



# **Engineered Computer Appliance Operating System**

ECA46

ecaOS 6.8

## **USER GUIDE**

Revision 1.9  
27 Sep 2024



Digital Copy

**Document Title**

|                                                                       |
|-----------------------------------------------------------------------|
| Engineered Computer Appliance (ECA46) Operating System 6.8 User Guide |
|-----------------------------------------------------------------------|

**Document Revision**

| Revision | Date          | Description                                        | Author     |
|----------|---------------|----------------------------------------------------|------------|
| 00       | 20 Sep 2022   | 1 <sup>st</sup> Edition                            | Jemiruddin |
| 01       | 12 Oct 2022   | 2 <sup>nd</sup> Edition                            | Jemiruddin |
| 1.1      | 22 Nov 2022   | 2 <sup>nd</sup> Edition with minor cosmetic change | Sengfu     |
| 1.2      | 19 March 2023 | 3 <sup>rd</sup> Edition                            | Jemiruddin |
| 1.3      | 19 April 2023 | 4 <sup>th</sup> Edition (Bay orientation)          | Jemiruddin |
| 1.4      | 30 May 2023   | Updated to ecaOS 6.1                               | Keong      |
| 1.5      | 23 Nov 2023   | Updated to ecaOS 6.2                               | Keong      |
| 1.6      | 22 Jan 2024   | ECA45 Redundant PSU                                | Keong      |
| 1.7      | 6 Mar 2024    | Updated to ecaOS 6.3                               | Keong      |
| 1.8      | 15 Jul 2024   | Updated to ecaOS 6.4                               | Keong      |
| 1.9      | 27 Sep 2024   | Updated to ecaOS 6.8                               | Keong      |

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# 1 ECA4.6

## 1.1 FX series

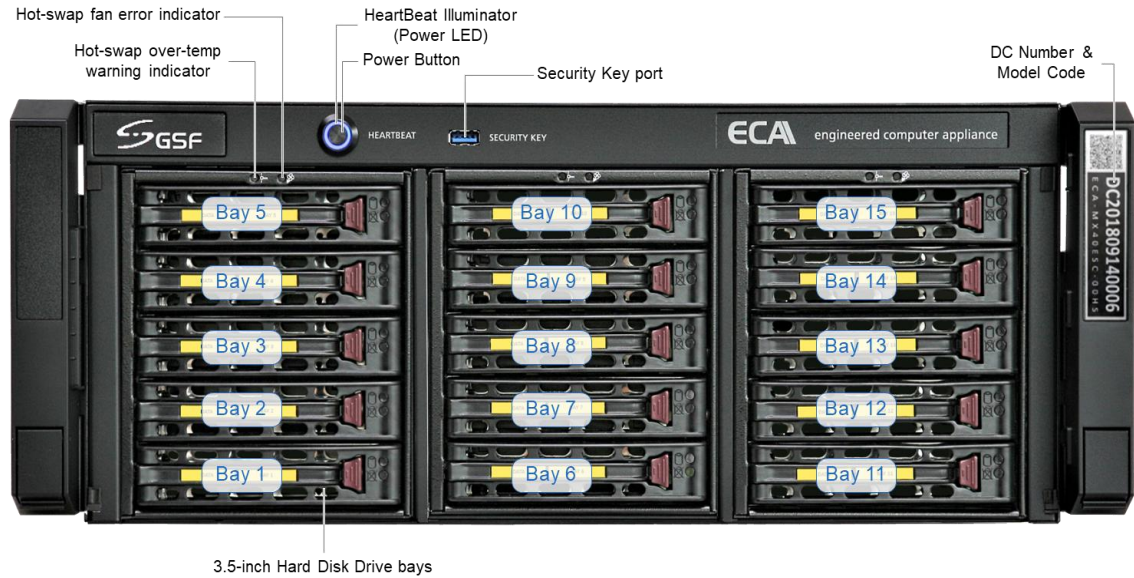


Figure 1: Front view of ECA-FX Series

|                                      |                                                                                                            |
|--------------------------------------|------------------------------------------------------------------------------------------------------------|
| Power Button                         | Press to power up the ECA                                                                                  |
| HeartBeat Illuminator (Power LED)    | LED indicator for power and display the status of the ECA operation state                                  |
| Security Key port                    | Port for ECA Security Key (USB type), which is used for authentication purposes to access ecaOS Dashboard  |
| Hot-swap over-temp warning indicator | The LED will light up if the temperature in Hard Disk Drive (HDD) bay(s) exceeds 55°C                      |
| Hot-swap fan error indicator         | The LED will light up if there is an error with the hot-swap fan, such as: fan not detected or fan failed. |
| Bay 1 ~ Bay 15                       | HDD bays for up to 15 units of 3.5-inch SATA HDDs.                                                         |

