G-SPEED™ eS Windows Installation Guide

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G-SPEED eS INSTALLATION GUIDE - Windows

IMPORTANT SAFEGUARDS

1. READ INSTRUCTIONS
All the safety and operating instructions should be read before the unit is operated.

2. RETAIN INSTRUCTIONS
The safety and operating instructions should be retained for future reference.

3. HEED WARNINGS
All Warnings on the unit and in the operating instructions should be adhered to.

4. FOLLOW INSTRUCTIONS
All operating and use instructions should be followed.

5. ATTACHMENTS
Do not use attachments not recommended by the unit’s manufacturer as they may cause hazards.

6. WATER AND MOISTURE
Do not use this unit near water—for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.

7. ACCESSORIES
Do not place this unit on an unstable cart, stand, tripod, bracket or table. The unit may fall, causing serious injury and serious damage.

8. VENTILATION
Openings in the front and back of the unit are provided for ventilation to ensure reliable operation of the unit and to protect it from overheating. These openings must not be blocked or covered. This unit should not be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer’s instructions have been adhered to.

9. POWER SOURCES
This unit should be operated only from the type of power source indicated on the rating label. If you are not sure of the type of power supply to your facility, consult your local dealer or power company.

10. GROUNDING AND POLARIZATION
This equipment is supplied with a power cord with a US style 3-wire grounding type plug at one end and a 3-wire IEC standard connector at the other. The 3-wire grounding type plug will fit into a US style grounding type power outlet and the IEC connector is intended to plug into the Netcon unit. The 3-wire grounding type plug is a safety feature. If you are unable to insert the plug into the outlet, do not force it. Contact your electrician to replace the obsolete outlet. DO NOT DEFEND THE SAFETY PURPOSE OF THE GROUNDING TYPE PLUG. For use in Foreign Countries, contact your local Netcon dealer or representative to obtain a power cord with a locally compatible 3-wire grounding plug on one end and a 3-wire IEC standard connector on the other.

11. POWER CORD PROTECTION
Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed on them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit the unit.

12. SERVICING
Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltages or other hazards. (See Caution Symbols at rear of power supply chassis.) Refer all servicing to qualified service personnel.

WICHTIGE SICHERHEITSHINWEISE

1. LESEN SIE DIE HINWEISE
Lesen Sie bitte alle Sicherheitshinweise und die Bedienungsanleitung bevor Sie das Gerät in Betrieb nehmen.

2. AUFBEWAHREN DER HINWEISE
Behalten Sie die Bedienungsanleitung und alle Sicherheitshinweise für spätere Verwendung auf.

3. BEACHTEN SIE DIE WARNUNGEN
Alle Warnungen und Hinweise auf dem Gehäuse und in der Anleitung sollten unter allen Umständen beachtet werden.

4. FOLGEN SIE DEN ANWEISUNGEN
Alle Benutzer- und Bedienungsanweisungen sollten befolgt werden.

5. ERWEITERN SIE
Benutzer, Personen, die nicht von Ihnen ausgewiesen wurden, die nicht von Ihnen ausgewiesen werden, die nicht von Ihnen ausgewiesen werden.

6. WASSER UND FEUCHTIGKEIT

7. ZUBEHÖR
Stellen Sie sicher, dass das Gerät nicht auf einen wackeligen Untergrund gestellt wird. Das Gerät sollte nicht in einer Heizung oder vor anderen Wärmequellen aufgestellt werden. Dieses Gerät könnte nicht in einem Einbaurahmen wie einem Schrank oder einem Rack installiert werden, solange eine ausreichende Belüftung nicht sichergestellt ist.

8. BELÜFTUNG
Öffnungen an der Vorder- und Rückseite des Gerätes sind für die Belüftung vorgesehen, um eine zuverlässige Funktion zu garantieren und jegliche Überhitzung vorzubeugen. Diese Öffnungen dürfen weder verdeckt noch zugemauert werden. Das Gerät sollte niemals in der Nähe einer Heizung oder an einem anderen Wärmequelle aufgestellt werden. Das Gerät sollte stets in einem Einbausystem wie einem Schrank, oder einem Rack installiert werden, sofern eine ausreichende Belüftung nicht sichergestellt ist.

9. NETZANSCHLUSS (STROMVERSORGUNG)
Das Gerät sollte nur mit der Spannungsversorgung, die auf dem Geräteaufkleber ausgewiesen ist, betrieben werden. Sollten Sie nicht sicher sein, welche Art der Spannungsversorgung in Ihrem Betrieb vorherrscht, fragen Sie bei Ihrem Händler oder der Stromversorgungsgesellschaft nach.
MEDIDAS PREVENTIVAS IMPORTANTES

1. LEA LAS INSTRUCCIONES
   Deberá leer todas las instrucciones sobre seguridad y operación antes de operar la unidad.

2. GUARDE LAS INSTRUCCIONES
   Deberá guardar las instrucciones sobre seguridad y operación para referencias futuras.

3. PRESTE ATENCIÓN A LAS ADVERTENCIAS
   Deberá cumplir con todas las Advertencias indicadas en la unidad o en las instrucciones de operación.

