory stick:

1. Prepare the USB memory stick for use (only required the first time it is used, see section 10.2.10).
2. Use Pbak Deploy to copy the RTB and various system files to the memory stick (see section 10.2.1)
3. Copy additional files to the USB memory stick (the actual files required depend on the operation(s) to be carried out, see section 10.2.2)
4. Create the Actions.txt file (actions required depend on the operations to be carried out, see section 10.2.3)
5. Insert the USB memory stick in the controller and perform the actions (see section 10.2.9)

Examples:

Examples of typical controller operations are detailed in sections 10.2.4 to 10.2.8.

10.2.1 Adding RTB and System Files Using Pbak Deploy

The Pbak Deploy tool is part of the Workbench installation. It is used to transfer the RTB file and system files to a bootable USB memory stick. The RTB file is the operating system file for the Nucleus2 router control module.

Note:

- The RTB file version must be compatible with the version of Workbench that is installed.

A bootable USB memory stick is required for this process. To create the bootable USB memory stick see section 10.2.10. Once created this bootable USB memory stick should be labeled and kept for future use.

1. Insert the bootable USB memory stick in a computer with Workbench installed.

2. Start the **Pbak Deploy Tool**: from the Windows **Start** menu browse to:

   Start | **All Programs** | **Snell** | **MCM** | **Utilities** | **Pbak Deploy Tool**

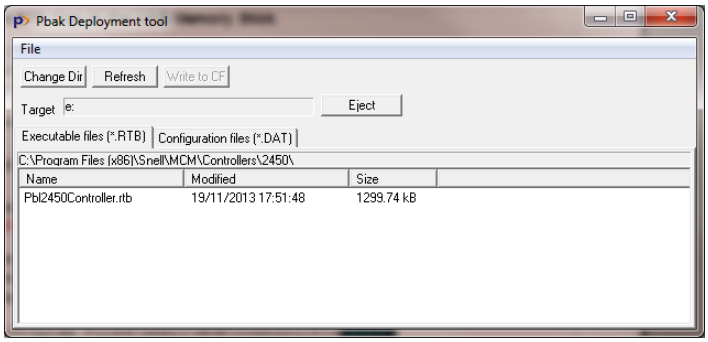


Figure 91 Pbak Deploy Tool

3. From the Pbak Deploy Tool select **File | Configuration**.

4. Select the USB memory stick as the **Target Drive** from the drop-down list. This is the bootable USB memory stick the file will be written to.

5. Select the **RTB directory** on your computer. If you installed to the default directories, browse to the RTB directory located in (assuming Workbench is installed in the default location):

   `C:\Program Files\Snell\MCM\Controllers\ControllerLoader\`

Note:

- If Workbench is installed in the default location on a 64 bit Windows computer then it will be located in the “Program Files (x86)” directory.
- The **Dat directory** and **on time tools directory** are not required for Nucleus2 controller configuration and should be left blank.

6. Click **OK**.

7. Select the **ControllerLoader.RTB** file from the list and click the **Write to CF** button.

8. Wait for Pbak Deploy to finish writing files to the USB memory stick.

9. Close Pbak Deploy and go to section 10.2.2 for details of the other files that are required for the USB memory stick.

10.2.2 USB Memory Stick Files

The USB memory stick contains a number of files that are automatically created by Pbak Deploy and a number of files that are created by the user and manually copied on to the USB memory stick.

Important:

- Do not leave the USB memory stick in a computer while the computer is being rebooted as this can cause the computer to malfunction.
- For this reason it is also recommended that the USB memory stick is removed from the computer when not in use in case the computer is rebooted accidentally, due to a power failure or due to automatic updates being installed.
- If Workbench is installed in the default location on a 64 bit Windows computer then Workbench will be located in the “Program Files (x86)” directory.

Table 25lists the USB memory stick files:

Filename	Description
Actions.txt	**Mandatory**: The Actions.txt file contains any actions that need to be carried out on one or more Nucleus2 controllers. The text file can be created and edited in any pure text editor, for example Microsoft Notepad. The Actions.txt file can be created from new or based on one of the example Actions.txt files stored in `C:\Program Files\Snell\MCM\Controllers\ControllerLoader` (assuming Workbench is installed in the default location). **Example Actions.txt files**: `Actions - Example.txt` - Contains all of the possible actions for the Nucleus2 controller grouped by type of action. Each action is commented out and can be run by removing the # (hash) symbol at the start of the action line. See section 10.2.3 for details on each of the actions. **Note**: do not use any actions from any section with a title containing “Vega” as these are intended for the Vega router only. `Actions - S800.txt` - Used to update the Nucleus2 controller software, firmware, RollCall command set and web content files. **Note**: Ensure all of the upgrade files are on the USB memory stick before using it (see section 10.2.4 for details) See section 10.2.3 for details of the commands available and sections 10.2.4 to 10.2.8 for common usage examples.
ControllerLoader.rta	**Mandatory system file**: The ControllerLoader application runs the commands in the Actions.txt file when the Nucleus2 boots from the USB memory stick. **Note**: the ControllerLoader application is updated with each new version of Workbench so ensure you have the latest version on the USB memory stick. This file is extracted from the ControllerLoader.rtb file and is written to the USB memory stick by the Pbak Deploy tool with an rta file extension (see section 10.2.1 for details). This is a system file and must be on the USB memory stick. Do not edit or delete this file.

Table 25 USB Memory Stick Files

Filename	Description
boot.ini	**Mandatory System file**: This file is automatically written to the USB memory stick by the Pbak Deploy tool (see section 10.2.1 for details). This is a system file and must be on the USB memory stick. Do not edit or delete this file.
BOOTSECT.RTT	**Mandatory System file**: This file is automatically written to the USB memory stick by Pbak Deploy tool (see section 10.2.1 for details). This is a system file and must be on the USB memory stick. Do not edit or delete this file.

ConfigTemplate.xml	**Optional**: The ConfigTemplate.xml file is used to create or update the config.xml file on the Nucleus2 controller.
	
	The `UPDATE-CONFIG-XML` action in the Actions.txt file tells the ControllerLoader application to use the ConfigTemplate.xml file on the USB memory stick to create or overwrite the Config.xml file on the Nucleus2 controller (see Table 26 for details).
	
	The ConfigTemplate.xml file can be edited to create a different default configuration for the Nucleus2 controller. An example ConfigTemplate.xml file can be found at: `C:\Program Files\Snell\MCM\Controllers\ControllerLoader\` (assuming Workbench is installed in the default location).
	
	Note: Do not change the IP address section between **<IP>** and **<IP>** as the ControllerLoader application uses this to populate the Nucleus2 controller IP Address details from the IP.list.txt file.
	
	`- <Config>`
	`- <IP>`
	`- <Adapter>`
	`<Number>0</Number>`
	`<DHCP>false</DHCP>`
	`<Address>10.1.0.10</Address>`
	`<Port>2007</Port>`
	`<SubNetMask>255.255.254.0</SubNetMask>`
	`<DefaultGateway>0.0.0.0</DefaultGateway>`
	`</Adapter>`
	`</IP>`
	`- <RollCall>`
	`<Enabled>false</Enabled>`
	`<StartupDelay>5</StartupDelay>`
	`<SharePort>2050</SharePort>`
	`<BridgePort>2600</BridgePort>`
	`<BridgeRemoteAddress>128.1.1.1</BridgeRemoteAddress>`
	`<BridgeAutoConnect>false</BridgeAutoConnect>`
	`<Name>Router</Name>`
	`<Information1>Info1</Information1>`
	`<Information2>Info2</Information2>`
	`<NetNibbles>1000</NetNibbles>`
	`<UseLongNames>false</UseLongNames>`
	`<IsVega4RUFrame>false</IsVega4RUFrame>`
	`</RollCall>`
	`- <SNMP>`
	`<Enabled>false</Enabled>`
	`<Contact>Snell Employee</Contact>`
	`<Location>Test Lab</Location>`
	`<SysName>Test System</SysName>`
	`<EnableSnellTraps>true</EnableSnellTraps>`
	`<DisableInitialNotify>true</DisableInitialNotify>`
	`- <TrapManagers>`
	`<Address>172.31.7.133</Address>`

Table 25 USB Memory Stick Files

Filename	Description

IP.list.txt	**Optional**: The IP.list.txt file is used to set the IP address details for one or more Nucleus2 controllers. The IP address details in this file are the ones used when using the `SET-IP-ADDRESS` or `UPDATE-CONFIG-XML` actions in the Actions.txt file.
	
	The text file can be created in any pure text editor such as Microsoft Notepad. The file can contain multiple lines with one for each Nucleus2 controller and is in the following format:
	
	`IP_ADDRESS/SUBNET_ADDRESS:DEFAULT_GATEWAY`
	
	If the default gateway address is unknown or is not required enter 0.0.0.0
	
	Example IP.list.txt file for six Nucleus2 controllers:
	
	`192.168.1.2/255.255.255.0:192.168.1.1`
	`192.168.1.3/255.255.255.0:192.168.1.1`
	`192.168.1.4/255.255.255.0:192.168.1.1`
	`192.168.1.5/255.255.255.0:192.168.1.1`
	`192.168.1.6/255.255.255.0:192.168.1.1`
	`192.168.1.7/255.255.255.0:192.168.1.1`
	
	The ControllerLoader application uses the IP Address details in the first line of the text file for the first controller. The line is then automatically commented out with the # symbol when the Nucleus2 controller is successfully updated so that the next line is then available for the next controller to be updated.

CentraController.rtb	**Optional**: The CentraController.rtb file contains the software for the Nucleus2 controller. This file is only required if the software on the Nucleus2 controller needs updating. The CentraController.rtb file can be found at: `C:\Program Files\Snell\MCM\Controllers\Centra\` (assuming Workbench is installed in the default location). The Nucleus2 software will only be updated if the `DEPLOY-RTB` action is included in the Actions.txt file (see section 10.2.4 for details).
PA1002.bin	**Optional**: The PA1002.bin file contains the firmware for the Nucleus2 controller. This file is only required if the firmware on the Nucleus2 controller needs updating. By default the firmware is located in: `C:\Program Files\Snell\MCM\Controllers\RollCall_Templates\FPGA\` (assuming Workbench was installed in the default directory). The Nucleus2 firmware will only be updated if the `PROG-FPGA` action is included in the Actions.txt file (see section 10.2.4 for details).

Table 25 USB Memory Stick Files

Filename	Description
RollCall Command Set Files	**Optional**: The RollCall command set files are installed on the Nucleus2 controller by default and are required when using RollCall to connect to the Sirius router. The RollCall Command Set files only need to be added to the USB memory stick when a newer version is released. **Note**: If RollCall is to be used then RollCall must be enabled on the Nucleus2 controller (for details see section 9.5.7). The most recent RollCall template files are stored in the following directory (assuming Workbench is installed in the default directory). `C:\Program Files\Snell\MCM\Controllers\RollCall_Templates\` Manually copy the files and directories from the PC directory into a directory named “RollCall” on the USB memory stick. See Section 10.2.4 for details on updating the RollCall Command Set files. **Note**: Delete the “Vega” and “VegaXYPanel” directories from the “RollCall” directory on the USB memory stick.