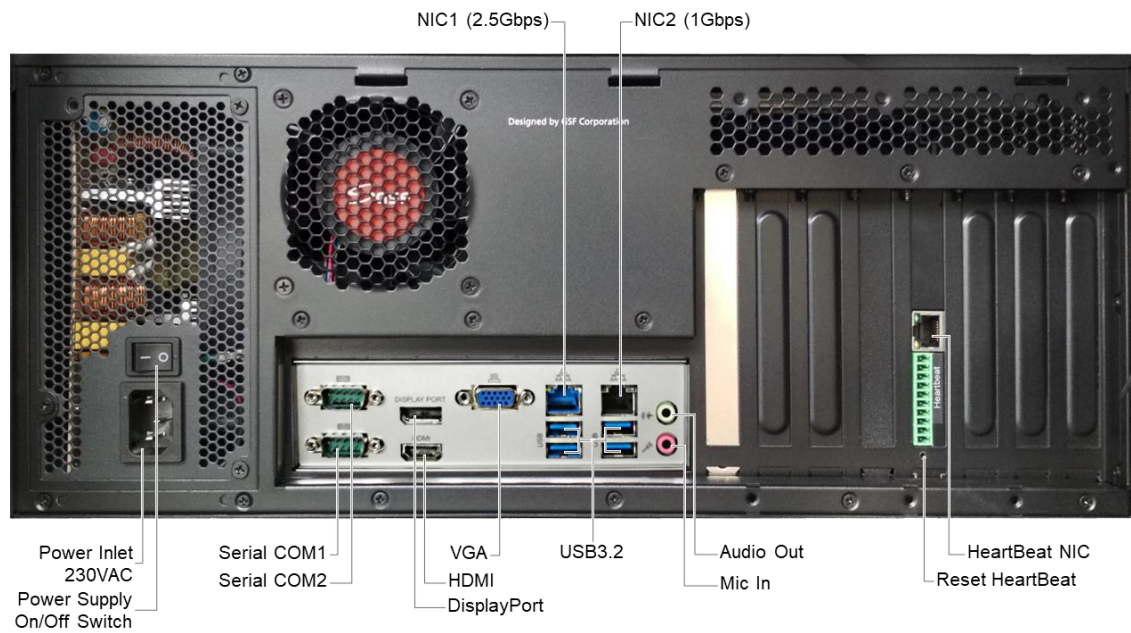


Figure 2: Rear view of ECA-FX Series

## 1.2 EX series

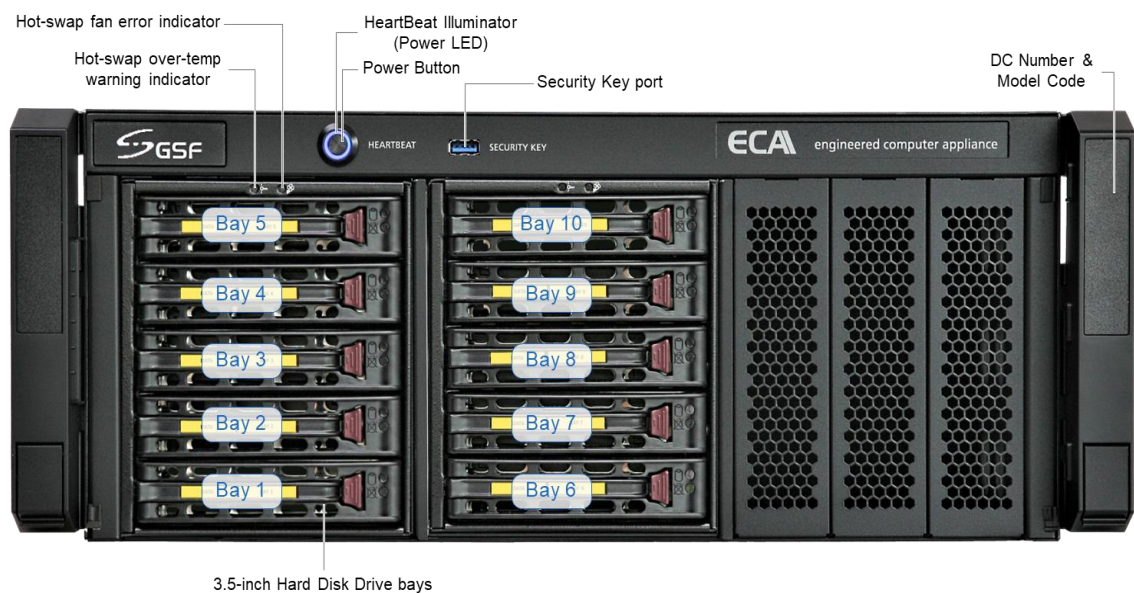


Figure 3: Front view of ECA-EX Series

|                                      |                                                                                                            |
|--------------------------------------|------------------------------------------------------------------------------------------------------------|
| Power Button                         | Press to power up the ECA                                                                                  |
| HeartBeat Illuminator (Power LED)    | LED indicator for power and display the status of the ECA operation state                                  |
| Security Key port                    | Port for ECA Security Key (USB type), which is used for authentication purposes to access ecaOS Dashboard  |
| Hot-swap over-temp warning indicator | The LED will light up if the temperature in Hard Disk Drive (HDD) bay(s) exceeds 55°C                      |
| Hot-swap fan error indicator         | The LED will light up if there is an error with the hot-swap fan, such as: fan not detected or fan failed. |
| Bay 1 ~ Bay 10                       | HDD bays for up to 10 units of 3.5-inch SATA HDDs.                                                         |