4. SIGA LAS INSTRUCCIONES
   Deberá seguir todas las instrucciones sobre operación y uso.

5. ACCESORIOS
   No utilice accesorios que no hayan sido recomendados por el fabricante de la unidad de que pueden crear un peligro.

6. AGUA Y HUMEDAD
   No utilice esta unidad cerca de agua—por ejemplo, cerca de una bañera, lavabo, fregadero o tina, en un sótano mojado o cerca de una piscina.

7. EQUIPO AUXILIAR
   No coloque esta unidad sobre bases, tableros, soportes o estantes inestables. La unidad se puede caer, causando lesiones graves y daños severos.

8. VENTILACIÓN
   Abra las ventanas del escritorio y en la parte posterior de la unidad. Se proporciona ventilación para ventilar la unidad. Para asegurar una operación estable, deje que el ventilador de refrigeración funcione.

9. FUENTES DE ENERGÍA
   La unidad deberá operar únicamente a partir del tipo de fuente de energía indicada en el etiqueta correspondiente. Si no está seguro del tipo de fuente de energía en su edificio, consulte a su distribuidor local o compañía de suministro de energía eléctrica.

10. PUESTA A TIERRA Y POLARIZACIÓN
    El equipo se entrega con un cable alimentador con un enchufe con puesta a tierra de 3 alambres y un extremo y el enchufe estándar IEC (Equipo Electrónico Internacional de tres alambres en el otro. El enchufe con puesta a tierra de 3 alambres se conecta a un tomacorriente con puesta a tierra y el enchufe con puesta a tierra de 3 alambres en una unidad Medusa. El enchufe con puesta a tierra de 3 alambres en un extremo y el enchufe estándar IEC en el otro compatible con un disyuntor de laboratorio de Medusa o su representante para obtener un cable alimentador con un enchufe con puesta a tierra de 3 alambres en un extremo y un enchufe estándar IEC en el otro compatible en su unidad.

11. PROTECCION DEL CABLE ALIMENTADOR
    Los cables alimentadores se deben de conectar de manera que se evite que sean pisados o pellizcados por algún equipo o muebles puestos encima o cerca del cable. Mantenga un espacio suficiente para evitar el riesgo de electrocución.

12. SERVICIOS
    No intente dar servicio a esta unidad por sí mismo en virtud de que abrir la unidad o retirar alguna cubierta lo puede exponer a voltajes peligrosos o otros riesgos. Permita que el servicio lo realice personal del servicio calificado.

MISES EN GARDE IMPORTANTES

1. LISEZ LES DIRECTIVES
   Lisez toutes les directives concernant le sécurité et le fonctionnement de l'appareil avant de l'utiliser.

2. CONSERVEZ LES DIRECTIVES
   Conservez toutes les directives concernant la sécurité et le fonctionnement de l'appareil pour référence ultérieure.

3. RESPECTEZ LES MISES EN GARDE
   Respectez toutes les mises en garde sur l'appareil et dans le manuel d'utilisation.

4. SUIVEZ LES DIRECTIVES
   Suivez toutes les directives concernant le fonctionnement et l'utilisation de l'appareil.

5. ACCESSOIRES
   Ne pas utiliser d'accessoires non recommandés par le fabricant de l'appareil, car le peuvent représenter un danger.

6. EAU ET HUMIDITÉ
   Ne pas utiliser l'appareil dans un endroit où il risque d'être mouillé, notamment dans un sous-sol humide et à proximité d'une baignoire, d'un lavabo, d'un bac de douche, d'une piscine ou d'une barrière de mer.

7. BAIES ET SUPPORTS
   Ne pas placer l'appareil dans une baie ou sur un support, un trépied, une console ou une table instable. L'appareil pourrait tomber et subir des dommages importants ou infliger de graves blessures.

8. AIRÉATION
   Le boîtier de l'appareil comporte des fentes d'aération à l'avant et à l'arrière pour assurer le bon fonctionnement de l'appareil et le protéger de la surchauffe. Ces fentes ne doivent pas être obstruées en aucun cas. Pour éviter le blocage des fentes, ne placez pas d'accessoires ou d'objets de valeur à proximité de l'appareil.

9. ALIMENTATION
   Ne brancher l'appareil que dans une prise de courant du type dédié sur l'attelage signalement. En cas de doute sur le type d'alimentation disponible, consulter les compagnies d'électricité ou le distributeur local.