Web Content Files	**Optional**: The Web Content files are installed on the Nucleus2 controller by default and are required when using a web browser to connect to the Sirius router.
	
	When installed a web browser can be used to update the Nucleus2 RTB file and to connect to the router using RollCall (assuming the RollCall files are installed and enabled on the router controller). A Diagnostics tab is also available for use by Grass Valley customer support. The Web Content files only need to be updated when a newer version is released.
	
	The most recent Web Content files are stored in the following directories (assuming Workbench was installed to the default directory):
	`C:\Program Files\Snell\MCM\Controllers\WebContent\S800\`
	and
	`C:\Program Files\Snell\MCM\Controllers\WebContent\Applet\`
	
	Manually copy the `S800` and `Applet` directories complete with their subdirectories and files from the PC into a directory named “WebContent” on the USB memory stick. See Section 10.2.4 for details on updating the Web Content files.

RunLog.txt	**Automatic**: If this file does not exist it will be created by the ControllerLoader application when it starts up. The RunLog.txt text file logs the actions the ControllerLoader application carries out each time it’s run. Each log entry is pre-fixed with the Run Number taken from the RunNo.dat file to make the logs easier to interpret. The Run Number starts at 1. If a problem occurs and you need to check the RunLog.txt file it is best to start at the bottom of the file and work up as this is usually the quickest way to find the problem. Do not edit or delete this file unless you need to remove all of the previous log file details.

Table 25 USB Memory Stick Files

Filename	Description
RunNo.dat	**Automatic**: If this file does not exist it will be created by the ControllerLoader application when it starts up. The RunNo.dat file keeps track of the how many times the ControllerLoader application has been run and is used in the RunLog.txt log file reports. The Run Number starts at 1. Do not edit or delete this file unless you need to reset the Run Number to 1.

Table 25 USB Memory Stick Files

10.2.3 ControllerLoader Application Actions

The Actions.txt file contains the actions that are to be carried out on one or more Nucleus2 router control modules. The Actions.txt file must be present on the USB memory stick so that the ControllerLoader application can work.

Important:

- Do not leave the USB memory stick in a computer while the computer is being rebooted as this can cause the computer to malfunction.
- For this reason it is also recommended that the USB memory stick is removed from the computer when not in use in case the computer is rebooted accidentally, due to a power failure or due to automatic updates being installed.

The Actions.txt file can be created and edited in any pure text editor, for example Microsoft Notepad. The file can be created as a new file or based on one of the example Actions.txt files stored in
`C:\Program Files\Snell\MCM\Controllers\ControllerLoader\`
(assuming Workbench is installed in the default location. If Workbench is installed in the default location on a 64 bit Windows computer then Workbench will be located in the “Program Files (x86)” directory).

General Information

- Adding `NON-FATAL` as the last parameter of any action means that if that action fails the ControllerLoader application will carry on running and will record the result, including the error, in the RunLog.txt file.
- If `NON-FATAL` is not the last parameter of an action and that action fails the ControllerLoader application will stop and will record the error in the RunLog.txt file.
- The # character is used at the start of a line to comment the contents of that line out so that the ControllerLoader application does not try and action it. A comment cannot be added to the end of an action line.
- The USB memory stick drive letter is D: when plugged in to the Nucleus2 controller.
- The Nucleus2 controller drive letter is C:
- Empty lines are allowed in the Actions.txt file but lines with just a space or other white-space characters will be processed and rejected.
- Multiple parameters must be separated by a space.

A simple example of an Actions.txt file is shown in Figure 92 For details on the actions available and how they are used see Table 26

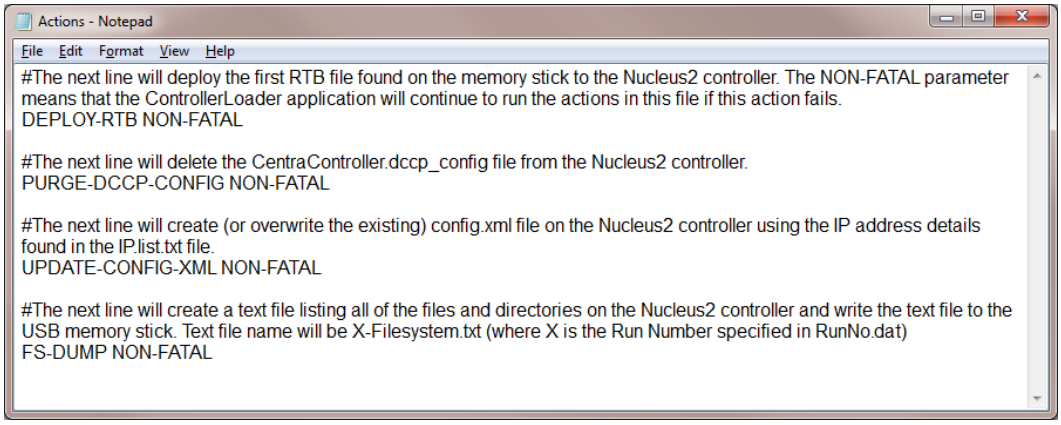


Figure 92 Example of an Actions.txt text File

Action	Description
DEPLOY-RTB	Used to load the CentraController.RTB file on the USB memory stick on to the Nucleus2 controller. With no additional parameters the ControllerLoader application will deploy the first file it finds with an rtb extension to the Nucleus2 controller. See section 10.2.4 for details on running this command. **Optional parameter:** `D:\xxxxxxx.rtb` Used to specify a particular rtb file if the USB memory stick contains more than one rtb file. The drive letter must be included. If the filename includes any spaces the entire filepath must be enclosed in quotation marks. **Optional parameter:** `NON-FATAL` **Example:** `DEPLOY-RTB D:\NewCentraController.rtb NON-FATAL`
PROG-FPGA	Used to upgrade the firmware in the serial EEPROM which loads code into the FPGA. You should only upgrade the firmware if instructed to do so by a Grass Valley representative. See section 10.2.4 for details on running this command. **Note**: this action will be run first no matter what position it is in the Actions.txt file. **Optional parameter:** `NON-FATAL` **Example:** `PROG-FPGA d:\pa1002.bin NON-FATAL`

Table 26 Actions and Parameters

Action	Description
PURGE-DCCP-CONFIG	Used to delete the CentraController.dccp_config file from the Nucleus2 controller. If the CentraController.dccp_config file is not present this action will still report success in the RunLog.txt text file. **Optional parameter:** `NON-FATAL` **Example:** `PURGE-DCCP-CONFIG NON-FATAL`

`PURGE-CONFIG-XML`	`Used to delete the config.xml file from the Nucleus2 controller.`
	
	If the `config.xml` file is not present this action will still report success in the RunLog.txt text file.
	
	Optional parameter: `NON-FATAL`
	
	Example:
	`PURGE-CONFIG-XML NON-FATAL`

UPDATE-CONFIG-XML	Used to create or overwrite the existing config.xml file on the Nucleus2 controller using the IP address details from the IP.list.txt file and the configuration details from the ConfigTemplate.xml file. See section 10.2.2 for details of the IP.list.txt and ConfigTemplate.xml files. **Optional parameter:** `NON-FATAL` **Example:** `UPDATE-CONFIG-XML NON-FATAL`
PURGE-PERSISTED-DATA	Used to delete the persistance.dccp file from the Nucleus2 controller. The persistance.dccp file contains the current processing settings. If the persistance.dccp file is not present this action will still report success in the RunLog.txt text file. **Optional parameter:** `NON-FATAL` **Example:** `PURGE-PERSISTED-DATA NON-FATAL`
DELETE-FILE	Used to delete a specified file from the Nucleus2 controller (drive C:). **Mandatory parameter:** `C:\Directoryname\Filename.xxx` Specifies the file to be deleted. The parameter must contain the complete path and filename of the file being deleted (if the path or filename contains any spaces enclose the entire path in quotation marks). **Optional parameter:** `NON-FATAL` **Example:** `DELETE-FILE C:\testdir\testfile.txt NON-FATAL`

Table 26 Actions and Parameters

Action	Description

COPY-FILE	Used to copy a file from the USB memory stick (drive D:) to the Nucleus2 controller (drive C:).
	
	Mandatory Source parameter:
	`Driveletter:\Directoryname\Filename.xxx`
	Specifies the source path and filename (if the path or filename contains any spaces enclose the entire path in quotation marks, see example below).
	
	Mandatory Destination parameter:
	`Driveletter:\Directoryname\Filename.xxx`
	specifies the destination path and filename.
	
	Optional parameter: `FALSE`
	FALSE - Don't overwrite file if present.
	Parameter not used (Default) - Overwrite file if present
	
	Optional parameter: `NON-FATAL`
	
	Example:
	`COPY-FILE "D:\testing\info\test file1.txt" C:\testdir\testfile.txt FALSE NON-FATAL`

COPY-DIR	Only available when running ControllerLoader.rta from Workbench 3.14.2 and later.
	
	Used to copy a directory (including files and sub-directories) from the USB memory stick (drive D:) to the Nucleus2 controller (drive C:).
	
	Mandatory Source parameter:
	`Driveletter:\Directoryname`
	Specifies the source path and directory (if the path contains any spaces enclose the entire path in quotation marks, see example below).
	
	Mandatory Destination parameter:
	`Driveletter:\Directoryname`
	specifies the destination path and directory.
	
	Optional parameter: `TRUE`
	Overwrite directory (including files and sub-directories) if present - Default if parameter not used.
	`or`
	Optional parameter: `FALSE`
	FALSE - Don't overwrite directory (including files and sub-directories) if present.
	Parameter not used (Default) - Overwrite directory (including files and sub-directories) if present
	
	Optional parameter: `NON-FATAL`
	
	Example:
	`COPY-DIR "D:\testing\info\test directory" "C:\testdir\test directory" FALSE NON-FATAL`

Table 26 Actions and Parameters

Action	Description
FS-DUMP	Used to create a text file on the USB memory stick that lists all of the files and directories on the Nucleus2 controller. **Optional parameter:** `D:\Directoryname\Filename.xxx` Specifies the path and filename for the text file (if the path contains any spaces enclose the entire path in quotation marks). If the parameter is not used the file is written to the root of the USB memory stick as `X-Filesystem.txt` where `X` = the Run Number stored in the RunNo.dat file (see Table 25 for details). **Optional parameter:** `NON-FATAL` **Example:** `FS-DUMP D:\Info\controller1FS.txt NON-FATAL`
SET-REPLICATED-PEER	Used to update or remove the Replicated Peer settings for the Nucleus controller from the Config.xml file. To clear the replicated peer settings from the config.xml just omit all the parameters. **Mandatory Parameter**: `IP` Specifies the IP address of the replicated peer controller. **Mandatory Parameter**: `Port` Specifies the Port of the replicated peer controller. **Example**: `SET-REPLICATED-PEER 123.456.78.9 2007 NON-FATAL`

Table 26 Actions and Parameters

Action	Description

SET-IP-ADDRESS	Used to update the IP address of the Nucleus2 controller using details supplied in the command line or from the IP.list.txt file if no details are entered in the command line.
	
