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A **BELDEN** BRAND

# ITX PLAYOUT APPLIANCE 2

GVSP-3TB-WIN-2IO

GVSP-3TB-WIN-2+2IO

GVSP-3TB-WIN-4IO

GVSP-3TB-WIN-8IO

## Installation and Service Manual

M958-9002-200

2016-12-09

[www.grassvalley.com](http://www.grassvalley.com)

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Title	iTX Payout Appliance 2 Installation and Service Manual
Part Number	M958-9002-200
Revision	2016-12-09, 14:16

## Important Safeguards and Notices

This section provides important safety guidelines for operators and service personnel. Specific warnings and cautions appear throughout the manual where they apply. Please read and follow this important information, especially those instructions related to the risk of electric shock or injury to persons.

### Symbols and Their Meanings



Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



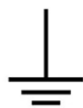
Indicates that the user, operator or service technician should refer to the product manuals for important operating, maintenance, or service instructions.



This is a prompt to note the fuse rating when replacing fuses. The fuse referenced in the text must be replaced with one having the ratings indicated.



Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.



Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.



Indicates that static sensitive components are present, which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.



Indicates that the equipment has more than one power supply cord, and that all power supply cords must be disconnected before servicing to avoid electric shock.



The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Canadian Standard Association (CSA) regulations and recommendations for USA/Canada.



The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Underwriters Laboratory (UL) regulations and recommendations for USA/Canada.



The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Intertek Testing Services regulations and recommendations for USA/Canada.



The presence of this symbol in or on Grass Valley product means that it complies with all applicable European Union (CE) directives.



The presence of this symbol in or on Grass Valley product means that it complies with safety of laser product applicable standards.

## Warnings



A warning indicates a possible hazard to personnel, which may cause injury or death. Observe the following general warnings when using or working on this equipment:

- Appropriately listed/certified mains supply power cords must be used for the connection of the equipment to the mains voltage at either 120 V AC or 240 V AC.
- This product relies on the building's installation for short-circuit (over-current) protection. Ensure that a fuse or circuit breaker for 120 V AC or 240 V AC is used on the phase conductors.
- Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only.
- Do not operate the equipment in wet or damp conditions.
- This equipment is grounded through the grounding conductor of the power cords. To avoid electrical shock, plug the power cords into a properly wired receptacle before connecting the equipment inputs or outputs.
- Route power cords and other cables so they are not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.
- Disconnect power before cleaning the equipment. Do not use liquid or aerosol cleaners; use only a damp cloth.
- Dangerous voltages may exist at several points in this equipment. To avoid injury, do not touch exposed connections and components while power is on.
- High leakage current may be present. Earth connection of product is essential before connecting power.
- Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.
- To avoid fire hazard, use only the fuse type and rating specified in the service instructions for this product, or on the equipment.
- To avoid explosion, do not operate this equipment in an explosive atmosphere.
- Use proper lift points. Do not use door latches to lift or move equipment.
- Avoid mechanical hazards. Allow all rotating devices to come to a stop before servicing.
- Have qualified service personnel perform safety checks after any service.

## Cautions



A caution indicates a possible hazard to equipment that could result in equipment damage. Observe the following cautions when operating or working on this equipment:

- This equipment is meant to be installed in a restricted access location.

- When installing this equipment, do not attach the power cord to building surfaces.
- Products that have no on/off switch, and use an external power supply must be installed in proximity to a main power outlet that is easily accessible.
- Use the correct voltage setting. If this product lacks auto-ranging power supplies, before applying power ensure that each power supply is set to match the power source.
- Provide proper ventilation. To prevent product overheating, provide equipment ventilation in accordance with the installation instructions.
- Do not operate with suspected equipment failure. If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.
- 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. Servicing should be done in a static-free environment.
- This unit may have more than one power supply cord. Disconnect all power supply cords before servicing to avoid electric shock.
- Follow static precautions at all times when handling this equipment.

## Electrostatic Discharge (ESD) Protection



Electrostatic discharge occurs when electronic components are improperly handled and can result in intermittent failure or complete damage adversely affecting an electrical circuit. When you remove and replace any card from a frame always follow ESD-prevention procedures:

- Ensure that the frame is electrically connected to earth ground through the power cord or any other means if available.
- Wear an ESD wrist strap ensuring that it makes good skin contact. Connect the grounding clip to an *unpainted surface* of the chassis frame to safely ground unwanted ESD voltages. If no wrist strap is available, ground yourself by touching the *unpainted* metal part of the chassis.
- For safety, periodically check the resistance value of the anti-static strap, which should be between 1 and 10 megohms.
- When temporarily storing a card make sure it is placed in an ESD bag.
- Cards in an earth grounded metal frame or casing do not require any special ESD protection.

## Battery Handling



This product includes a backup battery. There is a danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. Before disposing of your Grass Valley equipment, please review the *Disposal and Recycling Information* appendix.

## Cautions for LCD and TFT Displays



Excessive usage may harm your vision. Rest for 10 minutes for every 30 minutes of usage.

If the LCD or TFT glass is broken, handle glass fragments with care when disposing of them. If any fluid leaks out of a damaged glass cell, be careful not to get the liquid crystal fluid in your mouth or skin. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water. Never swallow the fluid. The toxicity is extremely low but caution should be exercised at all times.

## Mesures de sécurité et avis importants

La présente section fournit des consignes de sécurité importantes pour les opérateurs et le personnel de service. Des avertissements ou mises en garde spécifiques figurent dans le manuel, dans les sections où ils s'appliquent. Prenez le temps de bien lire les consignes et assurez-vous de les respecter, en particulier celles qui sont destinées à prévenir les décharges électriques ou les blessures.

## Signification des symboles utilisés



Signale la présence d'une tension élevée et dangereuse dans le boîtier de l'équipement ; cette tension peut être suffisante pour constituer un risque de décharge électrique.



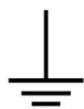
Avertit l'utilisateur, l'opérateur ou le technicien de maintenance que des instructions importantes relatives à l'utilisation et à l'entretien se trouvent dans la documentation accompagnant l'équipement.



Invite l'utilisateur, l'opérateur ou le technicien de maintenance à prendre note du calibre du fusible lors du remplacement de ce dernier. Le fusible auquel il est fait référence dans le texte doit être remplacé par un fusible du même calibre.



Identifie une borne de mise à la terre de protection. Il faut relier cette borne à la terre avant d'effectuer toute autre connexion à l'équipement.



Identifie une borne de mise à la terre externe qui peut être connectée en tant que borne de mise à la terre supplémentaire.



Signale la présence de composants sensibles à l'électricité statique et qui sont susceptibles d'être endommagés par une décharge électrostatique. Utilisez des procédures, des équipements et des surfaces antistatiques durant les interventions d'entretien.



Le symbole ci-contre signifie que l'appareil comporte plus d'un cordon d'alimentation et qu'il faut débrancher tous les cordons d'alimentation avant toute opération d'entretien, afin de prévenir les chocs électriques.



La marque C-CSA-US certifie que l'appareil visé a été testé par l'Association canadienne de normalisation (CSA) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.



La marque C-UL-US certifie que l'appareil visé a été testé par Underwriters Laboratory (UL) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.



La marque ETL Listed d'Intertek pour le marché Nord-Américain certifie que l'appareil visé a été testé par Intertek et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.



Le marquage CE indique que l'appareil visé est conforme aux exigences essentielles des directives applicables de l'Union européenne en matière de sécurité électrique, de compatibilité électromagnétique et de conformité environnementale.



Le symbole ci-contre sur un appareil Grass Valley ou à l'intérieur de l'appareil indique qu'il est conforme aux normes applicables en matière de sécurité laser.