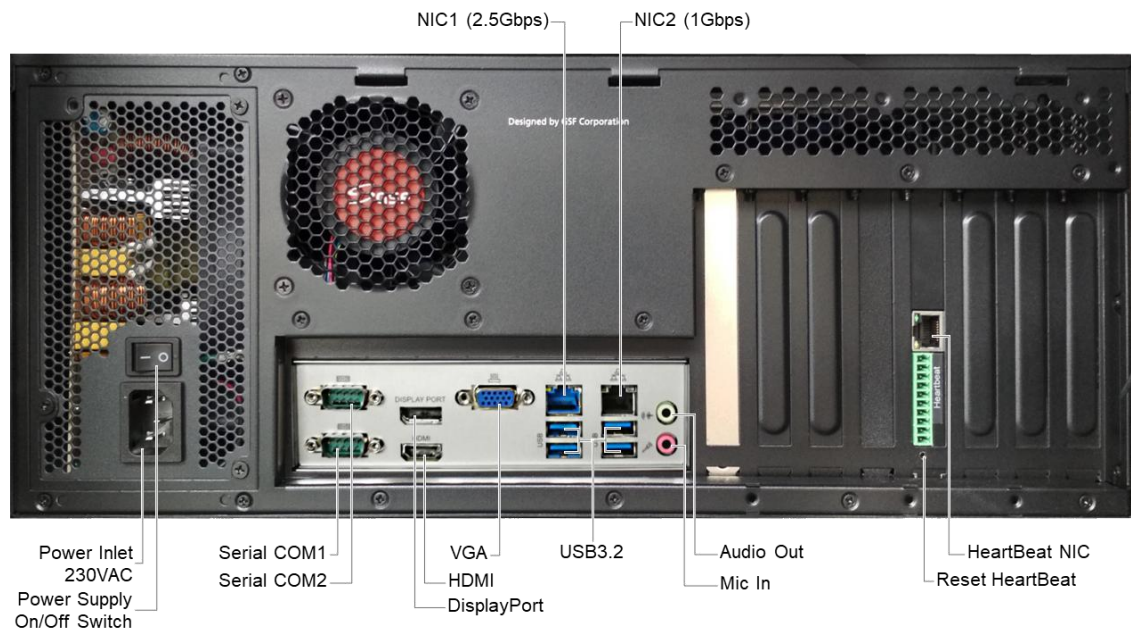


Figure 4: Rear view of ECA-EX Series

### 1.3 DX series

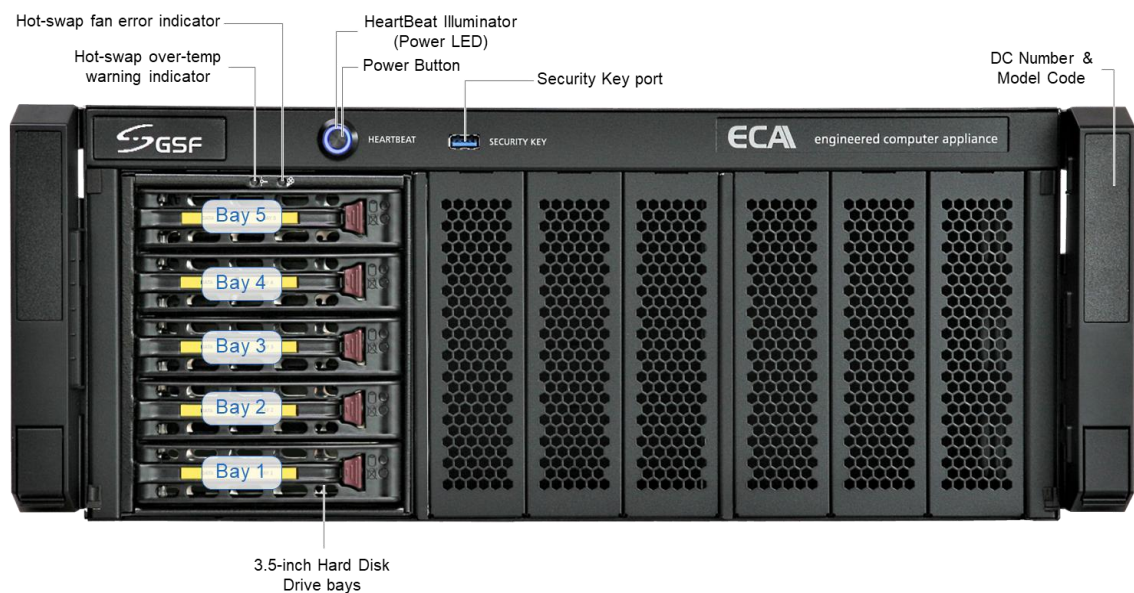


Figure 5: Front view of ECA-EX Series

|                                      |                                                                                                           |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Power Button                         | Press to power up the ECA                                                                                 |
| HeartBeat Illuminator (Power LED)    | LED indicator for power and display the status of the ECA operation state                                 |
| Security Key port                    | Port for ECA Security Key (USB type), which is used for authentication purposes to access ecaOS Dashboard |
| Hot-swap over-temp warning indicator | The LED will light up if the temperature in Hard Disk Drive (HDD) bay(s) exceeds 55°C                     |