10. MISE À LA TERRE ET POLARISATION
    Le cordon d'alimentation fourni avec l'appareil est doté d'une fiche polarisée à trois branches et de style américain à une extrémité et d'un connecteur femelle CEE standard à l'autre extrémité. La fiche polarisée à trois branches de l'appareil peut être branchée dans une prise de courant polarisée de style américain et le connecteur CEE doit être reçu droit à l'appareil. La fiche peut être utilisée à trois branches comme une mesure de sécurité. Si elle ne s'insère pas correctement, ne la forcez pas. Contacter un électricien pour rectifier la prise défectueuse.

11. PROTECTION DU CORDON D'ALIMENTATION
    Les cordons d'alimentation doivent être placés de manière qu'ils ne soient ni pelotonnés ni écrasés par des objets et une attention particulière doit être portée à la fiche, à la prise et au point de sortie de l'appareil.

12. RÉPARATION
    Ne pas tenter de réparer l'appareil, car l'ouverture ou le retrait du boîtier peut vous exposer à des tensions dangereuses ou à d'autres risques. Confier toute réparation à un technicien qualifié.
1. INTRODUCTION
Thank you for purchasing G-SPEED eS from G-Technology, Inc. (G-Tech)! Specifically designed for professional content creation applications, G-SPEED eS features a high-speed 3Gbit/sec eSATA interface and when used in conjunction with the optional G-Tech PCI Express (PCie) RAID controller provides RAID 0, 1, 5, 10 and JBOD functionality with greater than 2TB support in Windows 32bit environments. Up to four G-SPEED eS units can be attached to the G-Tech RAID controller for storage capacities to 16 TB and data rates over 600 MB/sec. G-SPEED eS supports multi-stream video editing workflows.

2. SAFETY PRECAUTIONS
The disk drives contained in your G-SPEED eS are delicate electronic instruments and are susceptible to damage due to excessive physical shock. Place the unit in a vented area away from moisture or liquids. Please handle the unit with care. Do not open the case. Doing so will void the warranty. If the Product is returned with damage caused by improper handling, the warranty will be void and liability will rest with the user.

3. SYSTEM REQUIREMENTS
- PCIe equipped workstation
- Microsoft Windows 2000/XP/2003/Vista
- G-Tech PCie RAID Controller or third party port multiplier aware eSATA host adapter

4. WHAT’S IN THE BOX
Take a moment to ensure that the following items are included in the box. If anything is missing, please call G-Tech at (310) 449-4599. Please keep the shipping container and packing materials. In the unlikely event that you need to return G-SPEED eS to us for any reason, you must use the G-Tech shipping container. If the Product is returned damaged caused by improper packaging, the warranty will be void and liability will rest with the user.

- G-SPEED eS storage system
- 4 removable SATA drive modules (installed in unit)
- (2) disk module keys
- 1-meter eSATA cable
- AC Power cable
- Optional – G-Tech PCie RAID controller
- Configuration Utility & Installation CD
5. **G-SPEED eS OVERVIEW**

![Diagram of G-SPEED eS](image)

- **(4) Removable Disk Drive Modules**
- **Drive Module**
  - Power/Activity LED
- **Disk Module**
  - Lock Hole
- **Power Supply**
  - LED
- **Temperature/Fan RPM**
  - Warning LED
- **ON/OFF Switch**
- **AC Input**
- **Cable Lock Hole**
- **Removable Fan**
- **3 GB/sec eSATA Port**

6. **OPTIONAL G-TECH PCIe RAID CONTROLLER OVERVIEW**

The optional G-Tech PCIe RAID controller connects G-SPEED eS to your PCIe equipped workstation and provides RAID 0, 1, 5, 10 & JBOD functionality. You will choose your level of RAID protection when you set up the G-SPEED eS in Section 8. For an explanation of supported RAID levels, please refer to Appendix B.

![PCIe x4 interface](image)

- **RAID Engine**
- **(4) High-speed 3 Gb/s eSATA ports. Supports up to (4) G-SPEED eS systems**
- **G-SPEED eS is also compatible with third-party Windows port multiplier aware eSATA host adapters. Refer to your host adapter documentation to set up G-SPEED eS with these boards.**
7. G-SPEED eS AUDIBLE ALARMS

7.1 The G-SPEED eS enclosure is equipped with an audible alarm that sounds when:

1. The internal temperature of the G-SPEED eS enclosure reaches a temperature of 60° centigrade and/or
2. When the main FAN fails or the RPM of the fan slows to a state where the fan can longer adequately cool the system.

In addition to the audible alarm, the Temperature/Fan Warning LED located on the front bezel of G-SPEED eS will illuminate.

If you hear an audible alarm and see the RED warning LED on the front of G-SPEED eS, stop using G-SPEED eS immediately. Check to see if the fan is spinning and move the unit to a cooler location. If the problem persists, contact G-Tech Support.

7.2 The G-Tech RAID controller is also equipped with an audible alarm that sounds when:

1. A disk drive failure occurs
   or
2. When the G-SPEED eS is removed from the RAID controller without first selecting “Unplug” in the Array Maintenance menu in the web GUI.