	Optional Parameter: `IP Address`
	Specifies the IP address to be used for the controller.
	This parameter is used in conjunction with the `Subnet` parameter and optionally the `Gateway` parameter.
	If no `Gateway` parameter is specified then 0.0.0.0 will be used.
	
	Optional Parameter: `Subnet`
	Specifies the subnet mask to be used for the controller.
	This parameter used in conjunction with the `IP Address` parameter and optionally the `Gateway` parameter.
	If no Gateway parameter is specified then 0.0.0.0 will be used.
	
	Optional Parameter: `Gateway`
	Specifies the Gateway IP Address to be used for the controller
	This parameter cannot be used on its own and must be used in conjunction with the `IP Address` parameter and the `Subnet` parameter.
	If this is left blank the Gateway will default to 0.0.0.0.
	
	Optional Parameter: `NON-FATAL`
	
	Example:
	`SET-IP-ADDRESS 123.456.78.9 255.255.255.0 123.456.78.1 NON-FATAL`
	Uses the IP Address details specified
	or
	`SET-IP-ADDRESS 123.456.78.9 255.255.255.0 NON-FATAL`
	Uses the IP Address and Subnet specified and uses 0.0.0.0 for the Gateway address
	or
	`SET-IP-ADDRESS NON-FATAL`
	Uses the next available address in the IP.list.txt file
	If no valid IP Address details are available in the IP.list.txt file the action will fail

ENABLE-WATCHDOG	Used to enable the Watchdog on the Nucleus2 Controller. **Optional Parameter**: `NON-FATAL` **Example**: `ENABLE-WATCHDOG NON-FATAL`
DISABLE-WATCHDOG	Used to disable the Watchdog on the Nucleus2 Controller. **Optional Parameter**: `NON-FATAL` **Example**: `DISABLE-WATCHDOG NON-FATAL`

Table 26 Actions and Parameters

Action	Description
PULL-LOGS	Only available when running ControllerLoader.rta from Workbench 3.14.2 and later Used to move all of the controller logs from the Nucelus2 controller (drive C:) to the USB memory stick (drive D:). **Note**: This command deletes the current log files from the Nucleus2 controller once they have been moved to the USB memory stick. **Optional parameter:** `D:\Directoryname\` Specifies the directory path name to move the controller logs to (no spaces). If the parameter is not used the log files are written to `D:\logs\` **Optional parameter:** `NON-FATAL` **Example:** `PULL-LOGS D:\logs_from_controller\ NON-FATAL`

Table 26 Actions and Parameters

10.2.4 Example: Updating Software, Firmware, RollCall & Web Content Files

Important: Before upgrading the Nucleus2 controller it is recommended that the controller Persistence and Localrouter files are backed-up, see section 10.2.7. In the unlikely event that the files are corrupted during the upgrade the back-up can be restored to the Nucleus2 controller.

The example actions.txt file “Actions - S800.txt” contains all of the commands required to update the Nucleus2 software, firmware, RollCall command set and web content files. This allows a controller to be completely updated in a single operation. To create the bootable USB memory stick see section 10.2.10.

Controller Software

The CentraController.rtb file contains the software for the Nucleus2 controller. Used to load the CentraController.RTB file on the USB memory stick on to the Nucleus2 controller.

Controller Firmware

The PA1002.bin file contains the firmware for the Nucleus2 controller. Used to upgrade the firmware in the serial EEPROM which loads code into the FPGA.

RollCall Command Set Files

The RollCall command set files are installed on the Nucleus2 controller by default and are required when using RollCall to connect to the Sirius router. The RollCall Command Set files only need to be added to the USB memory stick when a newer version is released.

Web Content Files

The Web Content files are installed on the Nucleus2 controller by default and are required when using a web browser to connect to the Sirius router. When installed a web browser can be used to update the Nucleus2 software (.RTB file) and to connect to the router using RollCall (assuming the RollCall files are installed and enabled on the router controller). A Diagnostics tab is also available for use by Grass Valley customer support. The Web Content files only need to be updated when a newer version is released.

Note:

- It is very important that all of the files listed below are on the USB memory stick before commencing the upgrade as any missing files will cause the process to stop. If one or more of the upgrades is not required then each line of the upgrade section that is not required should be commented out with the # (hash) symbol.
- The following instructions assume Workbench is installed in the default directory.
- If Workbench is installed in the default location on a 64 bit Windows computer then it will be located in the “Program Files (x86)” directory.

1. To update the Nucleus2 software, firmware, RollCall command set and web content files the following files must be on the USB memory stick:
   - **ControllerLoader.rta** - Added by PBak Deploy (see 10.2.1).
   - **Actions.txt** - Copy the “Actions - S800.txt” file from the `C:\Program Files\Snell\MCM\Controllers\ControllerLoader\` directory to the USB memory stick and rename it “`Actions.txt`”
   - **CentraController.rtb** - Ensure you have the correct Nucleus2 controller rtb file. Copy the `CentraController.rtb` file from the `C:\Program Files\Snell\MCM\Controllers\Centra\` directory to the root of the USB memory stick.
   - **RollCall Command Set** files: Create a directory on the USB memory stick called “`RollCall`” and copy the files and subdirectories in the `C:\Program Files\Snell\MCM\Controllers\RollCall_Templates\` directory to the “`RollCall`” directory.

Note: Delete the “Vega” and “VegaXYPanel” directories from the “RollCall” directory on the USB memory stick.

   - **Web Content** files:

   a Create a directory on the USB memory stick called “`WebContent`”. Copy the entire “`S800`” subdirectory from the `C:\Program Files\Snell\MCM\Controllers\Webcontent\` directory to the “`WebContent`” directory on the USB memory stick.

   b Copy the entire “`Applet`“ subdirectory from the `C:\Program Files\Snell\MCM\Controllers\Webcontent\` directory to the “`WebContent`” directory on the USB memory stick.

2. Update the Nucleus2 controller as described in section 10.2.9 up to step 6. on page 161.

Important:

- Leave the USB stick in the controller until step 4. on page 149 has been completed.
- If a video display is connected to the controller card being updated the video display will lose its video signal part way through the update as the controller automatically reboots. This is normal and part of the update process, it does not mean that the process is complete.

3. The LEDs will now go off and stay off while the controller performs an automatic reset and reboots.
4. When LEDs 3 to 7 on the controller flash green (see Table 30 on page 161) the process is complete.
5. Remove the USB memory stick and press the **Reset** button to reboot the controller.

Note: The RunLog.txt file will contain multiple entries as each entry is associated with a controller reboot.

6. When the Nucleus2 controller has been reset it will restart with the new software, firmware, RollCall Command Set files and WebContent files.

7. If two Nucleus2 controllers are installed they must both be running the same version of software, firmware, RollCall and WebContent so the second Nucleus2 controller will also need updating.

10.2.5 Example: Updating the IP Address of a Nucleus2 Controller

The IP address of a Nucleus2 controller can be set using the bootable USB memory stick. To create the bootable USB memory stick see section 10.2.10.

1. To set the IP address on a Nucleus2 controller the following files must be on the USB memory stick:

   - **Actions.txt** - Edit the Acions.txt file so that the only action is `SET-IP-ADDRESS` (see Figure 93)
   - **IP.list.txt** - Edit the IP.list.txt file so that the correct IP address details are in the file (see Figure 94)
   - **ControllerLoader.rta** - Added by PBak Deploy (see section 10.2.1).

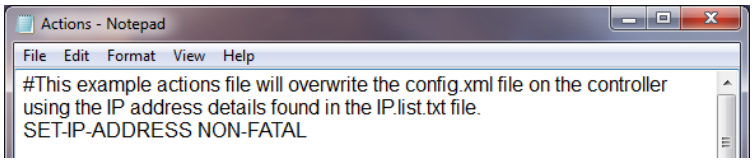


Figure 93 Example Actions.txt File to Change the Controller IP Address

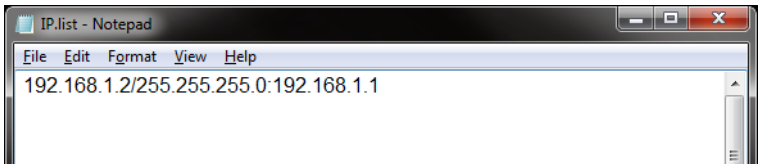


Figure 94 Example IP.list.txt Text File

2. Update the Nucleus2 controller as described in section 10.2.9.

3. When the Nucleus2 controller has been reset it will have the new IP address.

10.2.6 Example: Deleting the DCCP Configuration in a Nucleus2 Controller

The CentraController.DCCP-Config file in the Nucleus2 controller can be deleted using the bootable USB memory stick. To create the bootable USB memory stick see section 10.2.10.

1. To delete the CentraController.DCCP-Config file in the Nucleus2 controller the following files must be on the USB memory stick:

   - **Actions.txt** - Edit the Acions.txt file so that the only action is `PURGE-DCCP-CONFIG` (see Figure 95).
   - **ControllerLoader.rta** - Added by PBak Deploy (see 10.2.1).

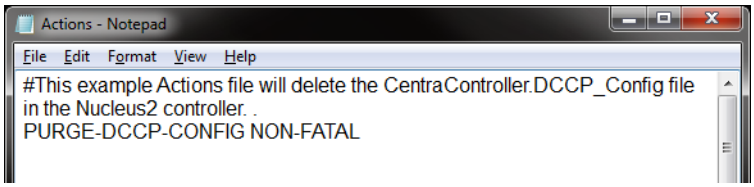


Figure 95 Example Actions.txt to Delete the Nucleus2 CentraController.DCCP_Config File

2. Update the Nucleus2 controller as described in section 10.2.9.
3. When the Nucleus2 controller has been reset it will restart without a DCCP configuration. A new DCCP configuration must be pushed to it from Workbench (see the Workbench manual for details).

10.2.7 Example: Backing-up Files

The persistence and localrouter files in the Nucleus2 controller contain important data and can be backed-up (copied) using a bootable USB memory stick. To create the bootable USB memory stick see section 10.2.10.

1. If the USB memory stick contains a Runlog.txt file this should be deleted. A new Runlog.txt file will be created when the Actions.txt file is run and this can be used to confirm the backup has successfully taken place.
2. To backup the persistence and localrouter.dat files from the Nucleus2 controller to the USB memory stick the following files must be the only ones on the USB memory stick:

Important:

- Check that the spelling in the actions.txt file is correct before running the file.
- **Workbench 3.15 and earlier**: The Actions.txt file only needs to contain the localrouter.dat and Persistence.dccp lines shown below.
- **Workbench 3.16 and later**: The Actions.txt file must contain the localrouter.dat and all of the Persistence_*.dat lines shown below.