## Avertissements



Les avertissements signalent des conditions ou des pratiques susceptibles d'occasionner des blessures graves, voire fatales. Veuillez vous familiariser avec les avertissements d'ordre général ci-dessous :

- Un cordon d'alimentation dûment homologué doit être utilisé pour connecter l'appareil à une tension de secteur de 120 V CA ou 240 V CA.
- La protection de ce produit contre les courts-circuits (surintensités) dépend de l'installation électrique du bâtiment. Assurez-vous qu'un fusible ou un disjoncteur pour 120 V CA ou 240 V CA est utilisé sur les conducteurs de phase.
- Dans le présent manuel, toutes les instructions qui nécessitent d'ouvrir le couvercle de l'équipement sont destinées exclusivement au personnel technique qualifié.
- N'utilisez pas cet appareil dans un environnement humide.
- Cet équipement est mis à la terre par le conducteur de mise à la terre des cordons d'alimentation. Pour éviter les chocs électriques, branchez les cordons d'alimentation sur une prise correctement câblée avant de brancher les entrées et sorties de l'équipement.
- Acheminez les cordons d'alimentation et autres câbles de façon à ce qu'ils ne risquent pas d'être endommagés. Supportez correctement les enroulements de câbles afin de ne pas endommager les connecteurs.
- Coupez l'alimentation avant de nettoyer l'équipement. Ne pas utiliser de nettoyeurs liquides ou en aérosol. Utilisez uniquement un chiffon humide.
- Des tensions dangereuses peuvent exister en plusieurs points dans cet équipement. Pour éviter toute blessure, ne touchez pas aux connexions ou aux composants exposés lorsque l'appareil est sous tension.

- Avant de procéder à toute opération d'entretien ou de dépannage, enlevez tous vos bijoux (notamment vos bagues, votre montre et autres objets métalliques).
- Pour éviter tout risque d'incendie, utilisez uniquement les fusibles du type et du calibre indiqués sur l'équipement ou dans la documentation qui l'accompagne.
- Ne pas utiliser cet appareil dans une atmosphère explosive.
- Présence possible de courants de fuite. Un raccordement à la masse est indispensable avant la mise sous tension.
- Après tout travail d'entretien ou de réparation, faites effectuer des contrôles de sécurité par le personnel technique qualifié.

## Mises en garde



Les mises en garde signalent des conditions ou des pratiques susceptibles d'endommager l'équipement. Veuillez vous familiariser avec les mises en garde ci-dessous :

- L'appareil est conçu pour être installé dans un endroit à accès restreint.
- Au moment d'installer l'équipement, ne fixez pas les cordons d'alimentation aux surfaces intérieures de l'édifice.
- Les produits qui n'ont pas d'interrupteur marche-arrêt et qui disposent d'une source d'alimentation externe doivent être installés à proximité d'une prise de courant facile d'accès.
- Si l'équipement n'est pas pourvu d'un modules d'alimentation auto-adaptables, vérifiez la configuration de chacun des modules d'alimentation avant de les mettre sous tension.
- Assurez une ventilation adéquate. Pour éviter toute surchauffe du produit, assurez une ventilation de l'équipement conformément aux instructions d'installation.
- N'utilisez pas l'équipement si vous suspectez un dysfonctionnement du produit. Faites-le inspecter par un technicien qualifié.
- Pour réduire le risque de choc électrique, n'effectuez pas de réparations autres que celles qui sont décrites dans le présent manuel, sauf si vous êtes qualifié pour le faire. Confiez les réparations à un technicien qualifié. La maintenance doit se réaliser dans un milieu libre d'électricité statique.
- L'appareil peut comporter plus d'un cordon d'alimentation. Afin de prévenir les chocs électriques, débrancher tous les cordons d'alimentation avant toute opération d'entretien.
- Veillez à toujours prendre les mesures de protection antistatique appropriées quand vous manipulez l'équipement.

## Protection contre les décharges électrostatiques (DES)



Une décharge électrostatique peut se produire lorsque des composants électroniques ne sont pas manipulés de manière adéquate, ce qui peut entraîner des défaillances intermittentes ou endommager irrémédiablement un circuit électrique. Au moment de remplacer une carte dans un châssis, prenez toujours les mesures de protection antistatique appropriées :



- Assurez-vous que le châssis est relié électriquement à la terre par le cordon d'alimentation ou tout autre moyen disponible.
- Portez un bracelet antistatique et assurez-vous qu'il est bien en contact avec la peau. Connectez la pince de masse à une *surface non peinte* du châssis pour détourner à la terre toute tension électrostatique indésirable. En l'absence de bracelet antistatique, déchargez l'électricité statique de votre corps en touchant une surface métallique *non peinte* du châssis.
- Pour plus de sécurité, vérifiez périodiquement la valeur de résistance du bracelet antistatique. Elle doit se situer entre 1 et 10 mégohms.
- Si vous devez mettre une carte de côté, assurez-vous de la ranger dans un sac protecteur antistatique.
- Les cartes qui sont reliées à un châssis ou boîtier métallique mis à la terre ne nécessitent pas de protection antistatique spéciale.

## Remplacement et élimination des piles



L'appareil renferme une pile. Pour réduire le risque d'explosion, vérifiez la polarité et ne remplacez la pile que par une pile du même type, recommandée par le fabricant. Mettez les piles usagées au rebut conformément aux directives du fabricant. Avant de vous défaire de l'équipement, assurez-vous d'avoir lu l'appendice *Disposal and Recycling Information*.

## Précautions pour les écrans LCD et TFT



Regarder l'écran pendant une trop longue période de temps peut nuire à votre vision. Prenez une pause de 10 minutes, après 30 minutes d'utilisation.

Si l'écran LCD ou TFT est brisé, manipulez les fragments de verre avec précaution au moment de vous en débarrasser. veillez à ce que le cristal liquide n'entre pas en contact avec la peau ou la bouche. En cas de contact avec la peau ou les vêtements, laver immédiatement à l'eau savonneuse. Ne jamais ingérer le liquide. La toxicité est extrêmement faible, mais la prudence demeure de mise en tout temps.

## Recycling

Visit [www.grassvalley.com](http://www.grassvalley.com) for recycling information.

## Certification and Compliance

### Safety Compliance



c

This equipment complies with the requirements of CSA/UL/IEC/EN 60950-1, 2<sup>nd</sup> Ed. + AM1, Safety of information technology equipment.

us The power cords supplied with this equipment meet the appropriate national standards for the country of destination.

## Safety of Laser Modules



This equipment incorporates modules containing Class 1 lasers. These modules are certified by the manufacturer to comply with:

- IEC/EN 60825-1 Safety of laser products
- IEC 60950-1 Safety of information technology equipment

## Electromagnetic Compatibility



This equipment has been tested for verification of compliance with FCC Part 15, Subpart B requirements for class A digital devices.

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

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This equipment has been tested and found to comply with the requirements of the EMC directive 2004/108/EC:

- EN 55022 Class A Radiated and conducted emissions
- EN 61000-3-2 Limits for harmonic current emissions
- EN 61000-3-3 Limitation of voltage fluctuations and flicker
- EN 61000-4-2 Electrostatic discharge immunity
- EN 61000-4-3 Radiated, radio-frequency, electromagnetic field immunity
- EN 61000-4-4 Electrical fast transient immunity
- EN 61000-4-5 Surge transient immunity
- EN 61000-4-6 Conducted disturbances immunity
- EN 61000-4-8 Power frequency magnetic field immunity
- EN 61000-4-11 Voltage dips, short interruptions and voltage variations immunity

# toc

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# Overview of the iTX Playout Appliance 2

This document provides an overview of the product and guides you through the procedures for installing and setting up a new, factory-delivered iTX Playout Appliance 2 unit.

This chapter provides information about the different models of iTX Playout Appliance 2 and the physical characteristics of the product, including system specifications and chassis components.

## Summary

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Note: Additional iTX system documentation can be downloaded from the Documentation Library on the Grass Valley web site ([www.grassvalley.com](http://www.grassvalley.com)).