If you hear an audible alarm coming from the G-Tech RAID controller, see Section 11 “What to do in the Event of a Disk Drive Failure”. See Appendix B.1.7.2 for information on the proper way to hot “Unplug” G-SPEED eS.

8. SETTING UP G-SPEED eS WITH THE G-TECH PCIe RAID CONTROLLER

Connecting G-SPEED to your workstation and configuring your system takes just a few steps as outlined below. For this example we will be installing G-SPEED eS on a Windows XP system. The installation is similar for Windows 2000, 2003 and Vista.

8.1 Installing the G-Tech PCIe RAID Controller

1. Install the G-Tech RAID controller into an available PCIe slot in your workstation.

2. Secure the RAID controller in place.
8.2 Attaching G-SPEED eS to the G-TECH RAID Controller

1. Attach one end of the supplied eSATA cable to the eSATA port located on the back of G-SPEED eS.

2. Attach the other end of the eSATA cable to Port 1 (port closest to motherboard) on the G-Tech RAID controller as shown below.

3. Attach the power cord to the back of G-SPEED eS and connect the other end to AC power.

4. Power on G-SPEED eS.

8.3 Installing the G-Tech PCIe RAID Controller Software

There are three steps required to fully install the software for the G-SPEED eS Controller.

1. Install the Windows driver
2. Update the Controller firmware
3. Installing the web GUI

Check for software updates at http://www.g-technology.com/Support/

1. Install the G-SPEED eS Windows driver
   a. Power on the workstation
   b. Insert the G-Tech Product CD into the CD-ROM drive

   When the CD loads a welcome screen may appear. Close this window.

   c. When the system boots the "Found New Hardware Wizard" will appear. Select "Install from a list or specific location" and click <Next>.
d. Select “Don’t Search, I will choose the driver to install” and click <Next>.

[Image: Found New Hardware Wizard]

Click on the <Browse> Button and navigate to the CD-ROM drive containing the G-Tech Product CD. Continue to “\Manuals-Drivers\G-SPEED eS\PC\GSeS Driver Win-v1.0” Select the folder for your operating system and click <OK>.

f. Click on the <Browse> Button and navigate to the CD-ROM drive containing the G-Tech Product CD. Continue to “\Manuals-Drivers\G-SPEED eS\PC\GSeS Driver Win-v1.0” Select the folder for your operating system and click <OK>.

[Image: Install From Disk]

Select “G-SPEED eS RAID Controller and click <Next>.

[Image: Found New Hardware Wizard]
h. When the Windows Logo warning screen appears click <Continue Anyway>.

i. The RAID controller driver will install and the Wizard will complete. Click <Finish>.

j. A new “Found New hardware Wizard” will open for the “G-Tech RCM device.” Click <Next>.

k. As before, click on “Don’t search. I will choose the driver to install.”
1. Select “G-SPEED es RAID Controller” and click <Next>.

2. Update the G-SPEED eS Controller firmware

   a. Insert the G-Tech Product CD into the CD-ROM / DVD drive. When the disk loads a welcome screen should appear. Click on the <Manuals / Drivers> link.

   b. This will open Windows Explorer. Navigate to the “G-SPEED eS\PC\GSeS Firmware-v2.2c” folder. Double-click “hptflash.exe” to launch the flash utility.

   NOTE: If the Menu screen does not appear, the “autorun” feature may not be enabled on your workstation. To load the menu manually go to the START menu and click on “Run.” Enter the drive letter of your CD-ROM containing the Product CD and then “autorun.exe.” For example “D:\autorun.exe”

m. The RCM Device driver will install and the Wizard will complete. Click <Finish>. This completes the driver installation.

n. Remove the G-Tech Product CD.
o. Restart your workstation.
c. Click <Open...>.

d. Select “rr231.xpm.22c” and click <Open>.

e. Click <Flash!> to begin the update process.

f. When the process is completed click <OK>.

g. Remove the G-Tech Product CD.

h. Restart your workstation.

3. **Installing the G-SPEED eS Web GUI.**
   
a. Insert the G-Tech Product CD. When the disk loads a welcome screen should appear. Click on the <Manuals / Drivers> link.
b. Navigate to the folder: “Manuals-Drivers\G-SPEED eS\PC\GSeS WEB GUI-vX.X” Double click on “Setup.exe” and follow the onscreen instructions, accepting the defaults.

c. When the installation is complete click <Finish>.

d. The Web GUI is ready to be launched and configure your G-SPEED eS.

9. SETTING UP G-SPEED eS USING THE WEB GUI

The G-Tech RAID controller web GUI is used to configure and monitor the G-SPEED eS system. The GUI is accessed using any web browser such as Safari, Internet Explorer or equivalent. This section will describe how to setup the G-SPEED eS on a Windows workstation.