- **Actions.txt** - Edit the Acions.txt file so that the only actions are

```
COPY-FILE c:\localrouter.dat d:\backup\localrouter.dat
NON-FATAL
COPY-FILE c:\Persistence.dccp d:\backup\Persistence.dccp
NON-FATAL
COPY-FILE c:\Persistence_S8.dat
d:\backup\Persistence_S8.dat
NON-FATAL
COPY-FILE c:\Persistence_S16.dat
d:\backup\Persistence_S16.dat
NON-FATAL
COPY-FILE c:\Persistence_S32.dat
d:\backup\Persistence_S32.dat
NON-FATAL
COPY-FILE c:\Persistence_S64.dat
d:\backup\Persistence_S64.dat
NON-FATAL
COPY-FILE c:\Persistence_U8.dat
d:\backup\Persistence_U8.dat
NON-FATAL
COPY-FILE c:\Persistence_U16.dat
d:\backup\Persistence_U16.dat
NON-FATAL
COPY-FILE c:\Persistence_U32.dat
d:\backup\Persistence_U32.dat
NON-FATAL
COPY-FILE c:\Persistence_U64.dat
d:\backup\Persistence_U64.dat
NON-FATAL
COPY-FILE c:\Persistence_bool.dat
d:\backup\Persistence_bool.dat
NON-FATAL
COPY-FILE c:\Persistence_float.dat
d:\backup\Persistence_float.dat
NON-FATAL
COPY-FILE c:\Persistence_double.dat
d:\backup\Persistence_double.dat
NON-FATAL
COPY-FILE c:\Persistence_string.dat
d:\backup\Persistence_string.dat
NON-FATAL
```



```
COPY-FILE c:\Persistence_TDateTime.dat
d:\backup\Persistence_TDateTime.dat
NON-FATAL
COPY-FILE c:\Persistence_TTimeSpan.dat
d:\backup\Persistence_TTimeSpan.dat
NON-FATAL
COPY-FILE c:\Persistence_TTimeCode.dat
d:\backup\Persistence_TTimeCode.dat
NON-FATAL
COPY-FILE c:\Persistence_TUID.dat
d:\backup\Persistence_TUID.dat
NON-FATAL
```

(see Figure 96 on page 153)

- **ControllerLoader.rta** - Added by PBak Deploy
(see Appendix 10.2.1 on page 137)

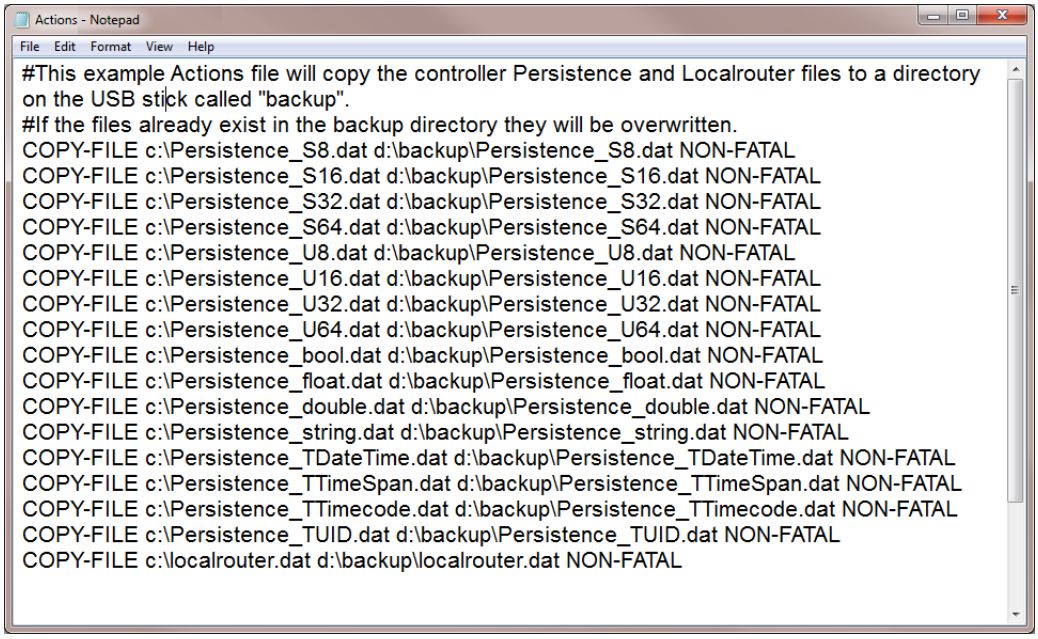


Figure 96 Example Actions.txt File to Copy Localrouter & Persistence Files

Note:

- On a dual redundant controller system the router controllers can be backed up while the router is on-air, if required.
- Do not press the Reset button if LED 5 on the idle controller is flashing orange (data synchronization in progress). Failing over to the idle controller before data synchronization is complete may corrupt the data files being synchronized and affect the operation of the router. When LED 5 on the idle controller flashes green (data synchronization complete) it is safe to fail over the controller.
- Ensure that all of the required files are on the bootable USB memory stick and that the Actions.txt file contains the correct actions for the Nucleus2 controller backup, see step 2.

3. Eject the bootable USB memory stick from the computer.
4. The backup should be run on the inactive Nucleus2 controller.
5. Locate the **Idle** Nucleus2 controller, see Table 27 for LED positions:

   LED 1:
   Idle = Flashing Blue
   Active = Flashing Green

LED 5 on the Idle controller:
Safe to run the Actions.txt file on the idle controller = Flashing Green
Do not run the Actions.txt file on the idle controller = Flashing Orange

Check that LED 1 confirms the Nucleus2 controller is **Idle** and LED 5 on the **Idle** controller confirms it is safe to proceed.

6. Insert the USB memory stick in the USB connector on the front of **Idle** Nucleus2 controller (see Table 27).
7. Press the **Reset** button on the Nucleus2 controller fitted with the USB memory stick (see Table 27).
8. The Nucleus2 controller will reboot. The Persistence and Localrouter files will be copied from the Nucleus2 controller. See Table 27 for the LED status that is displayed when the backup is complete.

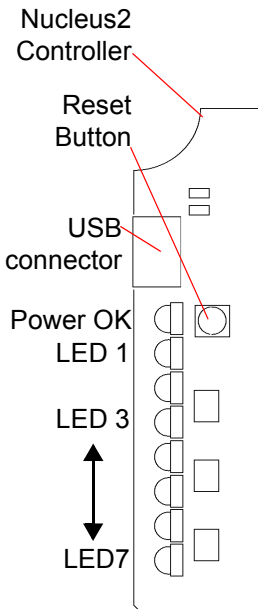
LED 3 to 7 Status	Description	LED Location
Flashing Green	When LEDs 3 to 7 continuously flash Green the backup actions have been successfully carried out and it is safe to remove the USB memory stick and re-start the controller. See step 9.	
Fault Conditions		
Flashing Orange	If LEDs 3 to 7 continuously flash Orange there has been a minor error or an action marked as NON-FATAL has failed during the backup. **Note**: As the controller rarely contains all of the persistence files in the Actions.txt file this error will inevitably occur when it tries to copy a non existent file to the USB memory stick.	
Flashing Red	If LEDs 3 to 7 continuously flash Red it indicates that an action marked as FATAL has failed to complete and therefore the rest of the actions were not processed.	
In the Event of one or more Errors		
	Plug the memory stick into a PC and check the **RunLog.txt** file for errors. It's best to start at the bottom of the **RunLog.txt** file and work up as this is usually the quickest way to find the problem. Typical errors will be missing files on the memory stick and incorrectly spelt Actions.txt commands. Correct any errors found, reinsert the USB memory stick into the idle Nucleus2 controller and press the **Reset** button to re-run the update if required.	

Table 27 Controller LED Status After File Backup

9. When LEDs 3 to 7 (see Table 27) on the controller flash orange or green the process is complete.
10. Remove the USB memory stick and press the **Reset** button to reboot the Nucleus2 controller.
11. The Nucleus2 controller will be rebooted.
12. Open the Runlog.txt file on the USB memory stick with a text viewer such as Microsoft's Notepad. Check the log to ensure the files were copied successfully to the USB memory stick and that the Backup folder contains the files.

The Actions.txt backup file in Figure 97 includes all of the possible persistence files that can be on the controller. Only the files that are actually on the controller will be copied when backing up the controller persistence and localrouter files.

Figure 97 shows part of an example RunLog.txt file. Each action is prefixed with the date (YYYYMMDD) and time (HHMMSS) the action was carried out as well as the run number (run 1 in this example).

The RunLog shows the result of each copy action carried out with either:

“Copied” + file details when successfully copied
or
“Error failed to do action” + file details when the file isn’t present on the controller.

The last line of the log summarizes that the actions have been completed and how many have failed. The example shown in Figure 97 shows that 9 files could not be copied.

Note: Nucleus2 controllers running Workbench version 3.15 and earlier will only show two files copied (Persistence.dccp and LocalRouter).