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## About the iTX Playout Appliance 2

The iTX Playout Appliance 2 unit is a 1 RU rack mountable server designed to run iTX playout software, which processes audio and video content as required by scheduled events and delivers the SD or HD video output for one or two channels of iTX playout.

We offer four models of the iTX Playout Appliance 2:

iTX Playout Appliance 2 model	Description
GVSP-3TB-WIN-2IO	1 RU iTX SD/HD Playout Appliance fitted with a single 2 I/O SDI video card. This unit is equipped with a GPU to support XG Inside (not licensed).
GVSP-3TB-WIN-2+2IO	1 RU iTX SD/HD Playout Appliance fitted with two 2 I/O SDI video cards. This model does not support XG Inside since it does not have a GPU.
GVSP-3TB-WIN-4IO	1 RU iTX SD/HD Playout Appliance fitted with a single 4 I/O SDI video card. This unit is equipped with a GPU to support XG Inside (not licensed).
GVSP-3TB-WIN-8IO	1 RU iTX HD Playout Appliance fitted with a single 8 I/O SDI video card. This unit is equipped with a GPU to support XG Inside (not licensed).

## System Specifications

The following table provides a summary of the product and technical specifications for the iTX Playout Appliance 2 unit.

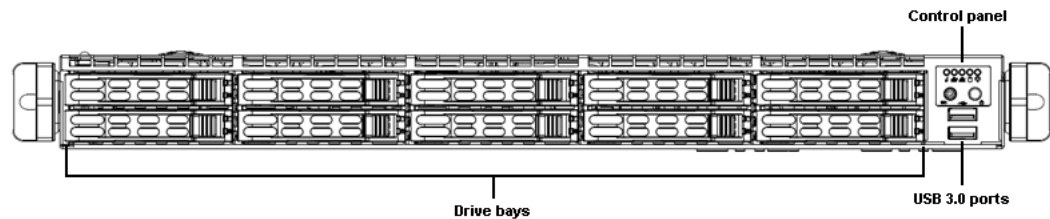
<b>Chassis dimensions</b>	<b>Form:</b> 1 U rackmount chassis <b>Height:</b> 1.7" (27.8 mm) <b>Width:</b> 17.2" (437 mm) <b>Depth:</b> 27.8" (706 mm) <b>Weight:</b> Not available at time of publication
<b>Processors</b>	Dual six-core Intel® Xeon® E5-2620v3 processors
<b>Memory</b>	64 GB main memory (RAM)
<b>Media Cache storage</b>	2 TB of usable RAID 10 storage
<b>System disk storage</b>	120 GB SSD RAID1
<b>SDI Video I/O</b>	<b>GVSP-3TB-WIN-2IO</b> <ul style="list-style-type: none"><li>• 1 AJA Corvid LP card, with 2 SDI I/Os on BNC connectors</li></ul> <b>GVSP-3TB-WIN-2+2IO</b> <ul style="list-style-type: none"><li>• 2 AJA Corvid LP cards, each with 2 SDI I/Os on BNC connectors</li></ul> <b>GVSP-3TB-WIN-4IO</b> <ul style="list-style-type: none"><li>• 1 AJA Corvid 44 card, with up to 4 SDI I/Os on DIN 1.0/2.3 connectors</li></ul> <b>GVSP-3TB-WIN-8IO</b> <ul style="list-style-type: none"><li>• 1 AJA Corvid 88 card, with up to 8 SDI I/Os on DIN 1.0/2.3 connectors</li></ul>
<b>Graphics Card</b>	NVIDIA Quadro K2200 Note: GVSP-3TB-WIN-2+2IO is not equipped with a graphics card.

<b>Power consumption</b>	<b>Number of power supplies:</b> 2 <b>AC input voltage:</b> 100-240V, 50/60Hz <b>Input current:</b> 3.74 A-1.55 A <b>Input power:</b> 400W max.
<b>Temperature</b>	<b>Ambient temperature:</b> 35°C (95°F) Note: This shall be the maximum internal temperature within the rack in which the iTX Playout Appliance unit is installed.
<b>Operating system</b>	<b>GVSP-3TB-WIN-2IO</b> <ul style="list-style-type: none"> <li>• Microsoft® Windows® Server 2008 R2</li> </ul> <b>GVSP-3TB-WIN-2+2IO</b> <ul style="list-style-type: none"> <li>• Microsoft® Windows® Server 2008 R2</li> </ul> <b>GVSP-3TB-WIN-4IO</b> <ul style="list-style-type: none"> <li>• Microsoft® Windows® Server 2012 R2</li> </ul> <b>GVSP-3TB-WIN-8IO</b> <ul style="list-style-type: none"> <li>• Microsoft® Windows® Server 2012 R2</li> </ul>
<b>Onboard controllers/ports</b>	<ul style="list-style-type: none"> <li>• USB 3.0 ports (2 front, 2 rear)</li> <li>• Dedicated IPMI LAN port (1)</li> <li>• COM port (1)</li> <li>• VGA monitor port (1) - Only used on GVSP-3TB-WIN-2+2IO</li> <li>• 10 Gigabit Ethernet ports (2)</li> <li>• Video card I/O:               <ul style="list-style-type: none"> <li>• Corvid LP: 3 BNC (Output, Input, Reference)</li> <li>• Corvid 44: 5 DIN (SDI In/Out and Reference)</li> <li>• Corvid 88: 9 DIN (SDI In/Out and Reference)</li> </ul> </li> <li>• Graphics card: DVI-I port (1) and DisplayPort 1.2 (2)</li> </ul>

## Front Panel Components








A removable bezel covers the front panel of the chassis and identifies the unit as an iTX Appliance 2.

Behind the bezel are the unit's front panel components, which includes two SSD drives, four SATA hard drives, two USB 3.0 ports and a control panel with power buttons and status monitoring lights.



## Control Panel Buttons and Status Monitoring Lights

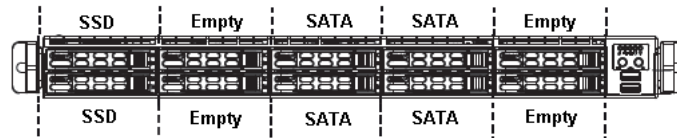
The upper right-hand corner of the iTX Payout Appliance 2 chassis features a control panel, which provides system monitoring lights, a unit identifier button and a main power control button.

	<b>UID (Unit Identifier)</b> button illuminates a blue light on the front and rear of the chassis for easy system location in large stack configurations.
	The <b>Power</b> button is the main power switch used to power on / off the iTX Payout Appliance 2 unit. Note that turning off system power with this button removes the main power, but keeps standby power supplied to the system.
	The <b>Information</b> light alerts operators to specific system states: <ul style="list-style-type: none"> <li>• Continuous red: Overheat condition</li> <li>• Blinking red (1 Hz): Fan failure</li> <li>• Blinking red (0.25 Hz): Power failure</li> <li>• Solid blue: Local UID has been activated</li> <li>• Blinking blue: Remote UID is on</li> </ul>
	Blinking green light indicates network activity on LAN2 connection.
	Blinking green light indicates network activity on LAN1 connection.
	Blinking green light indicates activity on the hard drive.
	The <b>Power</b> light indicates whether the unit is powered on or off. <ul style="list-style-type: none"> <li>• green: The unit is powered on</li> <li>• off: The unit is off, but standby power is still supplied to the unit.</li> </ul>

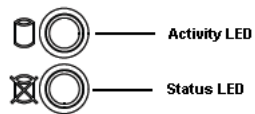


## SSD and SATA Drives

The front panel provides access to ten drive carrier bays, which are populated by two SSD drives and four SATA hard drives; leaving four of the drive bays empty.



Each drive carrier has an Activity LED and a Status LED.



The LED's color and illumination behavior indicates a specific status.

For example, the most commonly observed activities are:

- Activity LED > Blue > Blinking = I/O activity
- Status LED > RED > Solid On = Failed drive

Please consult the *SuperServer 1028U Series User Manual* for a complete listing of the drive carrier LED's behavior.