**NOTE:** Windows 2000 / XP are 32 bit operating systems with a built-in limitation that logical disks cannot be greater than 2TB (2048GB). The G-SPEED eS RAID Controller overcomes this barrier with a new technology, Variable Sector Size (VSS). VSS increases the sector size presented to the operating system making it possible to now have logical disks of up to 16TB.

9.1 Accessing the G-Tech PCIe RAID Controller Web GUI

1. Open your web browser and enter the following address: https://localhost:7402

2. The following Security Alert window will appear. Click the <YES> button.

**NOTE:** For easy access to the G-SPEED eS Web GUI save the web address in your favorites.
3. Enter “admin” as the User Name and “0000” (four zeros) as the Password and click on the <Login> button.

Note: See appendix A.4.5 for instructions on changing the password.

4. The main screen of the web GUI will appear as shown below. Each of the four drives in the unit are displayed in the “Physical Device Information” section of the GUI.

Note: The G-SPEED eS is shipped initialized as a RAID 0 array formatted for Mac OSX. This configuration needs to be deleted and re-created to function correctly on your Windows workstation. Section 9.2 covers this process.

NOTE: Please refer to APPENDIX A for detailed information on the features of the G-Tech RAID Controller web GUI.
9.2 Configuring the RAID level of G-SPEED eS

The G-SPEED eS/G-Tech RAID controller combination can be configured in RAID 0, 1, 5, 10 and JBOD. (See Appendix B for an explanation of RAID levels) Follow the directions below to setup the system.

1. Launch the G-Tech RAID Controller web GUI.

2. Click on the “Maintenance” Link and the window shown below will appear. Click on <Delete> in the Array Maintenance Window.

3. Click the <OK> button to proceed.

4. The GUI will refresh and the array is now deleted. Click the <Create Array> button. The “Create Array” page will appear.
5. The Create Array page is where you configure the new array and all its parameters. In this example we will setup a RAID 0 array. (To set up a different RAID level simply select it from the dropdown menu labeled “Array Type.”)

Select RAID 0 for “Array Type”, enter **G-SPEED eS** for “Array Name”.

6. Click the <Select All> to quickly select all the disks for the array.

7. To create an array less than the maximum available, enter the value in MB in the Capacity field.

8. If you are creating an array of Greater than 2TB, choose the value for Variable Sector Size as indicated in the table below.

<table>
<thead>
<tr>
<th>Array Capacity</th>
<th>Sector Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 2TB</td>
<td>512</td>
</tr>
<tr>
<td>2TB -&gt; 4TB</td>
<td>1k</td>
</tr>
<tr>
<td>4TB -&gt; 8TB</td>
<td>2k</td>
</tr>
<tr>
<td>8TB -&gt; 16TB</td>
<td>4k</td>
</tr>
</tbody>
</table>

**NOTE:** In this example we are creating a RAID 0 array. The system can also be set up in RAID 1, 5, 10 or JBOD mode by selecting the appropriate setting in the “Array Type” pull-down.

**NOTE:** When creating redundant arrays (RAID 1 or RAID 5) the initialization process takes time. For RAID 5 it takes approximately 1hr 45m per TB of final capacity.

**NOTE:** Windows 2000 / XP are 32 bit operating systems with a built-in limitation that logical disks cannot be greater than 2TB (2048GB). The G-SPEED eS RAID Controller overcomes this barrier with a new technology, Variable Sector Size (VSS). VSS increases the sector size presented to the operating system making it possible to now have logical disks of up to 16TB.
9. Click <OK> on the warning message that appears.

10. Click the <Create> button and the array will begin to initialize. A popup will appear confirming the array has been created and is now initializing. Click <OK>.

11. The GUI will reload indicating that the G-SPEED eS has completed initializing the RAID 0 array.

12. Your G-SPEED eS is now ready to be formatted for use with your operating system. See Appendix D for detailed instructions on using Disk Management to format the G-SPEED eS for Windows XP.

10. CONFIGURING TWO G-SPEED eS UNITS IN RAID 5 MODE

Follow the directions below to configure two G-SPEED eS arrays in RAID 5 mode using the G-Tech RAID controller.

1. Ensure that the G-Tech RAID controller is properly installed and the driver and web GUI are loaded.

2. Attach both G-SPEED eS units to the G-Tech RAID controller as shown below, power the units and restart your computer.

3. Launch the G-Tech RAID Controller web GUI. With the two units attached to the G-Tech RAID controller, the GUI will display information like that shown below.

NOTE: When creating redundant arrays (RAID 1 or RAID 5) the initialization process takes time. For RAID 5 it takes approximately 1hr 45m per TB of final capacity.
4. Click on the “Maintenance” link next to the array with “OS Name” GS Disk 1_0. The window shown below will appear.

5. Click the <Delete> button. The following window will appear.

![Delete Button](image)

**WARNING:** This will delete any data stored on G-SPEED eS.

6. Click the <OK> button to delete the array.

7. Repeat the procedure for GS Disk 1_1. Click on the “Maintenance” link next to the array with “OS Name” GS Disk 1_1. The window below will appear.