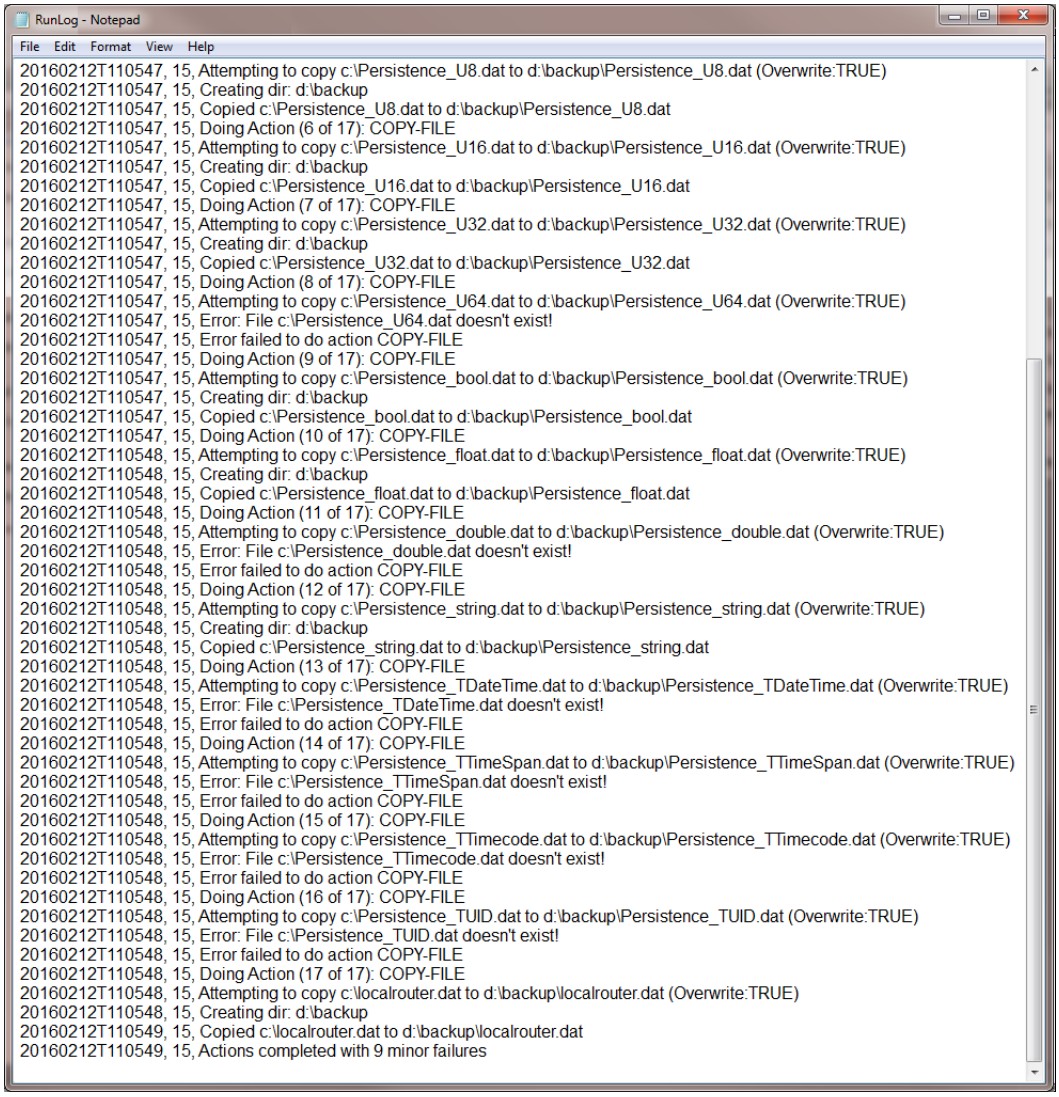


Figure 97 Example Backup RunLog.txt File Showing Nine Minor Failures

13. Keep the back-up files on the USB memory stick safe.

10.2.8 Example: Restoring Files

Important:

- The restore process can be performed while the router is on-air but all communication with the router controller will be lost during the restore. Because of this crosspoints cannot be switched and tallies are not reported during the restore.
- The back-up files are intended for use in the event of file corruption on the controller rather than for storing configurations. Copying the back-up files to the controller will overwrite the existing files and revert configuration and crosspoint settings back to those in force when the back-up was taken.

The persistence and localrouter files in the Nucleus2 controller contain important data. Back-up copies can be restored (copied) using a bootable USB memory stick. To create the bootable USB memory stick see section 10.2.10.

1. If the USB memory stick contains a Runlog.txt file this should be deleted. A new Runlog.txt file will be created when the Actions.txt file is run and this can be used to confirm the restore has successfully taken place.
2. To restore the persistence and localrouter files to the Nucleus2 controller from the USB memory stick the following files must be the only ones on the USB memory stick:

Important: Check that the spelling in the actions.txt file is correct before running the file.

- **Actions.txt** - Edit the Acions.txt file so that the only actions are
  `COPY-DIR d:\backup c:\ NON-FATAL`
  (see Figure 98)
- **ControllerLoader.rta** - Added by PBak Deploy
  (see section 10.2.1 on page 137)
- Backup directory and files created in section 10.2.7.

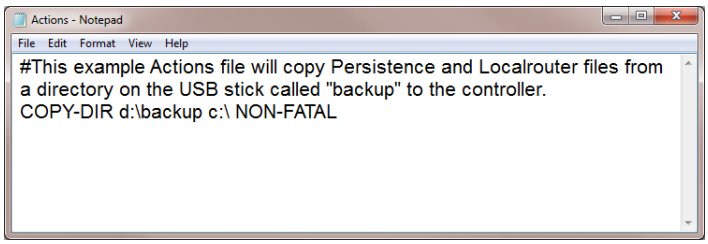


Figure 98 Example Actions.txt File to Restore Persistence & Localrouter Files

Note: Ensure that all of the required files are on the bootable USB memory stick and that the Actions.txt file contains the correct actions for the Nucleus2 controller restore, see step 2.

3. Eject the bootable USB memory stick from the computer.
4. Locate the **Idle** Nucleus2 controller, see Table 28 for LED positions:

   LED 1:
   Idle = Flashing Blue
   Active = Flashing Green
5. Pull the **Idle** controller out of the router frame by about 1 Inch so that all the LEDs switch off.

   This step prevents the **Idle** controller becoming active when the controller with the USB memory stick is reset. If the Idle controller remains fitted in the router the restored controller will be overwritten (synchronized) by the corrupt **Active** controller when the restored controller boots back up into an idle state.

6. Insert the USB memory stick in the USB connector on the front of **Active** Nucleus2 controller (see Table 28).

7. Press the **Reset** button on the Nucleus2 controller fitted with the USB memory stick (see Table 28).

Important: From this point all communication with the router controller will be lost. Because of this crosspoints cannot be switched and tallies are not reported during the restore.

8. The Nucleus2 controller will reboot. The Persistence and Localrouter files will be copied to the Nucleus2 controller. See Table 28 for the LED status that is displayed when the process is complete.

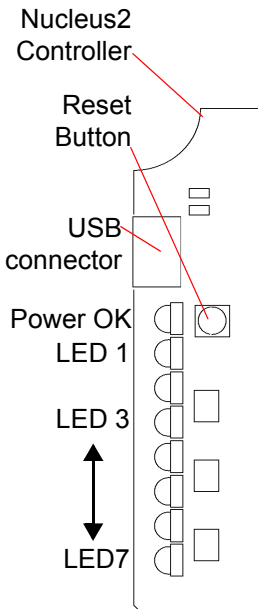
LED 3 to 7 Status	Description	LED Location
Flashing Green	When LEDs 3 to 7 continuously flash Green the restore actions have been successfully carried out and it is safe to remove the USB memory stick and re-start the controller. See step 9.	
Fault Conditions		
Flashing Orange	If LEDs 3 to 7 continuously flash Orange there has been a minor error or an action marked as NON-FATAL has failed during the restore.	
Flashing Red	If LEDs 3 to 7 continuously flash Red it indicates that an action marked as FATAL has failed to complete and therefore the rest of the actions were not processed.	
In the Event of one or more Errors Plug the memory stick into a PC and check the **RunLog.txt** file for errors. It's best to start at the bottom of the **RunLog.txt** file and work up as this is usually the quickest way to find the problem. Typical errors will be missing files on the memory stick and incorrectly spelt Actions.txt commands. Correct any errors found, reinsert the USB memory stick into the idle Nucleus2 controller and press the **Reset** button to re-run the update if required.		

Table 28 Controller LED Status After a File Restore

9. When LEDs 3 to 7 (see Table 28) on the controller flash green the process is complete.

10. Remove the USB memory stick and press the **Reset** button to reboot the Nucleus2 controller.

11. The Nucleus2 controller will be rebooted.

12. Open the Runlog.txt file on the USB memory stick with a text viewer such as Microsoft's Notepad. Check the log to ensure the files were copied successfully to the Nucleus2 controller.

    Figure 99 shows part of an example RunLog.txt file.

    Each action is prefixed with the date (YYYYMMDD) and time (HHMMSS) the action was carried out as well as the run number (run 2 in this example).

    The RunLog shows the result of each copy action carried out with either:

    "Copied" + file details when successfully copied
    or
    "Error failed to do action" + file details if the file hasn't been copied successfully.

The last line of the log summarizes that the actions have been completed and how many have failed. The example shown in Figure 99 shows that all of the files were successfully restored (copied) to the controller.

Note: Nucleus2 controllers running Workbench version 3.15 and earlier will only show two files copied (Persistence.dccp and LocalRouter).

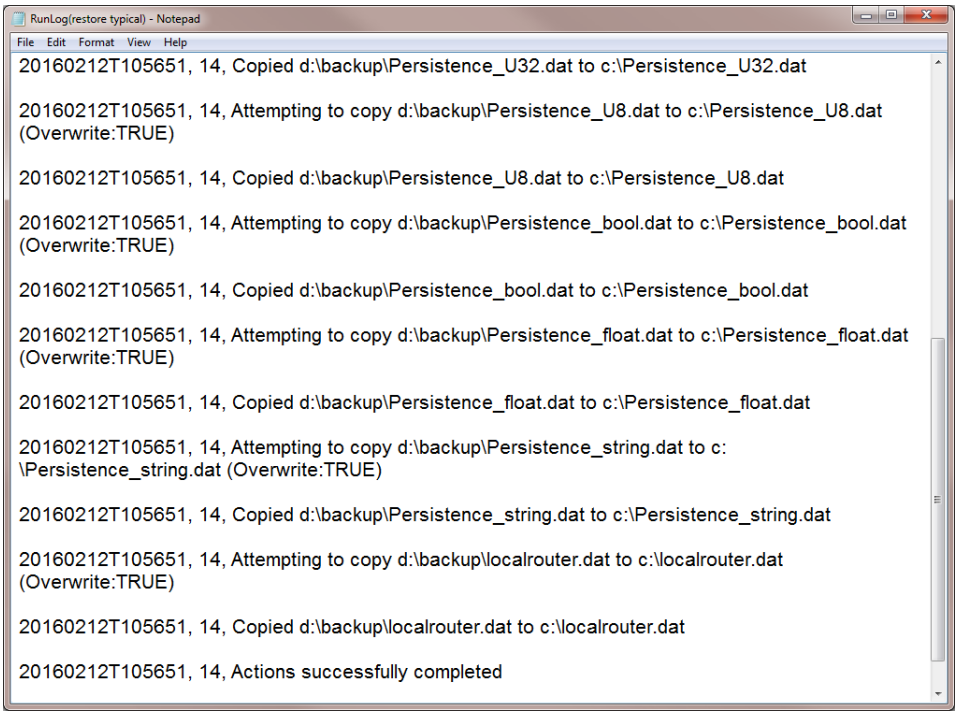


Figure 99 Example Restore RunLog.txt File Showing All Files Restored

13. Wait for at least two minutes once the restored controller has finished rebooting before inserting the second Nucleus2 controller back into the router (see below for the controller LED state displayed once it's rebooted).

    When the controller starts up or is reset the Power OK LED will illuminate first and then LEDs 1 to 6 will start to flash as the controller goes through its boot process. They will reach the state shown in Table 29 when the first part of the boot process is complete. The controller will be ready to communicate with the control system and control the router up to two minutes after this. This will be indicated by the Grass Valley control system connected to the router.