The drives are hot-swappable, meaning that a single drive can be replaced without having to stop the system or remove power from the unit.

### Managing the RAID Arrays on the iTX Playout Appliance 2

The **Intel Rapid Storage Technology (RST)** software is used to manage RAID arrays on the iTX Playout Appliance 2. This software is pre-installed and running on the unit.

When operating properly, the Intel RST icon in the Windows system tray appears as a hard drive with a green check mark over it. If there is any problem with a RAID array, the same icon appears with a yellow explanation mark over the hard drive icon along with a pop-up dialog that explains the problem.

To more closely monitor and manage the RAID arrays, you can open the Intel RST software window by double clicking its icon in the Windows system tray.

For more information about using the Intel RST software, please click the **Help** icon on the Intel RST window.

## Rear Panel Components

The rear panel of the iTX Playout Appliance 2 chassis provides access to two power supply units, as well as the appliance's input and output connectors.

The following diagrams identify the rear panel components of the different iTX Playout Appliance 2 models:

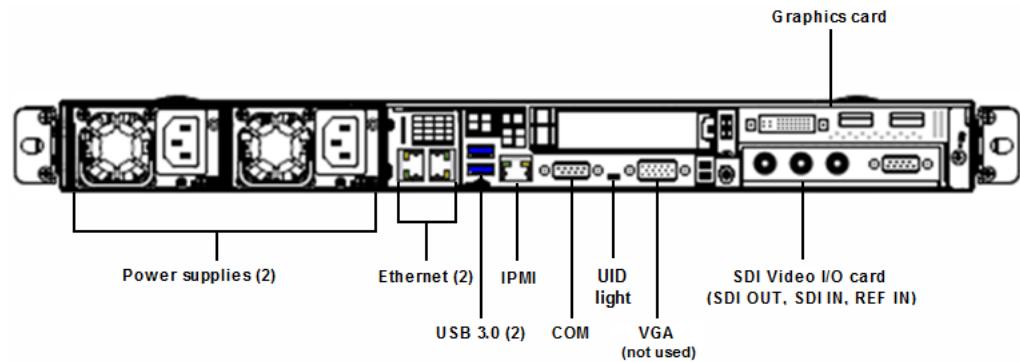


Fig. 1-1: Rear panel components of the GVSP-3TB-WIN-2IO

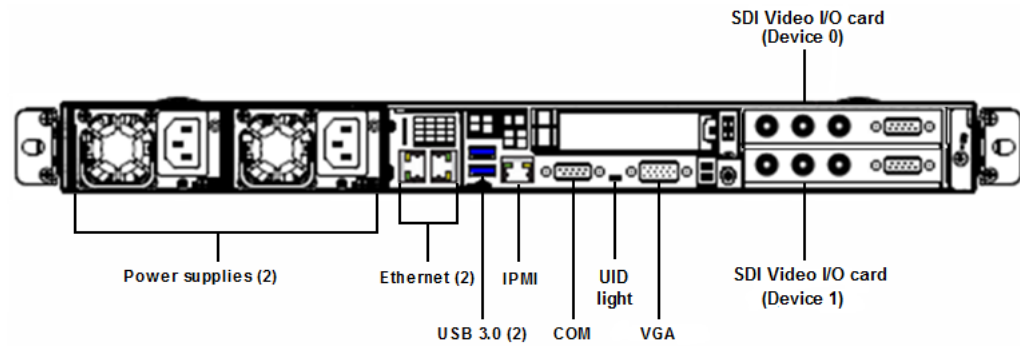


Fig. 1-2: Rear panel components of the GVSP-3TB-WIN-2+2IO

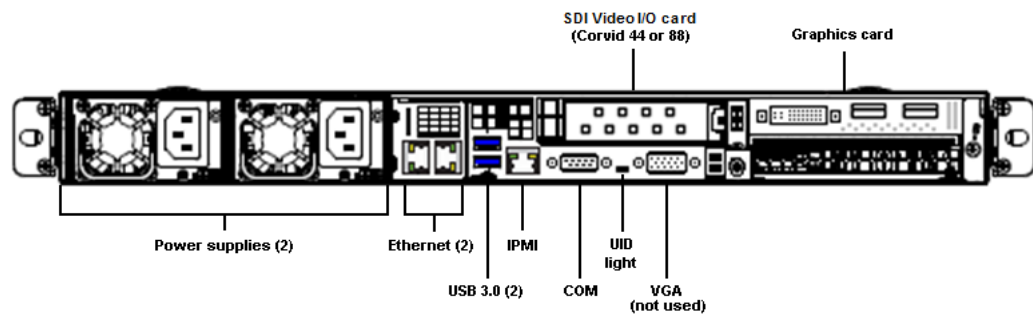


Fig. 1-3: Rear panel components of the GVSP-3TB-WIN-4IO and GVSP-3TB-WIN-8IO

## Video Card Inputs and Outputs (GVSP-3TB-WIN-2IO / GVSP-3TB-WIN-2+2IO)

Identifying the SDI video inputs and outputs on GVSP-3TB-WIN-2IO and GVSP-3TB-WIN-2+2IO models is quite straightforward since the BNC connectors are labeled (SDI OUT, SDI IN and REF IN). Note that on the GVSP-3TB-WIN-2+2IO, the upper card is Device 0 and the lower card is Device 1.

## Video Card Inputs and Outputs (GVSP-3TB-WIN-4IO / GVSP-3TB-WIN-8IO)

The GVSP-3TB-WIN-4IO is equipped with a Corvid 44 card and the GVSP-3TB-WIN-8IO with a Corvid 88 card. Each card's DIN connectors are labeled with a number, except for one which is **R** for Reference.

The SDI video card's input and output connections are determined by the intended playout channel type (e.g. Single channel, Dual channel, Simulcast... etc.). See "About Playout Types" in the *Output Server 2 Channel Configuration Guide* for more information.

Use the following tables to determine the appropriate cabling scheme for your appliance and playout channel type:

Corvid 44 Playout Type	Port 1	Port 2	Port 3	Port 4	Port R
Single channel	Ch A Output Main	Ch A Output Sec	Ch A Input Main	-	Ref Input
4K Single channel	Ch A Output Main 1	Ch A Output Main 2	Ch A Output Main 3	Ch A Output Main 4	Ref Input
Dual channel	Ch A Output Main	Ch B Output Main	Ch A Input Main	Ch B Input Main	Ref Input
Simulcast	Ch A Output Main	Ch B Output Main	Ch A/B Input Main	Ch A/B Input Second	Ref Input
Dual Live	Ch A Output Main	Ch A Output Sec	Ch A Input Main	Ch A Input Second	Ref Input

Corvid 88 Playout Type	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8	Port R
Single channel	Ch A Output Main	-	Ch A Input Main	-	-	-	Ch A Output Sec	-	Ref Input
4K Single channel	Ch A Output Main 1	Ch A Output Main 2	Ch A Output Main 3	Ch A Output Main 4	Ch A Input Main 1	Ch A Input Main 2	Ch A Input Main 3	Ch A Input Main 4	Ref Input
Dual channel	Ch A Output Main	Ch B Output Main	Ch A Input Main	Ch A Input Second	Ch B Input Main	Ch B Input Second	Ch A Output Sec	Ch B Output Sec	Ref Input
Simulcast	Ch A Output Main	Ch B Output Main	Ch A/B Input Main	Ch A/B Input Second	-	-	Ch A Output Sec	Ch B Output Sec	Ref Input
Dual Live	Ch A Output Main	-	Ch A Input Main	Ch A Input Second	-	-	Ch A Output Sec	-	Ref Input

Note: Once your iTX Playout Appliance 2 is setup and running, you can use the I/O Device Controller Engineering Panel to reference and validate the inputs and outputs to your video card based on the configured playout type. See "I/O Card Connection Reference" in the *Output Server 2 Channel Configuration Guide* for more information.