8. Click the <Delete> button and the following window will appear.

![Delete Confirmation](image)

**WARNING:** This will delete any data stored on G-SPEED eS.

9. Click the <OK> button to delete the array. Both arrays have now been deleted as shown below. Click the <Create Array> button. The “Create Array” window will appear.
10. In this window select the following values as shown:
   Select **RAID 5** for “Array Type”;
   Enter **G-SPEED-eS-R5** for “Array Name:”
   Select **Foreground** for “Initialization Method:”
   and **Write Back** for “Cache Policy:”
   Click <Select All> button to select all disks then click the <Create> button to begin the initialization process.

11. A popup will appear confirming the array has been created and is now initializing. Click <OK>.

12. The GUI will reload indicating that the G-SPEED eS is initializing.

13. The RAID 5 initialization process takes approximately 1hr 45m per TB of final capacity. Once the initialization process is complete, the GUI will indicate “Type” as **RAID 5** and “Status” as **Normal**.

14. Your G-SPEED eS is now ready to be formatted for use with your operating system. See Appendix D for detailed instructions on using Disk Management to format the G-SPEED eS for Windows XP.
11. WHAT TO DO IN THE EVENT OF A DISK DRIVE FAILURE

The G-Tech RAID controller continually monitors the health of each of the disk drives in G-SPEED eS. In the event of a disk failure, an audible alarm will sound. The web GUI will also report the failed drive and its physical position.

**NOTE:** If G-SPEED eS was configured in a protected RAID mode (RAID 1, 5 or 10), a drive failure does not result in data loss. However, the array is now in an unprotected state and the failed drive should be replaced as soon as possible to avoid data loss.

Follow the steps below to identify and replace a failed drive.

1. Launch the web GUI.
2. Mute the alarm by clicking on the <Beeper Mute> button.
3. The GUI will display information like that shown below. An exclamation mark on the G-SPEED eS icon indicates that the “Status” of the array is Critical. The lower portion of the GUI indicates which drive in which G-SPEED eS unit has failed.

![GUI showing failed drive](image)

In this example there are two G-SPEED eS units connected to the G-Tech RAID controller. Drive 3 of the G-SPEED eS connected to Port 2 of the G-Tech RAID controller has failed.

4. Remove the failed drive (In this example Drive 3, of the G-SPEED eS connected to port 2 of the G-Tech RAID controller) by inserting the provided key in to the lock hole and gently sliding the drive module out of the enclosure.

![Removal instructions](image)

**WARNING:** Make absolutely sure that you remove the failed drive indicated by the GUI. If multiple G-SPEED eS units are connected to the G-Tech RAID controller, it is a good idea to follow the cable to ensure you know which Port # the array is connected to on the RAID controller.

**REMOVING THE WRONG DRIVE WILL RESULT IN THE LOSS OF THE ARRAY AND ALL OF THE CONTENT STORED ON G-SPEED eS.**
5. Replace the failed drive with a new disk module and secure in place. Once the drive has spun up to speed, the GUI will indicate that the array is rebuilding (The “Status” shows Rebuilding and the percentage complete) as shown below. The rebuild time is approximately 2 hours per TB.

6. Once the rebuild is complete, G-SPEED eS is back to Normal and protecting your valuable data once again.

12. TECHNICAL SUPPORT
If you encounter any difficulties while installing G-SPEED, please contact G-Tech Technical Support via one of the following ways:

   Telephone: (310) 449-4599  
   Fax: (310) 449-4670  
   E-mail: support@g-technology.com  
   Internet: http://www.g-technology.com/support

When contacting Technical Support, make sure to be in front of your computer and have the following information readily available:

   • Your G-SPEED eS serial number (on bottom of unit)  
   • Operating system and version  
   • Computer brand and model  
   • eSATA host adapter brand and model  
   • Amount of memory installed  
   • Other devices attached to your computer

13. LIMITED WARRANTY
G-Technology Inc. (G-Tech) warrants your Product against any defect in material and workmanship, under normal use, for the designated warranty period. If the Product should become defective within the warranty period, G-Tech, will at its discretion, repair or replace the Product. Repair or replacement parts or Products will be furnished on an exchange basis and will be either new or reconditioned. All replaced parts or Products shall become the Property of G-Tech. This warranty shall not apply if the Product has been damaged by accident, misuse, abuse or as a result of unauthorized service or parts. Warranty service is available to the purchaser by obtaining a Return Material Authorization number (RMA) and by delivering the Product during the warranty period to an authorized G-Tech service facility or to G-Tech. The purchaser shall bear all shipping, packing and insurance costs and all other costs, excluding parts and labor, necessary to effectuate repair, replacement or refund under this warranty. All returned Product must be shipped to G-Tech in the original shipping container.

For more information on how to obtain warranty service, an RMA number or to acquire shipping materials, contact G-Tech at 1653 Stanford Street, Santa Monica, CA 90404, (310) 449-4599 or support@g-technology.com.