| Hot-swap fan error indicator         | The LED will light up if hot the is error with the hot-swap fan, such as: fan not detected or fan failed. |
| Bay 1 ~ Bay 5                        | HDD bays for up to 5 units of 3.5-inch SATA HDDs.                                                         |

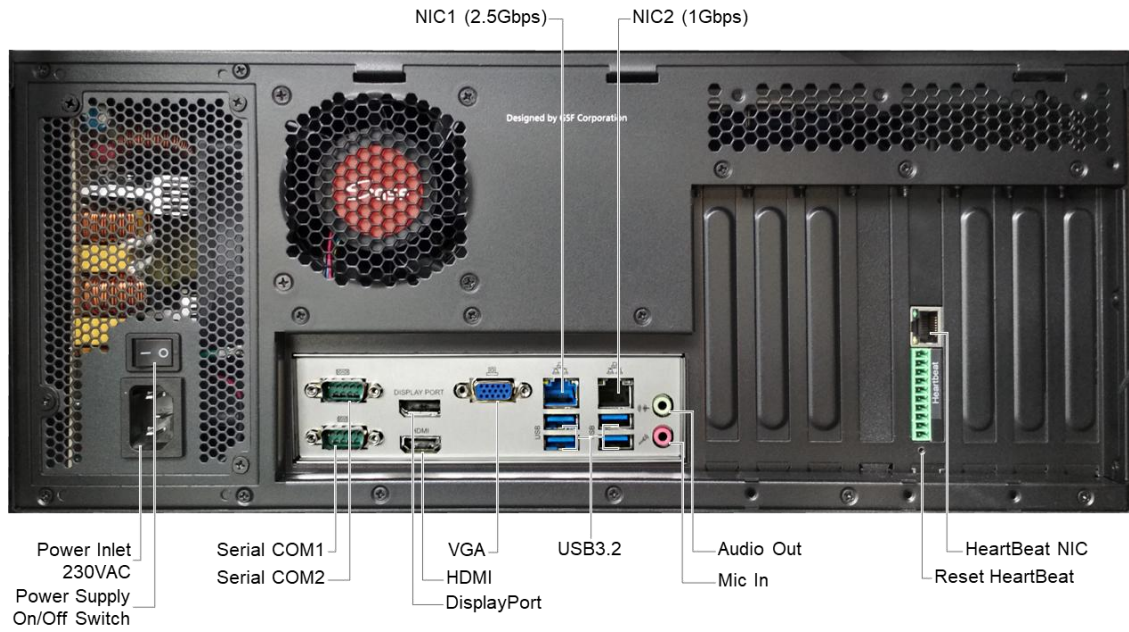


Figure 6: Rear view of ECA-EX Series

## 1.4 MX series

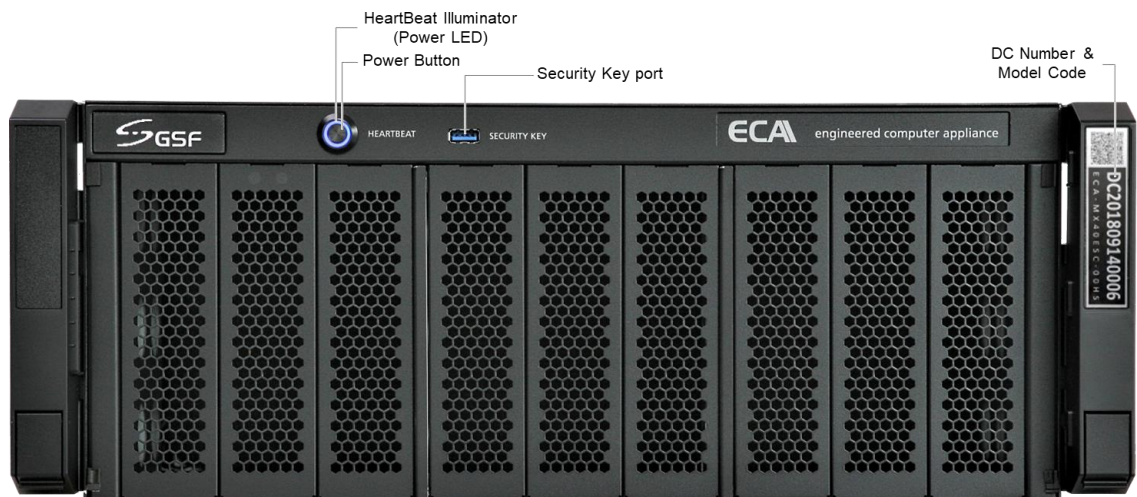


Figure 7: Front view of ECA-MX Series

|                                   |                                                                                                           |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------|
| Power Button                      | Press to power up the ECA                                                                                 |
| HeartBeat Illuminator (Power LED) | LED indicator for power and display the status of the ECA operation state                                 |
| Security Key port                 | Port for ECA Security Key (USB type), which is used for authentication purposes to access ecaOS Dashboard |