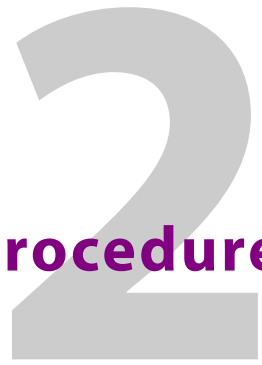
## Power Supply Modules

The rear panel provides access to two redundant 750 watt power supply modules. If either of the power supply module fail, the other module supports the full load and allows the system to operate without interruption.

Each power supply module has an LED, that is visible from the rear panel, that reports the status of the module.

- **Solid green:** Indicates that the power supply is on.
- **Solid amber:** Indicates the power supply is plugged in and turned off.
- **Blinking amber:** Indicates that the system power supply temperature has reached 36°C. The system will automatically power-down when the power supply temperature reaches 70°C and restarts when the power supply temperature goes below 60°C.

# Installation and Start-up Procedures



This chapter provides information about the installation and setup of the iTX Payout Appliance 2 unit.

---

**IMPORTANT** - Please read this chapter in its entirety before beginning the installation procedure.

---

## Summary

<i>Installing the iTX Payout Appliance 2 Chassis in a Rack</i> .....	9
<i>Cabling the iTX Payout Appliance 2</i> .....	10
<i>Starting the iTX Payout Appliance 2</i> .....	11

## Installing the iTX Payout Appliance 2 Chassis in a Rack

Included in the shipping package is a rack mounting kit, which contains the rail assemblies and screws required to mount the iTX Payout Appliance 2 chassis in an equipment rack. The rails provided are designed to fit in racks with a depth of 26" to 33.5".

Complete and detailed instructions for installing the iTX Payout Appliance 2 chassis in a rack are provided in the "Server Installation" section of the *SuperServer 1028U Series User's Manual*.



---

### IMPORTANT - Server Chassis Installation

- iTX Payout Appliance 2 units are intended to be installed in restricted locations by qualified personnel.
  - Due to the heavy weight of the unit, the rack in which the iTX Payout Appliance 2 will be installed should be anchored to the building's structure.
  - All health and safety regulations and precautions must be observed as identified in [Important Safeguards and Notices](#), on page iii and in the *SuperServer 1028U Series User's Manual*.
-

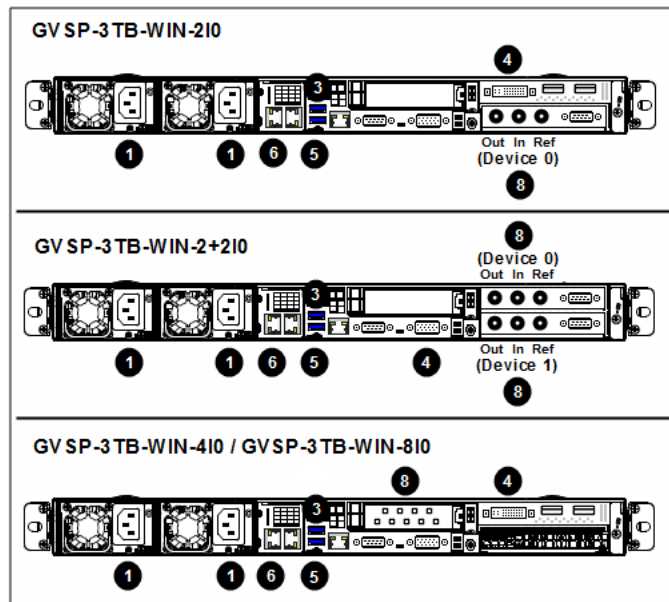
## Cabling the iTX Playout Appliance 2

Once the iTX Playout Appliance 2 chassis is securely mounted in an equipment rack, you can make the required connections to the rear panel connectors.



### WARNING - Power cables

Use the provided or designated power cables. Using any other cables and adapters could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) for any other electrical devices, other than products designated by Grass Valley.



Note:  
The numbers in this diagram correspond to the steps in the cabling instructions below.

### To make the required cable connections to the iTX Playout Appliance 2:

- 1 Insert the two AC power cords into the unit's power supply sockets.
- 2 Connect the unit's power cords to a power output.
- 3 Insert a KVM switch cable for the mouse and keyboard into one of the rear USB 3.0 ports.
- 4 Insert a graphics monitor cable (or KVM switch cable) in the graphics card's DVI connector. If required, a DVI to VGA adapter is provided in the appliance's shipping package.  
For GVSP-3TB-WIN-2+210 only, connect a graphics monitor cable (or KVM switch cable) to the VGA port.
- 5 Insert the iTX license dongle into the other rear USB 3.0 port.
- 6 Insert an Ethernet cable that is connected to the LAN into the LAN1 port.
- 7 Consult the SDI video card I/O configuration information on [page 7](#) and take note of the connection requirements based on the intended playout type.
- 8 Connect the SDI input, SDI output and Reference cables to the SDI video card's BNC or DIN connectors.

## Starting the iTX Playout Appliance 2

Once the iTX Playout Appliance 2 unit is properly racked and cabled, you can power up the unit by pressing the **Power** button on the front control panel.

The Power light on the front control panel illuminates as green to indicate that the unit is powered on.

It is normal for the connected graphics monitor to remain blank for up to one minute after the pressing the Power button, so please wait patiently.

Upon startup, the iTX Playout Appliance 2 automatically logs on as *iTX-user*.





# 3

## Configuring the iTX Playout Appliance 2

This chapter provides instructions for the initial configuration of a factory-delivered iTX Playout Appliance 2 unit. Upon completing the initial configuration procedures, we recommend that you consult the *iTX System Administrator Guide* and *iTX Output Server 2 Channel Configuration Guide* for information on fully integrating the unit into your iTX system.

### Summary

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<i>Configuring iTX on the GVSP-3T-WIN-2IO and GVSP-3TB-WIN-2+2IO</i> .....	15
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### Configuring Windows and System Settings

When the iTX Playout Appliance 2 is powered up for the first time, the local user (**itx-user**) is configured to automatically logon to Windows.

Since factory-delivered units are initially configured with generic Windows and system settings, you must configure some settings to ensure that they are appropriate for your geographic location and local network configuration.

#### To configure the Windows and system settings:

- 1 Open the **Windows Clock, Language and Region** window and verify that the Date and Time settings are appropriate for the Coordinated Universal Time (UTC) time zone used by your iTX system.

We also recommend that you configure the following settings as appropriate for your situation:

- If the Appliance is part of a workgroup, disable the **Synchronize Time with...** setting on the **Date and Time** window's **Internet** tab.
  - If you want to change from the default language of English, configure the **Language** settings.
  - Ensure that the **Location** and **Formats** settings are configured appropriately in the **Region** window.
- 2 Change the default DHCP assigned IP address to a static IP address using the **Internet Protocol Version 4 (TCP/IPv4) Properties** window.
  - 3 Change the order of the network protocol bindings.
    - a Open the **Network Connections** window.
    - b Open the **Advanced Settings** window by selecting **Advanced > Advanced Settings** menu option.
    - c Select the **Adapters and Bindings** tab.

- d Move the adapter that you want to be the active connection to the top of the **Connections** list.
  - e Ensure that the **Internet Protocol Version 6 (TCP/IPv6)** options are disabled in the **Bindings** list.
  - f Click **OK**.
- 4 Set the Appliance's Hostname and Domain membership using the **System Properties** window.

For Domain membership, you may need to consult with your IT department to obtain the user name and password for a user that has permission to join the Appliance to the domain.

---

**Note:** You may be prompted to restart the computer. Do not restart at this time. Continue this procedure and only reboot as instructed in step 8 of these instructions.

---

- 5 Add the Domain User as Local Administrator using the **Select Computers, Service Accounts, or Groups** window.
- 6 Configure Windows to logon to the domain user account automatically.