LED	Controller
Power OK	Solid Green
1 - Active/Idle	Flashing Green
2 - Master/Slave	Solid Green
3 - Watchdog Status	Flashing Green
4 - Serial Link Between Controllers	Magenta Pulsing Blue
5 - Serial Data Replication	Off
6 - Not Used	Off
7 - Not Used	Off

Table 29 Nucleus2 LED Status at Startup/Reset

14. Push the second Nucleus2 controller into the router frame and it will start up. Once it has started up it will synchronize the Persistence and Localrouter files from the **Active**

controller (LED 5 of the **Idle** controller will flash orange while the files are being synchronized).

Important: Do not press the Reset button if LED 5 on the idle controller is flashing orange (data synchronization in progress). Failing over to the idle controller before data synchronization is complete may corrupt the data files being synchronized and affect the operation of the router. When LED 5 on the idle controller flashes green (data synchronization complete) it is safe to fail over the controller.

15. When data synchronization is complete LED 5 will flash green on the **Idle** controller.
16. The restore process is now complete.

10.2.9 Running an Actions.txt file from a USB Memory Stick

If dual controllers are fitted to the router, the inactive controller should be updated first. This can then be made the active controller, and the other controller (now inactive) can be updated. If a single controller is fitted it must be updated while it is Active.

Note:

- On a dual redundant controller system the router controllers can be updated while the router is on-air, if required.
- If the router only has a single controller the upgrade can be performed while the router is on-air but all communication with the router controller will be lost during the upgrade. Because of this the crosspoints cannot be switched and tallies are not reported during the upgrade. Video and audio processing is unaffected.
- Before running an Actions.txt file on the Nucleus2 controller, it is recommended that the controller Persistence.DCCP and the Localrouter.dat files are backed-up, see section 10.2.7.
  In the unlikely event that the files are corrupted during the process the back-up can be restored to the Nucleus2 controller.
- Do not press the Reset button if LED 5 on the idle controller is flashing orange (data synchronization in progress). Failing over to the idle controller before data synchronization is complete may corrupt the data files being synchronized and affect the operation of the router. When LED 5 on the idle controller flashes green (data synchronization complete) it is safe to fail over the controller.
- Ensure that all of the required files are on the bootable USB memory stick and that the Actions.txt file contains the correct actions for the Nucleus2 controller update. For details see the tables in section 10.2.2 and 10.2.3.

1. Eject the bootable USB memory stick from the computer.
2. When working on a dual controller system locate the **Idle** Nucleus2 controller, see Table 30 for LED positions:

   LED 1:
   Idle = Flashing Blue
   Active = Flashing Green

   LED 5 on the Idle controller:
   Safe to run the Actions.txt file on the idle controller = Flashing Green
   Do not run the Actions.txt file on the idle controller = Flashing Orange

   Check that LED 1 confirms the Nucleus2 controller is **Idle** and LED 5 on the **Idle** controller confirms it is safe to proceed.
3. Insert the USB memory stick in the USB connector on the front of **Idle** Nucleus2 controller (see Table 30).

Note: If the router is only fitted with a single controller the controller will be active and the USB memory stick should be plugged into that controller.

4. Press the **Reset** button on the Nucleus2 controller fitted with the USB memory stick (see Table 30).

5. The Nucleus2 controller will reboot and the new software will be copied to the Nucleus2 controller. See Table 30 for the LED status that is displayed when the update is complete.

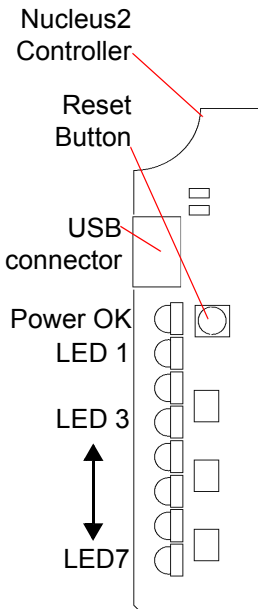
LED 3 to 7 Status	Description	LED Location
Flashing Green	When LEDs 3 to 7 continuously flash Green the actions have been successfully carried out and it is safe to remove the USB memory stick and re-start the controller. See step 6.	
Fault Conditions		
Flashing Orange	If LEDs 3 to 7 continuously flash Orange there has been a minor error or an action marked as NON-FATAL has failed during the update.	
Flashing Red	If LEDs 3 to 7 continuously flash Red it indicates that an action marked as FATAL has failed to complete and therefore the rest of the actions were not processed.	
In the Event of one or more Errors Plug the memory stick into a PC and check the **RunLog.txt** file for errors. It's best to start at the bottom of the **RunLog.txt** file and work up as this is usually the quickest way to find the problem. Typical errors will be missing files on the memory stick and incorrectly spelt Actions.txt commands. Correct any errors found, reinsert the USB memory stick into the idle Nucleus2 controller and press the **Reset** button to re-run the update if required.		

Table 30 Controller LED Status After Software Update

6. When LEDs 3 to 7 (see Table 30) on the controller flash green the process is complete.
7. Remove the USB memory stick and press the **Reset** button to reboot the Nucleus2 controller.
8. The Nucleus2 controller will be rebooted.
9. If the router is fitted with a single Nucleus2 controller the update is complete.
   If the router is fitted with two Nucleus2 controllers go to section 10.2.9.1.

10.2.9.1 Running the Actions.txt file on the Second Nucleus2 Controller

Wait for at least two minutes once the updated controller has finished rebooting before updating the second Nucleus2 controller (see section 9.5.3 for the controller LED state displayed once it's rebooted).

Important: Do not press the Reset button if LED 5 on the idle controller is flashing orange (data synchronization in progress). Failing over to the idle controller before data synchronization is complete may corrupt the data files being synchronized and affect the operation of the router. When LED 5 on the idle controller flashes green (data synchronization complete) it is safe to fail over the controller.

1. Ensure that the second non updated Nucleus2 controller is **Idle**, see Table 30 for LED positions:

   LED 1:
   Idle = Flashing Blue
   Active = Flashing Green

   LED 5 on the Idle controller:
   Safe to run the Actions.txt file on the Idle controller = Flashing Green
   Do not run the Actions.txt file on the Idle controller = Flashing Orange

   Check that LED 1 confirms the Nucleus2 controller is Active and LED 5 on the Idle controller confirms it is safe to proceed.

2. Make the second Nucleus2 controller **Idle** by pressing its **Reset** button (see Table 30). The **Active** and **Idle** Nucleus2 controllers will swap over.

3. Repeat the procedure from step 2. on page 160 to step 7. on page 161 for the second Nucleus2 controller.

Important: Remove the USB memory stick before shutting the Sirius 800 door. Leaving the USB memory stick in the Nucleus2 controller will result in damage to the USB memory stick and the Nucleus2 controller.

10.2.10 Creating a Bootable USB Memory Stick (Optional)

These instructions enable you to create a bootable USB memory stick that can be used for updating Nucleus2 controllers.

Important:

- The USB memory stick must be a minimum of 512 Mb in size.
- The contents of the USB memory stick will be completely overwritten.
- If the USB memory stick contains any information that you want to keep back it up before proceeding.

1. Format the USB memory stick from Microsoft Windows Explorer using the **Quick Format** option and selecting the **FAT** file system (not FAT 32 or NTFS).
2. Now use Pbak Deploy in the normal way (see section 10.2.1).
3. If the Nucleus2 controller fails to boot from the USB memory stick you will need to format another USB memory stick or use the advanced formatting option detailed in Section 10.2.10.1

10.2.10.1 If the USB Memory Stick Doesn't Work

This process is for advanced Microsoft Windows users only and should only be carried out if the process in Section 10.2.10 fails to create a working USB memory stick for the Nucleus controller.

If this process is carried out incorrectly you could potentially format the wrong disk drive which would lead to data loss and possibly make your computer unusable. If you are unsure then it is best not to proceed.

Important:

- The USB memory stick must be a minimum of 512 Mb in size.
- The contents of the USB memory stick will be completely overwritten.
- If the USB memory stick contains any information that you want to keep back it up before proceeding.
- You must be using Microsoft Vista or Microsoft Windows 7 to create a bootable USB memory stick. It is not possible using Microsoft Windows XP.
- This process is for advanced Microsoft Windows users only as, if it is carried out incorrectly, could potentially format the wrong disk drive which would lead to data loss and possibly make your computer unusable.
  If you are unsure then it is best not to proceed.

1. Plug a USB memory stick into the computer.
2. Open the command prompt by clicking the **Start** button and typing "cmd" into the **Search** box. Select **cmd.exe** from the results window and the command window will open.
3. Type "diskpart" followed by the **Return** key.
   If a UAC (User Access Control) message is displayed click on **Yes** to proceed.
4. The Diskpart> prompt will be displayed.
5. At the Diskpart> prompt type "list disk" followed by the **Return** key to display the disks available on the PC. For an example see Figure 100

6. Make a note of the Disk number that matches the USB drive that is being made bootable.
   In the example shown in Figure 100 Disk 2 is a 2 Gb USB memory stick.

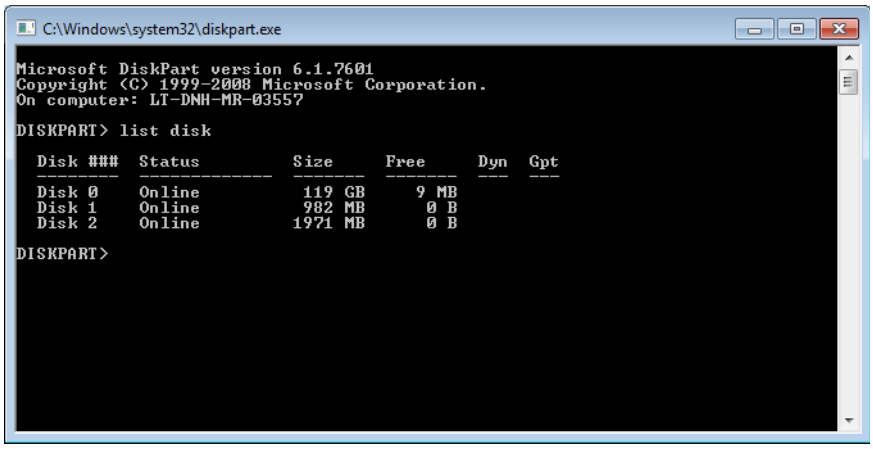


Figure 100 DiskPart List Disks Example

Important: It is extremely important that the correct disk number is identified at this point to avoid formatting the wrong disk drive.
If you are unsure then it is best not to proceed beyond this point.

7. At the Diskpart> prompt type “select disk X” (where X is the Disk Number of the USB memory stick to be made bootable) followed by the **Return** key. The following commands are carried out on this disk.
8. At the Diskpart> prompt type “clean” followed by the **Return** key.
9. At the Diskpart> prompt type “create partition primary” followed by the **Return** key.
10. At the Diskpart> prompt type “active” followed by the **Return** key. This sets the flag that will make the USB memory stick bootable.
11. At the Diskpart> prompt type “format fs=FAT32 quick” followed by the **Return** key. This formats the USB memory stick.
12. At the Diskpart> prompt type “assign” followed by the **Return** key.
13. At the Diskpart> prompt type “exit” followed by the **Return** key. This closes the DiskPart tool.
14. When a drive letter prompt is displayed you can exit the command window in the usual way by clicking on the X in the top right of the window.
15. The USB memory stick will now be bootable.