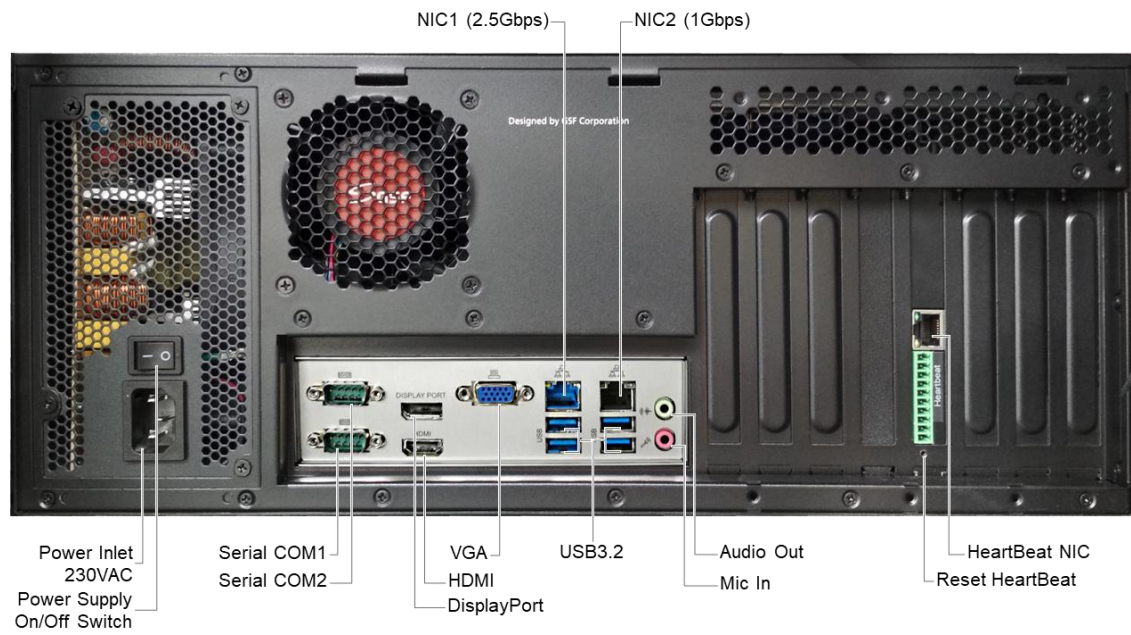


Figure 8: Rear view of ECA-EX Series

## 1.5 VW series



Figure 9: Front view of ECA-MX Series



Figure 10: Front view of ECA-MX Series

## 1.6 ECA with redundant PSU

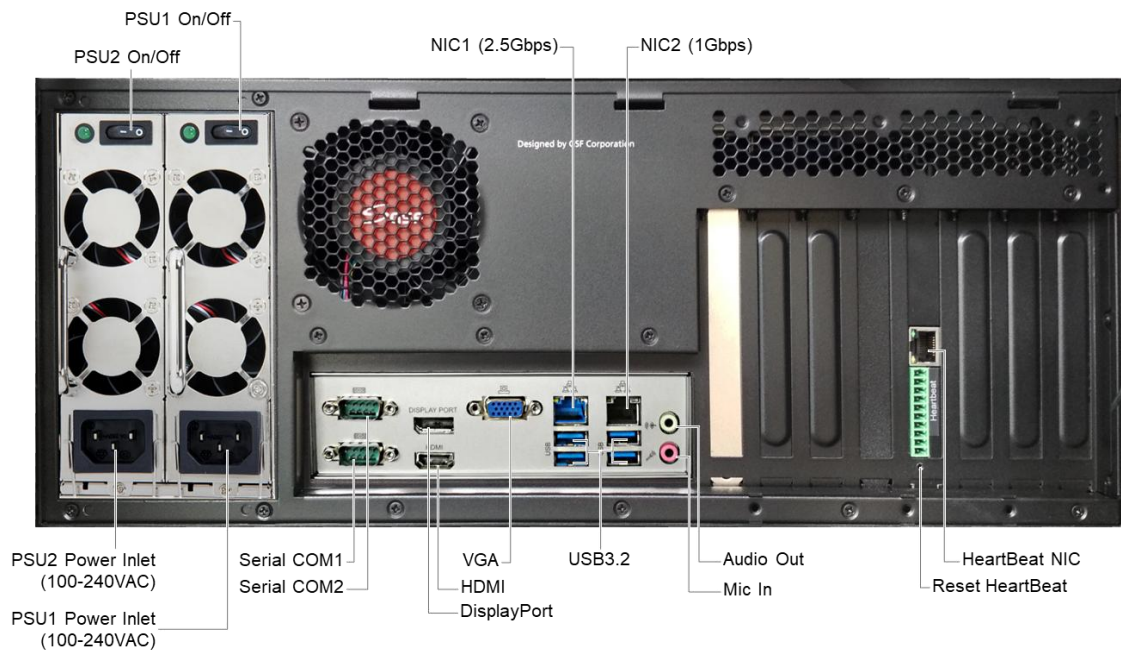


Figure 11: Rear view of ECA-EX Series

## 1.7 Security Keys

Security Keys are required for gaining authenticated access to ecaOS Dashboard.