IN THE EVENT A PRODUCT BECOMES DEFECTIVE DURING THE WARRANTY PERIOD, THE PURCHASER'S EXCLUSIVE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED ABOVE. INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION LOSS OF DATA, ARISING FROM BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ARE NOT THE RESPONSIBILITY OF G-TECH AND, TO THE EXTENT PERMITTED BY LAW, ARE HEREBY EXCLUDED BOTH FOR PROPERTY DAMAGE, AND TO THE EXTENT NOT UNCONSCIONABLE, FOR PERSONAL INJURY DAMAGE.
APPENDIX A: WEB GUI

1. Manage:
   **Array**: This is the main screen of the G-SPEED eS web GUI. G-SPEED eS is configured and monitored from this page. (See Appendix A.1 for details)
   **Devices**: Hard drive parameters are modified on this page (you should not make any changes on this page as the drives are configured for optimal performance with the G-SPEED eS).
   **Spare Pool**: When configured in protected mode drives can be assigned to a “spare pool” (sometimes called hot spare). These drives will be automatically added to the Array in the event of a drive failure.

2. Events: All events of the G-SPEED eS controller are recorded here, such as array changes and failures. These events can be emailed by setting up email notification under the “Settings” tab.

3. Tasks: Schedule the G-Tech controller to automatically verify the integrity of the RAID volume.

4. Settings: Configure the G-SPEED eS controller settings such as login password and email notification. See Appendix A.4 for details

5. Drive Status: Check the status of all connected hard drives including detailed SMART data.

6. Logout: Say goodbye

A.1 Manage: Array

1. **Name**: Array name (as shown in GUI only).

2. **Type**: Displays RAID level of array.

3. **Capacity**: you guessed it... capacity of the array.

4. **Cache Policy**: Displays current write cache policy for RAID protected arrays. For more info see appendix B.1.7.7

5. **OS Name**: Controller assigned name that will display in Disk Utility.

6. **Status**: Displays current status of array.
   - **Normal**: All systems go
   - **Critical**: Drive failure has occurred
   - **Initializing**: Building RAID 1, 5 or 10 array
   - **Rebuilding**: Parity data being reconstructed
7. **Maintenance**: Displays configuration and maintenance options for current array. The options differ depending on RAID level of the array.

**RAID 0**

- **Delete**: Deletes current Array
  
  **WARNING**: THIS OPERATION WILL DELETE THE ARRAY AND ALL DATA ON IT!!

- **Unplug**: This will disconnect the Array from the controller. Be sure to close all files before using this option. This enables the arrays to be unplugged from the system without causing an alarm.

  **NOTE**: While the controller is “hot pluggable,” we recommend shutting the system down when connecting or disconnecting G-SPEED eS from the controller.

- **Rename**: Renames array as displayed in the GUI.

**RAID 5**

- **Verify**: Verifies the integrity of the RAID set.

- **Change Cache Policy**: This option is available for RAID 5 arrays.

  - **Write-back**: (Default) Data written to the array is cached. This will result in higher performance, but data loss may occur in case of a power failure.

  - **Write-through**: Data written to the array is always passed directly to the disks. Subsequent reads may still be completed from the cache, if appropriate.

**7.4 OCE/ORLM**: Online Capacity Expansion: It is possible to expand the capacity of an existing array when additional G-SPEED eS units are added to the system.

**Online RAID Level Migration**: It is possible to change the RAID level of an existing array.

**7.5** Shows the devices currently part of the Array, their location and status.

  “Device_Controller#_Port#_Drive#”
8. Create Array
Click on “Create Array” and the following will appear.

8.1 Array Type: select the RAID level for new array
8.2 Array Name: This is the name that will be displayed in the MAIN page of the GUI.
8.3 Initialization Method: Sets the priority of the RAID creation process.
   Foreground: All controller resources are used for the creation process and the array is not available until complete.
   Background: Minimal controller resources are used for the creation process and the array is available for immediate use.
   NOTE: RAID protection is not available until initialization is complete
8.4 Cache Policy: This option is available when creating a RAID 5 array.
   Write-back: Data written to the array is cached. This will result in higher performance, but data loss may occur in case of a power failure.
   Write-through: Data written to the array is always passed directly to the disks. Subsequent reads may still be completed from the cache, if appropriate
8.5 Select All: Simple method to select all disks.
8.6 Available Disks: Displays disks currently available for array creation, showing location, drive model, serial number, size of the disk and current free capacity.
   Location: “Controller#/Port#/Drive#”
8.7 Available Disks: Enter the desired capacity of the new array. Default is the Maximum capacity available.
8.8 Create: As expected, selecting this will begin the array creation process.
9. **Location**: Shows the location of disks attached to the controller.
   
   Location: “Controller#/Port#/Drive#”

10. **Model**: Displays the drive model and serial number of disks currently attached to the controller.