Important:

- Do not leave the USB memory stick in a computer while the computer is being rebooted as this can cause the computer to malfunction.
- For this reason it is also recommended that the USB memory stick is removed from the computer when not in use in case the computer is rebooted accidentally, due to a power failure or due to automatic updates being installed.

16. See section 10.2 for details on how to copy files to the bootable USB memory stick, and update the software on a Nucleus2 controller.

10.2.11 Creating and Restoring an Image of a Bootable USB Memory Stick

Once you have created a bootable USB memory stick (see section 10.2.10) it is a good idea to make a backup image of it. If the original bootable USB memory stick is lost or corrupted the backup image can be used to quickly create a new bootable memory stick.

Important:

- Do not leave the USB memory stick in a computer while the computer is being rebooted as this can cause the computer to malfunction.
- For this reason it is also recommended that the USB memory stick is removed from the computer when not in use in case the computer is rebooted accidentally, due to a power failure or due to automatic updates being installed.

Creating a Backup Image

1. There are many free imaging tools available for download. Two of the more popular tools are:
   - *http://osforensics.com/tools/write-usb-images.html*
   - *https://launchpad.net/win32-image-writer*
2. These tools only need to be copied to your computer and don't need any kind of installation.
3. Plug the bootable USB memory stick to be imaged into your computer.
4. Follow the instructions for your chosen Imaging tool and store the image on your computer for future use.

Restoring a Backup Image

Important:

- Restoring an image to a USB memory stick will delete all information on that memory stick and the data cannot be recovered.
- The image can only be restored by the program tool that created the image.
- An image is an exact bit for bit copy (including Boot sectors) of the original memory stick. An image can only be restored to a USB memory stick of the same size or larger than the original USB memory stick.
- Don't rely on the marked size of the memory stick, check the actual memory stick size in Microsoft Windows.
- Images restored to a memory stick with a larger capacity than the original memory stick will reduce the capacity of the new memory stick to the size of the original memory stick image. Any lost space can be recovered by formatting the memory stick when you have finished using it.

Follow the instructions for your chosen Imaging tool to restore the image to the USB memory stick.

10.3 Nucleus 2450 Software Update

Note: If the Nucleus 2450 controller is running an RTB file from Workbench release 3.14.2 or later the preferred upgrade process is to use RollCall update and this is described in section 9.4. The preferred upgrade method updates the controller software, firmware, RollCall Command Set files and Webcontent files from a single zip file.

The Nucleus 2450 controller operating system software can be updated by updating the RTB file used by the controller.

Note: The RTB file version must be compatible with the version of Workbench that is installed.

There are two methods to update the software:

- FTP access to the Nucleus controller, see section 10.3.1.
- Use Pbak Deploy to write to the Nucleus controller Compact Flash card and update the software locally, see section 10.3.2.

10.3.1 Update using FTP

1. Use Workbench to check the IP address(es) of the Nucleus controller(s) to be updated.
2. Use a client FTP program such as “FileZilla” or “SmartFTP” to open an FTP connection to either one of the Nucleus controllers in the router. Use the IP address of the Nucleus and the normal login:

   User: 2450

   Password: xyz
3. If Workbench is installed to the default directories, browse to the RTB directory located in:
   `C:\Program Files\Snell\MCM\Controllers\2450\`

Note: If Workbench is installed in the default location on a 64 bit Windows computer then it will be located in the “Program Files (x86)” directory.

4. Copy the **Pbl2450Controller.RTB** file to the controller over the FTP connection.
5. Make sure the copy was successful and close the FTP connection.
6. Open a terminal connection to the Nucleus Controller using a Telnet program such as “HyperTerminal”, “Terraterm” or “Putty” (the TCP port is 50000).
7. Login to the terminal by typing `login` followed by the password `pw2450`
8. Type the command: `Programdiskimage pbl2450controller`
9. Wait for the message `The new boot image was installed successfully`.
10. Type the command `reboot`. Alternatively the controller can be rebooted by clicking the “Force Reset of Controller” within Workbench.
11. When the Nucleus controller has rebooted, the new software should be running. You can verify the version from the Workbench Configuration - Nucleus software versions screen.

10.3.2 Update Using Pbak Deploy

Pbak Deploy is a tool that is part of the Workbench installation. It makes it possible to transfer RTB files to the removable Compact Flash disk on the controller card. The **Dat** and **On Time** tools are used by other Grass Valley products but are not relevant to the Sirius 800.

1. Remove the **Idle** Nucleus controller, see Figure 101

   LED D4: Idle = Purple, Active = Blue

   LED D16: Idle = Flashing Red, Active = Flashing Green

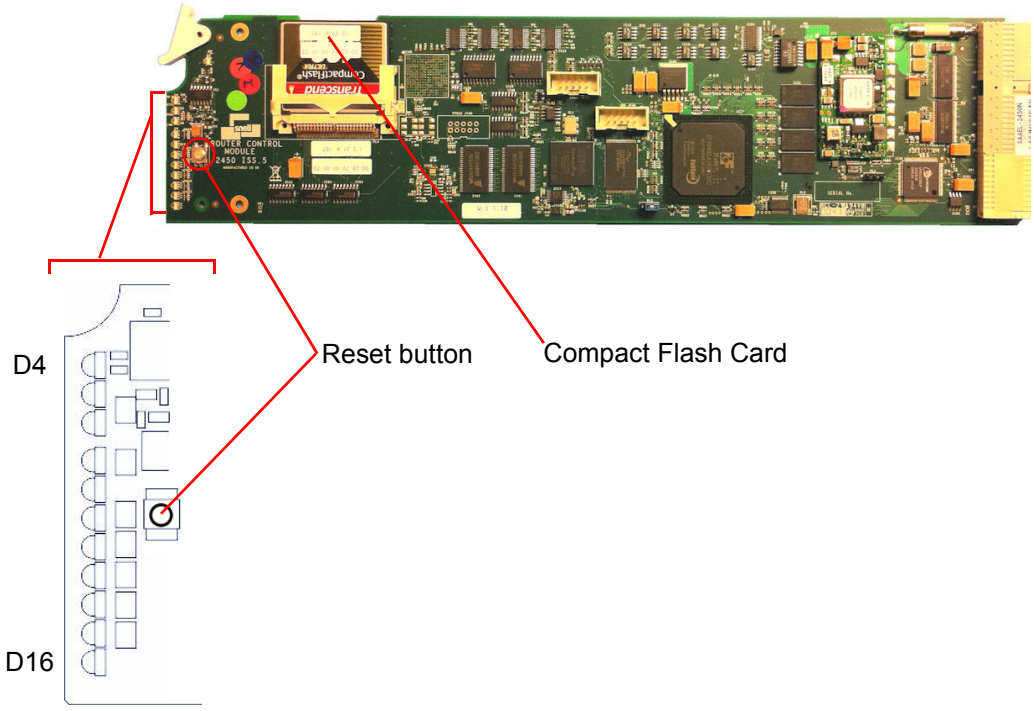


Figure 101 Nucleus 2450 Controller Compact Flash Card, LED D4 and D16

2. Remove the Compact Flash card and insert it into the card reader.
3. Start Pbak Deploy Tool, from the Windows Start menu browse to:

   Start | All Programs | Snell | MCM | Utilities | Pbak Deploy Tool

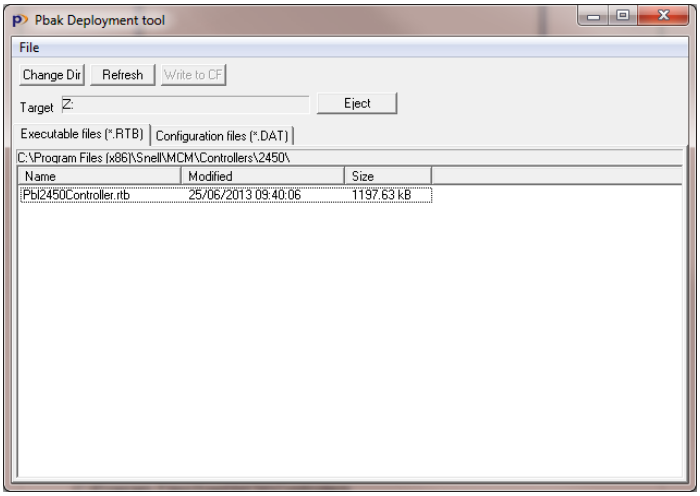


Figure 102 Pbak Deploy Tool

4. Select **File | Configuration**.

5. Select the **Target Drive** from the drop-down list. This is the Compact flash card the file will be written to.
6. Select the **RTB directory** on your computer. If Workbench installed to the default directories, browse to the RTB directory located in:
   `C:\Program Files\Snell\MCM\Controllers\2450\`

Note:

- If Workbench is installed in the default location on a 64 bit Windows computer then it will be located in the “Program Files (x86)” directory.
- The **Dat directory** and **on time tools directory** are not relevant for Sirius 800 configuration.

7. Click **OK**.
8. Select the **Pbl2450Controller.RTB** file from the list and click the **Write to CF** button.
9. Once the RTB file has been successfully written to the Compact Flash card eject it from the computer.
10. Replace the Compact Flash card in the Nucleus controller, and replace the Nucleus controller in the Sirius 800.
11. Wait until the controller has booted: LED 15 = Red.
12. Press the **Active** Nucleus controller Reset button. The Active and Idle Nucleus controllers swap over.
13. Repeat the procedure for the second Nucleus controller. LED 15 for both Nucleus controllers will be off.

10.4 Nucleus 2450 Firmware Update

Note: If the Nucleus 2450 controller is running an RTB file from Workbench release 3.14.2 or later the preferred upgrade process is to use RollCall update and this is described in section 9.4. The preferred upgrade method updates the controller software, firmware, RollCall Command Set files and Webcontent files from a single zip file.

The Nucleus firmware runs on an FPGA within the Nucleus controller. This is loaded every time the controller is power cycled and is the **PA864.rbf** file on the compact flash card.

There are two methods to update the firmware:

- FTP access to the Nucleus, see section 10.4.1.
- Removing the compact flash card and copying the **PA864.rbf** firmware file to the compact flash card, see section 10.4.2.

10.4.1 Update using FTP

1. Use Workbench to check the IP address(es) of the Nucleus controller(s) to be updated.
2. Use a client FTP program such as “FileZilla” or “SmartFTP” to open an FTP connection to either one of the Nucleus controllers in the router. Use the IP address of the Nucleus and the normal login:

   User: 2450

   Password: xyz
3. Make a backup copy of the existing file **PA864.rbf**, either on the PC or in a directory on the compact flash card.
4. Select the **PA0864F** file on your computer. If Workbench installed to the default directories, browse to the **PA0864F** file located in:
   `C:\Program Files\Snell\MCM\Controllers\2450\`

Note: If Workbench is installed in the default location on a 64 bit Windows computer then it will be located in the “Program Files (x86)” directory.