There are two types of Security Keys:

- USB Security Key
- Virtual Key (Virtual Access Code)

### USB Security Key

Security Key is uniquely designed USB key which is paired to the ECA. It can only be used with the paired ECA. If the key is lost, a new key can be issued by GSF and the paired ECA will automatically reject the usage of the lost key, should they be recovered later.



### Virtual Key

Virtual Access Code is used for gaining authenticated access to ecaOS Dashboard without requiring the use of security key.

Authenticator app, such as Google Authenticator is required to install on your phone or tablet device such as phone.

### When to use Virtual Access code?

1. Accessing ecaOS Dashboard without possession of Security Key
2. Access ecaOS Dashboard remotely from another computer.

## 2 Heartbeat

### 2.1 What is Heartbeat?

HeartBeat is around the clock hardware safeguard. Its micro controller overlooks the whole hardware platform to ensure continuous operation even in the event of critical breakdown.

In the event the server fails, it will send help signal via digital I/O or can be connect to CMS Alarm.

### 2.2 In what event will the HeartBeat react?

| Event                       | HeartBeat's action                   |
|-----------------------------|--------------------------------------|
| Unauthorized Shutdown       | Reboot the ECA                       |
| Unauthorized Power Unplug   | Produce beep tone                    |
| ECA not responding          | Forces system reboot after 2 minutes |
| Blue screen of death (BSOD) | Forces reboot after 2 minutes        |

### 2.3 ECA Power LED Indicator

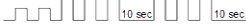
| LED Status                            | ECA Scenario                                                             | Description                                                                                    |
|---------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Slow glow and dim (Breathing pattern) | System in Operating System (OS)                                          | System is running in normal operational state                                                  |
| Blinking                              | While ECA is OFF<br>While ECA is rebooting<br>While System running is OK | HeartBeat battery charge is low.<br>ECA is in a rebooting state<br>HeartBeat is not ready yet. |

To view examples of LED indication demonstration, click the link below:

<https://www.gsfcorp.com/downloads/ece-hb-led.gif>

### 2.4 HeartBeat Alert Tones and Behaviours

| Scenario | Beep Tones and Patterns                                                                             | ECA State         | Events                                                                                         | Action Required |
|----------|-----------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------|-----------------|
| 1        | 1 short beep<br> | Power Up          | ECA is booting up                                                                              | None            |
| 2        | 1 short beep<br> | ECA is <b>OFF</b> | Authorized shutdown                                                                            | None            |
| 3        | 1 short beep<br> | ECA is <b>OFF</b> | AC power cord is removed (planned)<br>Switch OFF power supply (Toggle switch to 'O' position). | None            |

| Scenario | Beep Tones and Patterns                                                                                                                                                    | ECA State                            | Events                                                                    | Action Required                                                     |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------|
| 4        | 1 short beep<br>                                                                          | ECA is <b>OFF</b>                    | Switch ON Power Supply (Toggle switch to 'I' Position)<br>AC Power resume | None                                                                |
| 5        | 1 short beep<br>                                                                          | ECA is <b>ON</b> or <b>OFF</b> state | Closing chassis cover                                                     | None                                                                |
| 6        | 2 beeps → 3 high-pitch beeps (repeat after 10 seconds)<br>                                | ECA is <b>ON</b> or <b>OFF</b> state | Opening chassis cover                                                     | Close the chassis cover                                             |
| 7        | 4 escalating beeps<br>                                                                    | In operating system or Layer Manager | HeartBeat successfully connected to the OS or Layer Manager               | None                                                                |
| 8        | 3 high-pitch short beeps (repeat after 10 seconds)<br>                                    | Booting up;<br>In Operating System   | System has shutdown or rebooted 3 times or more within 30 minutes         | Shutdown the ECA to mute the alert                                  |
| 9        | 1 beep, 3 beeps then 2 short beeps x2, followed by 3 beeps (reports after 10 seconds)<br> | ECA is <b>ON</b>                     | Power Lost                                                                | Power up the ECA                                                    |
| 10       | 1 beep, followed by 2 beeps x2                                                                                                                                             | ECA is <b>OFF</b>                    | Power supply is switched OFF (Switch is toggled to 'O' position)          | None                                                                |
| 11       | No Beep                                                                                                                                                                    | ECA is <b>ON</b>                     | ECA cannot be shutdown using power button or Windows shutdown button      | Expected behaviour. Please shutdown the ECA using authorized method |

**Note:**

- For Scenario 8, shutting down the ECA will mute the beep (either authorized or unauthorized method).
  - Authorized shutdown : Shutting down the ECA via ecaOS Dashboard
  - Unauthorized shutdown : Shutting down the ECA via shutdown in Windows Start Menu, or Forcing shutdown by long-pressing ECA power button on the front panel.
- For Scenario 6, closing Chassis cover will mute the beep.
- For Scenario 9, resuming the AC power to ECA will mute the beep.