- a Click Start and type `Regedit.exe` in the search field.
- b Select the **Regedit.exe** program, which opens the **Registry Editor** window.

c Navigate to:

```
HKEY_Local_Machine>SOFTWARE>Microsoft>Windows NT>CurrentVersion>
Winlogon
```

d Edit the following string values: (Value Name, Value Data)

- `AutoAdminLogon`, 1
- `DefaultUserName`, <username>
- `DefaultPassword`, <password>
- `DefaultDomainName`, <DomainName>

The `DefaultDomainName` should be the hostname for workgroups and the Windows domain for a domain.

---

**Note:** If these values do not exist, create them as follows:

- Right-click in the right-hand pane and select **New>String Value**.
  - Enter the name.
  - Double-click this new value and enter the value data as listed above.
  - Click **OK**.
- 

- 7 Disable the Windows Firewall by enabling the **Turn Off Windows Firewall** setting for all network locations listed in the **Windows System and Security** panel.
- 8 Restart the Appliance to apply all of the changes.
- 9 Once the system has restarted, verify that the clock, language and region settings are correct. If they are still incorrect, make the appropriate changes before proceeding to the next step.
- 10 Enable file sharing for domain users by configuring the following settings in the **Advanced Sharing settings** window (Network and Sharing Center):
- Enable **Turn on network discovery**.
  - Enable **Turn on file and printer sharing**.

- Enable **Turn on network discovery**.
- Disable **Password protected sharing**. (Workgroup only)

11 Disable Action notifications.

- a Use the Windows **Start** menu to open the Windows **Control Panel**.
- b Select **System and Security > Action Center > Change Action Center Settings**.
- c In the **Security Messages** section, uncheck the following options:
  - **User Account Control**
  - **SmartScreen (Windows® Server 2012 R2 only)**
- d In the **Maintenance Messages** section, uncheck the following options:

Windows® Server 2012 R2	Windows® Server 2008 R2
Automatic Maintenance	Check for updates
Drive Status	
Device Software	
HomeGroup	
Storage Spaces	

e Click **OK**.

12 Disable automatic updates.

- a Use the Windows **Start** menu to open the Windows **Control Panel**.
- b Select **System and Security > Windows Update**.
- c Click **Change Settings**.
- d In the **Important Updates** section, select **Never check for updates** from the drop-down list.
- e Click **OK**.

## Configuring iTX on the GVSP-3T-WIN-2IO and GVSP-3TB-WIN-2+2IO

GVSP-3T-WIN-2IO and GVSP-3TB-WIN-2+2IO models are shipped with the required iTX software modules already installed, including Output Server 1.

As part of a first-time installation, some iTX components may need to be configured in order to integrate with the overall iTX system.

You will also need to add and configure the iTX channel(s) using Output Server 1. The number of playout channels depends upon the model of iTX Ployout Appliance 2, since GVSP-3TB-WIN-2IO provides only a single SD/HD output channel, while the GVSP-3TB-WIN-2+2IO provides dual SD/HD channel output.

---

**Note:** Output Server 2 can be installed and configured on the GVSP-3T-WIN-2IO and GVSP-3TB-WIN-2+2IO models. Please refer to the Output Server 2 Channel Configuration Guide for guidelines and instructions for further information and instructions.

---

**To integrate the iTX Payout Appliance 2 into an iTX system and add payout channels:**

- 1 Install iTX licenses.
  - a Obtain the iTX license file from your Grass Valley representative.
  - b Place a copy of the `.lic` file in the iTX Media Watcher's Inbox folder on your network. Consult your iTX system administrator if you are unsure of the location of the Media Watcher's Inbox folder.
- 2 Ensure that the Media Cache's name contains the payout appliance's hostname.
  - a Open the **Media Cache Configuration** window by double-clicking the **Cache Config** shortcut on the Windows desktop.
  - b Ensure that the **Cache Name** field is set to the unit's hostname followed by the suffix `-cache` (e.g. `iTX-Server-cache`).
  - c Click **Save**.
- 3 Specify the iTX Domain setting.
  - a Open the iTX Domain Configuration window by double-clicking the **Domain Config** shortcut on the Windows desktop.
  - b Enter the name of your iTX domain in the **iTX Domain** field and click **Save**.
- 4 Configure a first iTX payout channel:
  - a Open the **iTX Channel Configuration** window by double-clicking the **TXPlay Config** shortcut on the Windows desktop.
  - b In the **Unmodified Name** field, enter the name of the channel for this iTX Payout Appliance.
  - c In the **Playout** field, select the name of the video card type installed in the iTX Payout Appliance 2 and click **Save**.
- 5 (GVSP-3TB-WIN-2+2IO only) Add a second payout channel:

Only perform the following if you are running two iTX payout channels on the same Appliance.

  - a In the **iTX Channel Configuration** window, click the **Add Extra Channel** button
  - b Enter the name of the second channel.
  - c In the **Playout** field, select the name of the video card type installed in the iTX Payout Appliance 2 and click **Save**.
- 6 Start the **iTX Server Controller** by double-clicking the Windows desktop icon or using the Windows Start menu.

---

Note: If you want the services to start automatically when you start a machine and log onto the network, you need to add the program shortcut for the Server Controller to the Windows Startup folder. For instructions on how to do this, see the *Microsoft Windows Help* documentation.

---

## Configuring iTX on the GVSP-3T-WIN-4IO and GVSP-3TB-WIN-8IO

To integrate the iTX Payout Appliance 2 into an iTX system as a channel playout server, you must install and configure the required software modules, including Output Server 2.

GVSP-3TB-WIN-4IO and GVSP-3TB-WIN-8IO are not shipped with the iTX software modules already installed. As such, you must run the iTX Installer, using the iTX Setup shortcut on the desktop, to install the required software modules.

Please refer to the “Process Overview - Output Server 2 Installation and Channel Configuration” section in the *Output Server 2 Channel Configuration Guide* for instructions on how to install and configure the required iTX software components.



## Servicing the iTX Playout Appliance 2

This chapter provides information about service procedures that can be performed on-site in cases where a faulty component must be replaced.



**WARNING** All health and safety regulations and precautions must be observed as identified in [Important Safeguards and Notices](#), on page iii.

**IMPORTANT:** To ensure performance and preserve support and warranty agreements, only Grass Valley approved replacement parts must be used when servicing the iTX Playout Appliance 2. Contact Grass Valley’s Technical Support for precise part specifications and additional servicing guidance.

### Summary

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<i>Removing the Chassis Cover</i>	21
<i>Removing and Replacing the Bezel</i>	20
<i>Replacing a Hard Drive</i>	22
<i>Replacing a Power Supply Module</i>	22
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<i>Replacing the SDI Video I/O Card (Corvid 44 / 88)</i>	27

### Removing Power from the System

Before performing a service or maintenance task, we recommend using the following procedure to ensure that power has been removed from the system.

#### To completely remove power from the system:

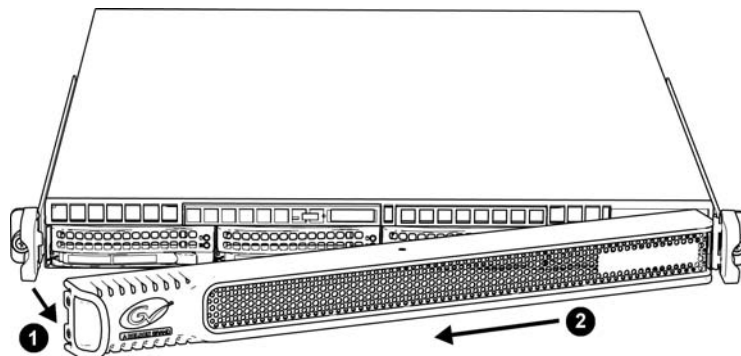
- 1 Use the operating system’s **Shutdown** command to power down the system.
- 2 Disconnect the unit’s two AC power cords from their power source (i.e. wall socket or power bar).
- 3 Remove the AC power cords from the two power supply modules on the rear of the unit.