11. **Capacity**: Displays the advertised capacity of the disks currently attached to the controller.

12. **Max Free**: Displays the maximum free capacity of the disks currently attached to the controller.

13. **Rescan**: Rescans the eSATA bus to detect any new devices attached.

14. **Beeper Mute**: Mutes audible beeper.

   **NOTE**: Beeper will sound when a drive fails or an array is disconnected from the system without first selecting “Unplug” in the Array Maintenance menu.
Appendix A.4: Settings

1. **Auto Rebuild**: Enables or disables the auto-rebuild feature. When enabled, a critical RAID 5 or RAID 1 array will automatically rebuild when a new drive is inserted. See Section 12 for details.

2. **Audible Alarm**: Enables or disables the audible alarm

3. **Rebuild Priority**: Sets the amount of controller CPU time dedicated to rebuilding an array. Higher Priority will rebuild the array faster, however the array will be less responsive to the system.

4. **SAF-TE**: This feature is not currently supported.

5. **Listening Port**: The port used to connect to the G-SPEED web GUI. “Restrict to local access” disables network users to access the GUI. Default is Port 7402.

6. **Password**: Changes login password. Default is 0000

7. **SMTP Setting**: Email server information necessary for email notification. Enter your server information here.

8. **Recipients**: A list of current email recipients.

9. **Add Recipient**: Add email addresses for email notification. Select Event level to trigger an email. 
   - Information: Informational events are sent
   - Warning: Warning events are sent
   - Error: Error events are sent
   - **Test**: Sends a test email to the new account

10. **HDD Temperature Threshold**: Adjusts the threshold of the hard drive temperature to trigger a warning email. Default is 50°C, however today’s disk drives can operate up to 60°C.
# APPENDIX B: RAID levels explained

<table>
<thead>
<tr>
<th>RAID Level</th>
<th>Description</th>
<th>Advantage</th>
<th>Disadvantage</th>
<th>Ideal For...</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Disk striping</td>
<td>Offers the highest performance and a useable storage capacity of 100% of total available storage capacity</td>
<td>No fault tolerance - failure of one drive in the array results in complete data loss</td>
<td>Content creation applications requiring highest storage capacity</td>
</tr>
<tr>
<td>1</td>
<td>Mirroring</td>
<td>Maximum level of data protection as identical data is written to multiple drives</td>
<td>Useable storage space is 50% of total available capacity</td>
<td>Applications in which data security is paramount</td>
</tr>
<tr>
<td>5</td>
<td>Disk striping with distributed parity</td>
<td>High read performance, medium write performance with data protection in case of a drive failure.</td>
<td>Useable storage capacity equals total capacity of all drives in the array less the capacity of one drive. For example, a 4x 1TB RAID 5 yields a useable capacity of 3 TB. Disk failure results in slight drop in performance</td>
<td>Content creation applications requiring data protection</td>
</tr>
<tr>
<td>10</td>
<td>Mirror of striped drive pairs</td>
<td>Higher performance than RAID 1 with same level of data protection.</td>
<td>Useable storage space is 50% of total available capacity</td>
<td>Content creation applications requiring data protection</td>
</tr>
<tr>
<td>JBOD</td>
<td>Just-a-bunch-of-disks</td>
<td>Each drive can be accessed as an individual volume. Useable storage capacity is 100% of total available storage.</td>
<td>No fault tolerance</td>
<td>Audio applications</td>
</tr>
</tbody>
</table>

# APPENDIX C: Notes

When the G-Tech web GUI is open dropped frames may occur in editing applications such as Final Cut Pro and Premiere Pro. We recommend not having the GUI open while working in these programs.

It is recommended not to exceed the standard eSATA cable length of 1 meter (3 feet).

Up to (4) G-SPEED eS storage units can be attached to the G-Tech RAID controller for up to 16TB of capacity and over 600 MB/sec of performance.

Replacements / extra G-SPEED eS disk modules are available for purchase online at: [www.g-technology.com/products/g-speed-es.cfm](http://www.g-technology.com/products/g-speed-es.cfm)
APPENDIX D: Formatting G-SPEED eS using Windows XP

Disk Management

1. Open Disk Management by right clicking on <My Computer> from the Start Menu and selecting "Manage."

2. Select “Disk Management”

3. The “Initialize Wizard” will appear. Click <Next> and accept all the default values.

4. When the Wizard completes you will see the G-SPEED eS listed as Disk X (in this example Disk 1). It will also show the capacity and “Unallocated.” Right click on the bar as shown and select “New Partition.”
5. The "New Partition Wizard" will open, click <Next>.

6. Follow the prompts, accepting the default values. When you reach this screen, enter the values as shown. Select "Perform a quick format" and then click <Next>.

7. The Wizard will complete and bring you back to the Main Disk Management screen. The G-SPEED eS will format in just a few seconds and be ready to use!