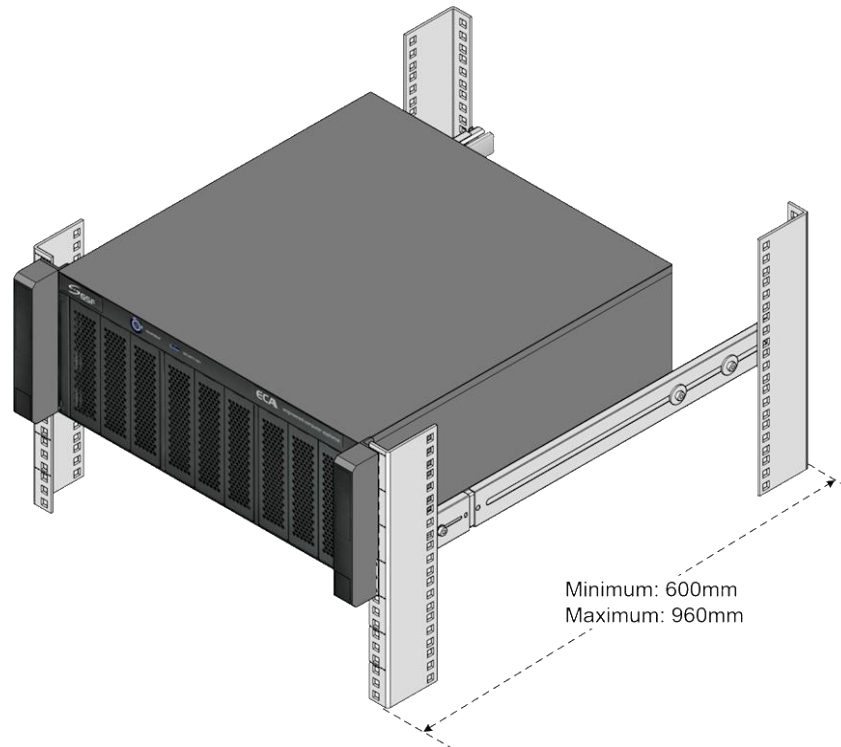
## 3 Rail

### 3.1 Equipment Rack Requirement



Before beginning with the installation, it is important to make sure the equipment rack you are using fulfills the following rack depth. Usage of improper rack size may result in injury.

The depth for equipment rack, shall have its front-to-rear vertical mounting columns, measures at minimum **600mm** gap distance.



To avoid injury, it is strongly recommended that the installation shall be done by two persons.

*\*Note: The above requirement is based on rail part number: King Slide A68-583BPZZ11ED.*