5. Extract the **PA864.rbf** file from the **PA0864F** package and copy the new **PA864.rbf** file to the compact flash card.
6. Now use the FTP program to connect to the second Nucleus controller (if it is fitted) and repeat the process so that both controllers contain the new firmware.
7. Now with the new firmware on both controllers check which of the controllers is Idle (using Workbench) and connect to it using a Telnet program such as “HyperTerminal”, “Terraterm” or “Putty” (the TCP port is 50000).

Note: If the router is only fitted with a single controller the controller will be Active rather than Idle.

8. Login to the terminal by typing `login` followed by the password `pw2450`
9. Send the command `RebootAll` to the controller and this will force it to load the new firmware.

Note: Simply resetting the controller from the controller Reset button or Workbench will not load the new firmware.

10. If only one controller is fitted to the router frame the update will be complete once the controller has rebooted and is displayed as connected (Green) in Workbench.

11. If a second controller is fitted reset it from the Workbench Controller Configuration interface software so that it goes Idle.
12. Repeat the `RebootAll` procedure for the second (Idle) Nucleus controller.

10.4.2 Update using Copy

1. Remove the **Idle** Nucleus controller, see Figure 101 on page 167 for LED locations:

Note: If the router is only fitted with a single controller the controller will be Active rather than Idle.

LED D4: Idle = Purple, Active = Blue

LED D16: Idle = Flashing Red, Active = Flashing Green

2. Remove the compact flash card and insert it into a card reader connected to a PC.
3. Make a backup copy of the existing file **PA864.rbf**, either on the PC or in a directory on the compact flash card.
4. Select the **PA0864F** file on your computer. If Workbench installed to the default directories, browse to the **PA0864F** file located in:
`C:\Program Files\Snell\MCM\Controllers\2450\`

Note: If Workbench is installed in the default location on a 64 bit Windows computer then it will be located in the “Program Files (x86)” directory.

5. Extract the **PA864.rbf** file from the **PA0864F** package and copy the new **PA864.rbf** file onto the compact flash card.
6. Once the new firmware file has been successfully written to the compact flash card eject it from the computer.
7. Replace the flash card in the Nucleus controller, and replace the Nucleus controller in the Sirius 800.
8. Wait until the card has booted: LED 15 = Red.
9. Press the **Active** Nucleus controller Reset button. The Active and Idle Nucleus controllers swap over.
10. Repeat the procedure for the second Nucleus controller. LED 15 for both Nucleus controllers will be off.

10.5 Nucleus 2450 RollCall File and WebContent File Update

Note: If the Nucleus 2450 controller is running an RTB file from Workbench release 3.14.2 or later the preferred upgrade process is to use RollCall update and this is described in section 9.4. The preferred upgrade method updates the controller software, firmware, RollCall Command Set files and Webcontent files from a single zip file.

The RollCall Command Set and Webcontent files are installed on the Nucleus 2450 controller by default and are required when using RollCall to connect to the Sirius router. RollCall must also be enabled on the Nucleus 2450 controller (RollCall is enabled by default, see section 9.6.6 for details). When installed and enabled on the controller the RollCall web applet can be used to connect to the router. These files only need to be updated when a newer version is released.

There are two methods to update the RollCall Command Set and Webcontent files:

- FTP access to the Nucleus, see section 10.5.1.
- Removing the compact flash card and copying the directories to the compact flash card, see section 10.5.2.

10.5.1 Update using FTP

1. Use Workbench to check the IP address(es) of the Nucleus controller(s) to be updated.
2. Use a client FTP program such as “FileZilla” or “SmartFTP”. Open an FTP connection to either one of the Nucleus controllers in the router using the IP address of the Nucleus and the normal login:

   User: 2450

   Password: xyz
3. Delete the following directories from the root of the Compact flash card:
   `Matrix`
   `Nucleus`
   `Webcontent`
   `XY Panel`
4. Copy the following directories from the Workbench computer to the root directory of the compact flash card:
   `Matrix`
   `Nucleus`
   `XY Panel`
   The directories to be copied are located here:
   `C:\Program Files\Snell\MCM\Controllers\RollCall_Templates\`
   (assuming Workbench is installed in the default directory)

Note: If Workbench is installed in the default location on a 64 bit Windows computer then it will be located in the “Program Files (x86)” directory.

5. Copy the Webcontent directory from the Workbench computer to the root directory of the compact flash card:
   The `Webcontent` directory is located here:
   `C:\Program Files\Snell\MCM\Controllers\`
   (assuming Workbench is installed in the default directory)
6. Now use the FTP program to connect to the second Nucleus controller (if it is fitted) and repeat the process so that both controllers contain the new directories.

7. Now with the new directories on both controllers check which of the controllers is Idle (using Workbench) and reset the controller from the controller Reset button or Workbench.

Note: If the router is only fitted with a single controller the controller will be Active rather than Idle.

8. If only one controller is fitted to the router frame the update will be complete once the controller has rebooted and is displayed as connected (Green) in Workbench.

9. If a second controller is fitted reset it from the Workbench Controller Configuration interface software so that it goes Idle.

10.5.2 Update using Copy

Note: If the router is only fitted with a single controller the controller will be Active rather than Idle.

1. Remove the **Idle** Nucleus controller, see Figure 93 for LED locations:

   LED D4: Idle = Purple, Active = Blue

   LED D16: Idle = Flashing Red, Active = Flashing Green

2. Remove the compact flash card and insert it into a card reader connected to a PC.

3. Delete the following directories from the root of the compact flash card:
   `Matrix`
   `Nucleus`
   `Webcontent`
   `XY Panel`

4. Copy the following directories from the Workbench computer to the root directory of the compact flash card:
   `Matrix`
   `Nucleus`
   `XY Panel`
   The directories to be copied are located here:
   `C:\Program Files\Snell\MCM\Controllers\RollCall_Templates\`
   (assuming Workbench is installed in the default directory)

Note: If Workbench is installed in the default location on a 64 bit Windows computer then it will be located in the “Program Files (x86)” directory.

5. Copy the Webcontent directory from the Workbench computer to the root directory of the compact flash card:
   The `Webcontent` directory is located here:
   `C:\Program Files\Snell\MCM\Controllers\`
   (assuming Workbench is installed in the default directory)

6. Once the new directories have been successfully written to the compact flash card eject it from the computer.

7. Replace the Compact flash card in the Nucleus controller, and replace the Nucleus controller in the Sirius 800.

8. Wait until the card has booted: LED 15 = Red.

9. Press the **Active** Nucleus controller Reset button. The Active and Idle Nucleus controllers swap over.

10. Repeat the procedure for the second Nucleus controller. LED 15 for both Nucleus controllers is off.

10.6 Nucleus 2450: Viewing/Modifying Config.ini and Network.ini Files

The Nucleus 2450 controller Compact Flash card stores the Config.ini file and the Network.ini file. These files are used to set various controller parameters and can be modified if required to change controller configuration.

The contents of the Config.ini file and the contents of the Network.ini file are listed in the Sirius 800 user manual.

This section describes how to view and modify the ini files using a simple text editor such as Microsoft Notepad.

There are two methods to modify the ini files:

- FTP access to the Nucleus, see section 10.6.1.
- Removing the compact flash card and viewing/modifying an ini file on the compact flash card, see section 10.6.2.

10.6.1 Modify an ini File Using FTP

1. Use Workbench to check the IP address(es) of the Nucleus controller(s) to be updated.
2. Use a client FTP program such as “FileZilla” or “SmartFTP”. Open an FTP connection to either one of the Nucleus controllers in the router using the IP address of the Nucleus and the normal login:

   User: 2450

   Password: xyz
3. If no changes are required the ini file can simply be opened with a text editor, such as Microsoft Notepad, viewed and then closed again without saving.

Note: Before making any changes backup the ini file to be modified to the computer using the FTP software. It is a good idea to modify the backup filename with a date in case it is required at a future date.

4. Copy the ini file to be modified from the controller to your computer using the FTP software and open it using a text editor such as Microsoft Notepad.
5. Make any changes required to the ini file and Save the modified file to the computer.
6. Copy the modified ini file back to the controller using the FTP software and confirm that the file is to be overwritten when prompted.
7. Now use the FTP program to connect to the second Nucleus controller (if it is fitted) and repeat the process so that both controllers contain the modified ini file.
8. Now with the modified ini file on both controllers check which of the controllers is Idle (using Workbench) and reset the idle controller from the controller Reset button or Workbench.

Note: If the router is only fitted with a single controller the controller will be Active rather than Idle.

9. If only one controller is fitted to the router frame the update will be complete once the controller has rebooted and is displayed as connected (Green) in Workbench.
10. If a second controller is fitted reset it from the Workbench Controller Configuration interface software so that it goes Idle.

10.6.2 Modify an ini File Using Copy

1. Ensure the Nucleus Controller card to be removed is idle:

Note: If the router is only fitted with a single controller the controller will be Active rather than Idle.

Nucleus Controller	LED Number/Color	LED Number/Color
2450	**LED D4**: Idle = Purple Active = Blue	**LED D16**: Idle = Flashing Red Active = Flashing Green

Table 31 Nucleus 2450 Active/Idle LED Status

2. If the Nucleus controller to be removed is Active (see Table 31) press the reset button on it (see Figure 101 on page 167) and the Active and Idle Nucleus controllers will swap over.
3. Remove the Idle Nucleus controller card.
4. Remove the Compact Flash memory card from the Nucleus controller and insert it into a card reader.
5. Plug the card reader into your computer and view the files on the memory card.
6. If no changes are required the ini file can simply be opened with a text editor, such as Microsoft Notepad, viewed and then closed again without saving.

Note: Before making any changes backup the ini file to be modified to the computer. It is a good idea to modify the backup filename with a date in case it is required at a future date.

7. Open the ini file to be modified using a text editor such as Microsoft Notepad.
8. Make any changes required to the ini file and Save the modified file to the Compact Flash card.
9. Eject the Compact flash card from your computer and remove the Compact flash card.
10. Insert the Compact flash card back in the Nucleus controller.
11. Replace the Nucleus controller in the router and it will reboot.
12. If changes are also required on the second Nucleus controller (if it is fitted) repeat the process so that both controllers contain the modified ini file.

Grass Valley Technical Support

For technical assistance, contact our international support center, at 1-800-547-8949 (US and Canada) or +1 530 478 4148.

To obtain a local phone number for the support center nearest you, please consult the Contact Us section of Grass Valley's website (www.grassvalley.com).

An on-line form for e-mail contact is also available from the website.

https://www.grassvalley.com/contact/support/

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