## Removing and Replacing the Bezel

The iTX Playout Appliance 2 has a front bezel which protects the drives and other front panel components from accidental removal or damage. The bezel can be completely removed from the unit to expose the unit's front panel components.

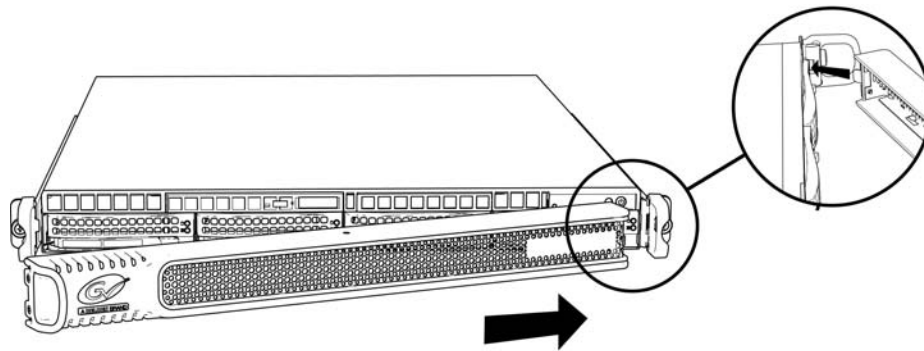
### To remove the front bezel:

- 1 Pull the left handle of the bezel slightly forward, away from the unit so that the bezel is angled.
- 2 Pull the right handle of the bezel to the left to dislodge the bezel tab and completely detach the bezel from the chassis.

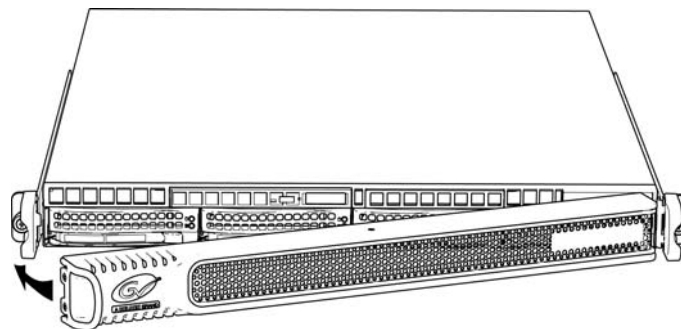


### To install a new bezel:

- 1 Insert the bezel's right-side tab into the bracket on the front of the chassis.



- 2 Push the bezel's left handle back toward the unit until the bezel clips onto the chassis.





## Removing the Chassis Cover

You can access the internal components of the iTX Playout Appliance 2 by removing the cover on the top side of the chassis.



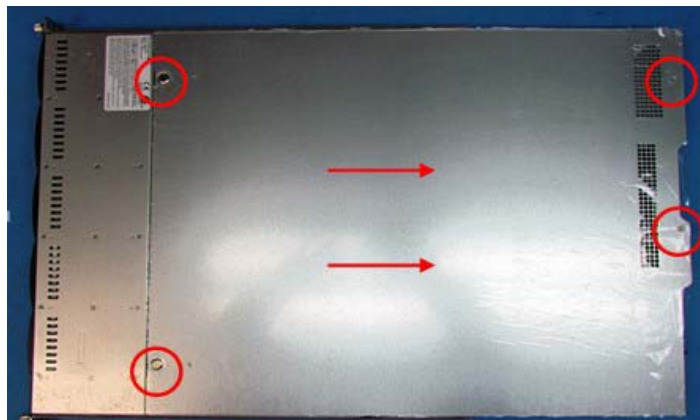
**WARNING - Power Disconnection**

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components. This unit has more than one power supply connection. All connections must be removed to de-energize the unit.

---

**To remove the top cover from the chassis:**

- 1 Remove the 2 Phillip screws from the rear of the cover.
- 2 Press the two release buttons along the front of the cover.
- 3 Slide the cover towards the rear.
- 4 Lift the cover upwards to completely remove it from the chassis.



## Replacing a Hard Drive

The front panel provides access to ten drive carrier bays, which are populated by two SSD drives and four SATA hard drives; leaving four of the drive bays empty.

The hard drives are hot swappable, meaning that you do not have to halt and shutdown the unit when replacing a single drive.

Complete instructions for removing and replacing a hard drive are provided in the "Installing Drives" section of the *SuperServer 1028U Series User's Manual*.

## Replacing a Power Supply Module

The rear panel provides access to two redundant 750 watt power supply modules. They automatically sense the input voltage between 100V to 240V, and operate at that voltage. An amber light on the power supply is illuminated when the power is switched off. A green light indicates that the power supply is operating.

If either of the power supply modules fail, the other module supports the full load and allows the system to operate without interruption. The unit's **Power** light, located in the front control panel, illuminates when a power supply failure is identified.

Complete instructions for removing and replacing a power supply are provided in the "Power Supply" section of the *SuperServer 1028U Series User's Manual*.

## Replacing a System Fan

A series of eight fans provide the cooling for the system by circulating the air through the inside of the chassis.

If a fan fails, the system continues to operate and the remaining fans ramp up to compensate for the faulty fan. If the system detects that a fan is inoperable, the **Information** light on the unit's front control panel begins to blink red. In such a case, we recommend replacing the fan at your earliest convenience.



### **WARNING - Hot swap fan**

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

---

Complete instructions for removing and replacing a fan are provided in the "System Fan Replacement" section of the *SuperServer 1028U Series User's Manual*.

## Replacing the Graphics Card



### WARNING - Power Disconnection

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components. This unit has more than one power supply connection. All connections must be removed to de-energize the unit.

### To remove and replace the graphics card:

- 1 Power down the system and remove power from the unit.
- 2 Disconnect all of the cables from the unit's rear panel.
- 3 Remove the unit from the rack and place on a solid, flat surface.
- 4 Remove the top cover from the chassis.
- 5 Remove the four screws (2 on rear, 2 on top) that secure the graphics card and video card bracket to the frame.



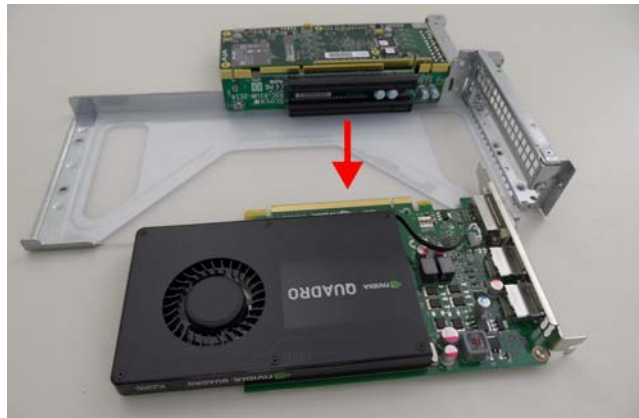
- 6 Carefully lift the bracket upwards to remove the entire bracket from the chassis. The graphics card and video card remain attached to the bracket.



- 7 Remove the screw that secures the graphics card to the bracket.



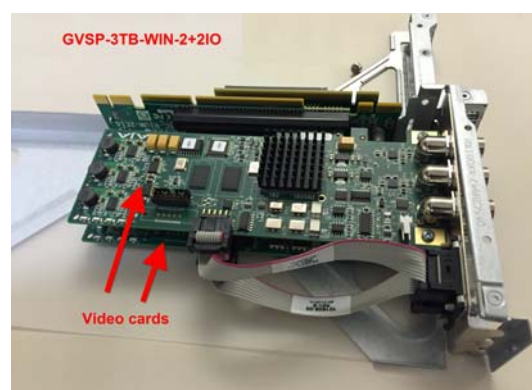
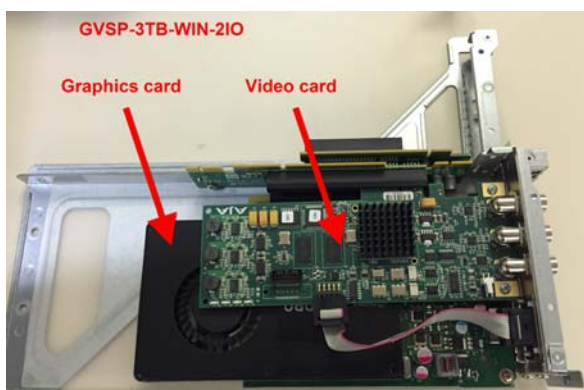
- 8 Remove the graphics card from the bracket by carefully pulling it away from the middle of the bracket.



- 9 Replace the graphics card by sliding the new graphics card into the bracket, ensuring that its connector is aligned and securely interfacing with the bracket's middle connector.
- 10 Fasten the screw that secures the graphics card to the bracket.
- 11 Align the bracket with above its location within the chassis, ensuring that both cards' connectors are align with the motherboard's connectors. Press down on the bracket to ensure proper connection.
- 12 Fasten the four screws to secure the bracket to the chassis.
- 13 Replace the cover of the chassis and reinstall the unit.

## Replacing the SDI Video I/O Card (Corvid LP)

The following procedure applies only to iTX Playout Appliance 2 units that are equipped with the AJA Corvid LP card(s) -- GVSP-3TB-WIN-2IO and GVSP-3TB-WIN-2+2IO.



### WARNING - Power Disconnection

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components. This unit has more than one power supply connection. All connections must be removed to de-energize the unit.

---

**To remove and replace the SDI video I/O card(s) (Corvid LP):**

- 1 Power down the system and remove power from the unit.
- 2 Disconnect all of the cables from the unit's rear panel.
- 3 Remove the unit from the rack and place on a solid, flat surface.
- 4 Remove the top cover from the chassis.
- 5 Remove the four screws (2 on rear, 2 on top) that secures the card bracket to the frame.



- 6 Carefully lift the bracket upwards to remove the entire bracket from the chassis. The cards remain attached to the bracket.

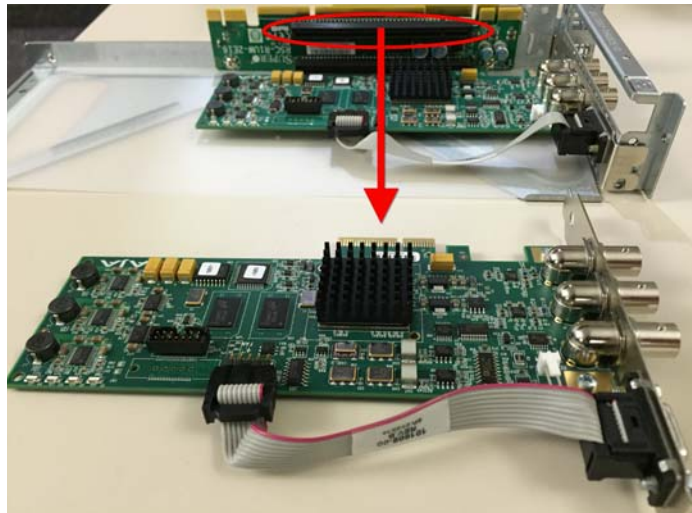


- 7 Remove the screw(s) that secures the video card(s) to the bracket.

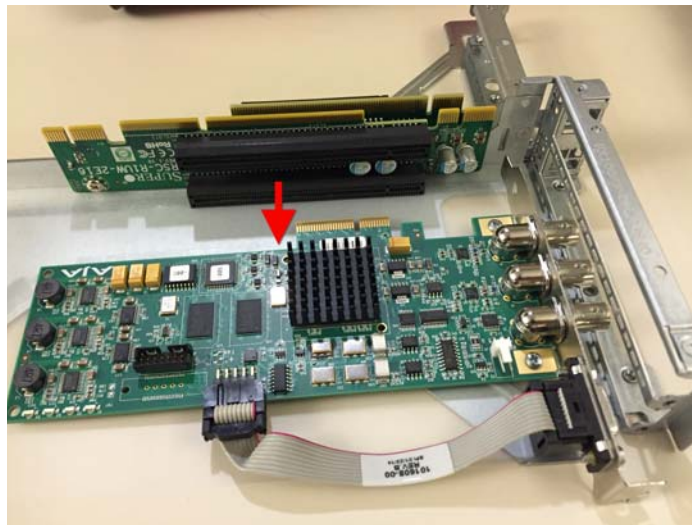




- 8 Remove the top video card from the bracket by carefully pulling it away from the middle of the bracket.



- 9 On a GVSP-3TB-WIN-2+2IO, if you would like to replace the lower card, remove the top video card from the bracket by carefully pulling it away from the middle of the bracket.



- 10 Replace the video card(s) by sliding the new video card(s) into the bracket, ensuring that its connector is aligned and securely interfacing with the bracket's middle connector.
- 11 Fasten the screw that secures the video card to the bracket.
- 12 Align the bracket with above its location within the chassis, ensuring that both cards' connectors are align with the motherboard's connectors. Press down on the bracket to ensure proper connection.
- 13 Fasten the four screws to secure the bracket to the chassis.
- 14 Replace the cover of the chassis and reinstall the unit.

## Replacing the SDI Video I/O Card (Corvid 44 / 88)

The following procedure applies only to iTX Payout Appliance 2 units that are equipped with the AJA Corvid 44 or 88 card -- GVSP-3TB-WIN-4IO and GVSP-3TB-WIN-8IO.



### WARNING - Power Disconnection

The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components. This unit has more than one power supply connection. All connections must be removed to de-energize the unit.

### To remove and replace the video I/O card (Corvid 44 / 88):

- 1 Power down the system and remove power from the unit.
- 2 Disconnect all of the cables from the unit's rear panel.
- 3 Remove the unit from the rack and place on a solid, flat surface.
- 4 Remove the top cover from the chassis.
- 5 Remove the four screws (2 on rear, 2 on top) that secures the graphics card and video card bracket to the frame.



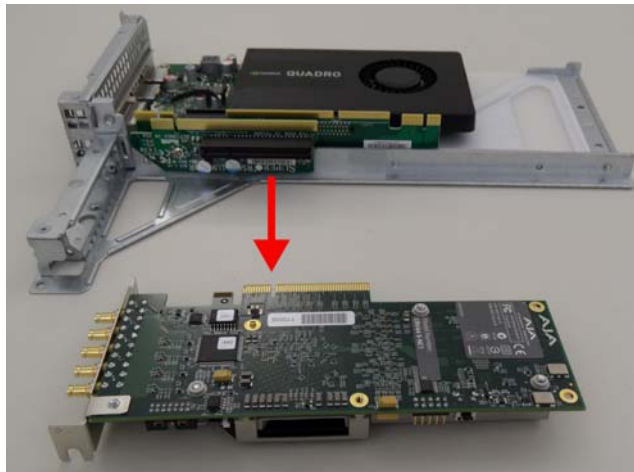
- 6 Carefully lift the bracket upwards to remove the entire bracket from the chassis. The graphics card and video card remain attached to the bracket.



- 7 Remove the screw that secures the video card to the bracket.



- 8 Remove the video card from the bracket by carefully pulling it away from the middle of the bracket.



- 9 Replace the video card by sliding the new video card into the bracket, ensuring that its connector is aligned and securely interfacing with the bracket's middle connector.
- 10 Fasten the screw that secures the video card to the bracket.
- 11 Align the bracket with above its location within the chassis, ensuring that both cards' connectors are align with the motherboard's connectors. Press down on the bracket to ensure proper connection.
- 12 Fasten the four screws to secure the bracket to the chassis.
- 13 Replace the cover of the chassis and reinstall the unit.





## **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 web site ([www.grassvalley.com](http://www.grassvalley.com)).

An online form for e-mail contact is also available from the web site.

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