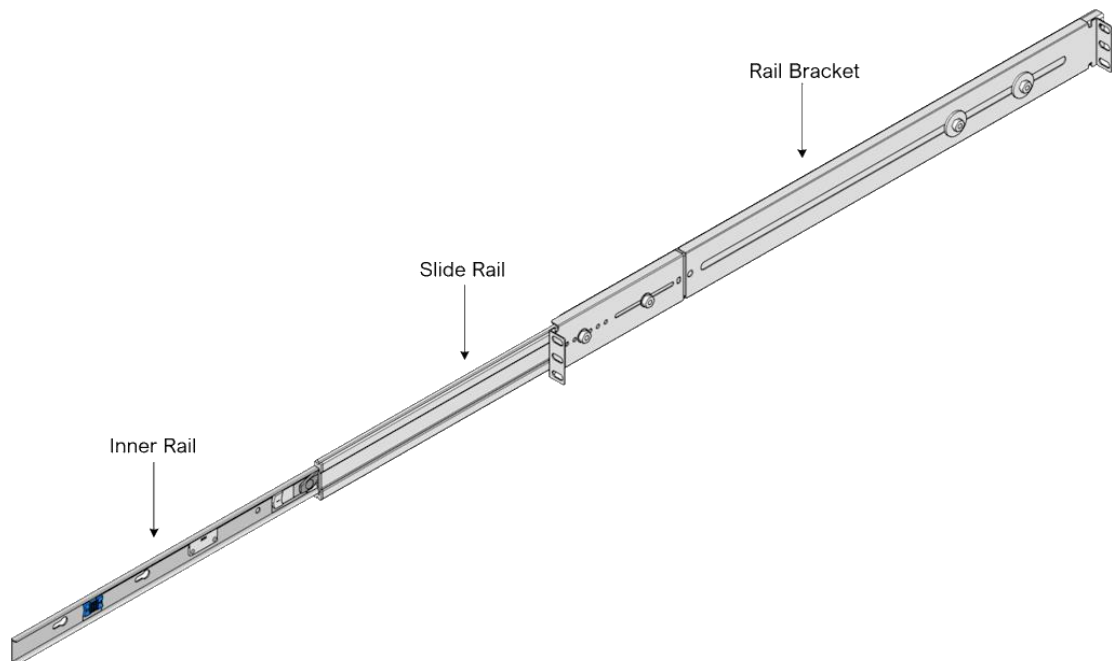
### 3.2 Package Content

| Content                                                                           | Description  | Quantity |
|-----------------------------------------------------------------------------------|--------------|----------|
|  | Sliding Rail | 2        |
|  | CH Screw     | 2        |
|  | SL Screw     | 8        |
|  | CL Screw     | 6        |
|  | RK Nut       | 10       |

### 3.3 Sliding Rail Assembly

The Sliding Rail assembly is comprised of 3 parts:

- Inner Rail
- Slide Rail
- Rail Bracket

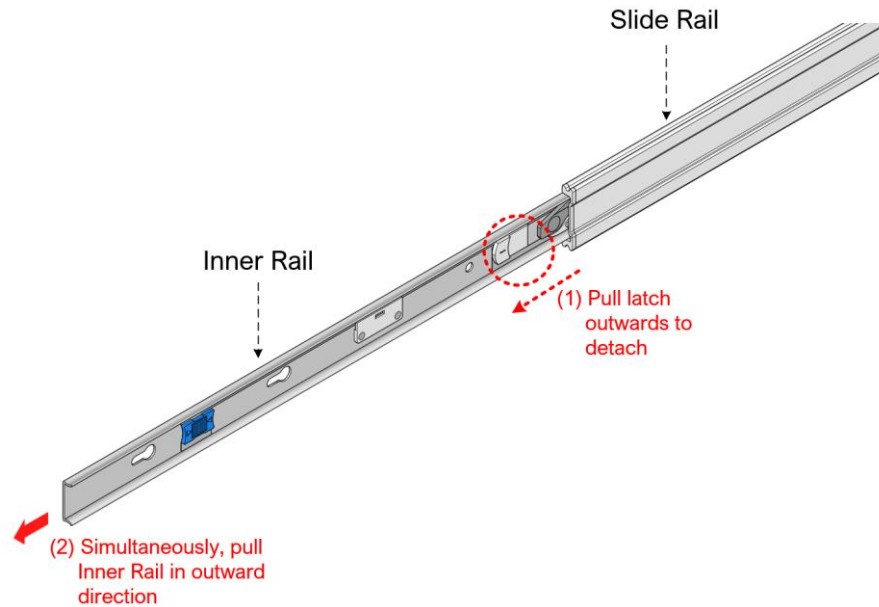


### 3.4 Installation Procedure

**Step 1:** Detach the Inner Rail from the Sliding Rail assembly.

Extend the parts of the Sliding rail to reveal the WHITE color latch on the Inner Rail.

Pull and hold the **WHITE** color latch outwards, while simultaneously pulling the Inner Rail in an outward direction. This shall remove the Inner Rail from the assembly.

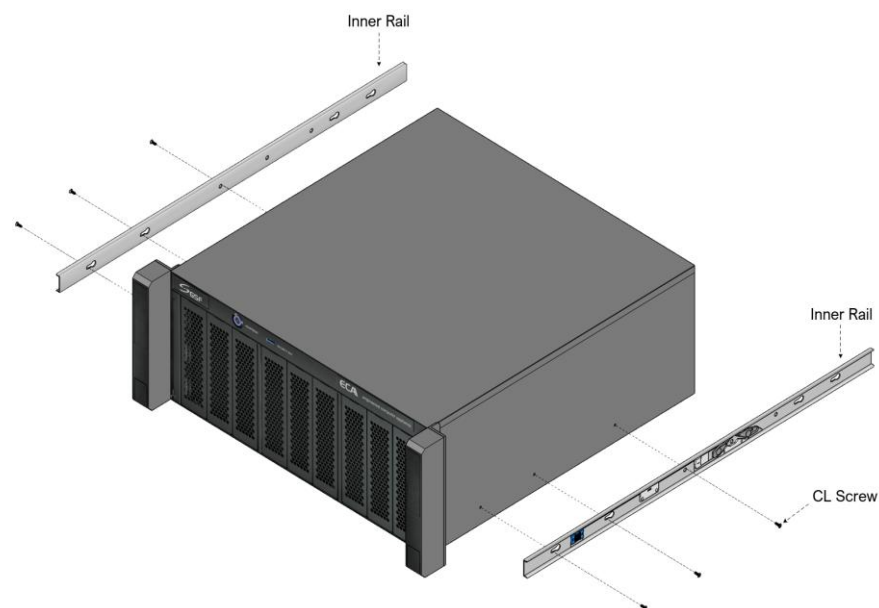


**DO NOT** remove the Slide rail from the Rail assembly. It is **NOT** removable.

**Step 2:** Detach the Inner Rail from the Sliding Rail assembly.

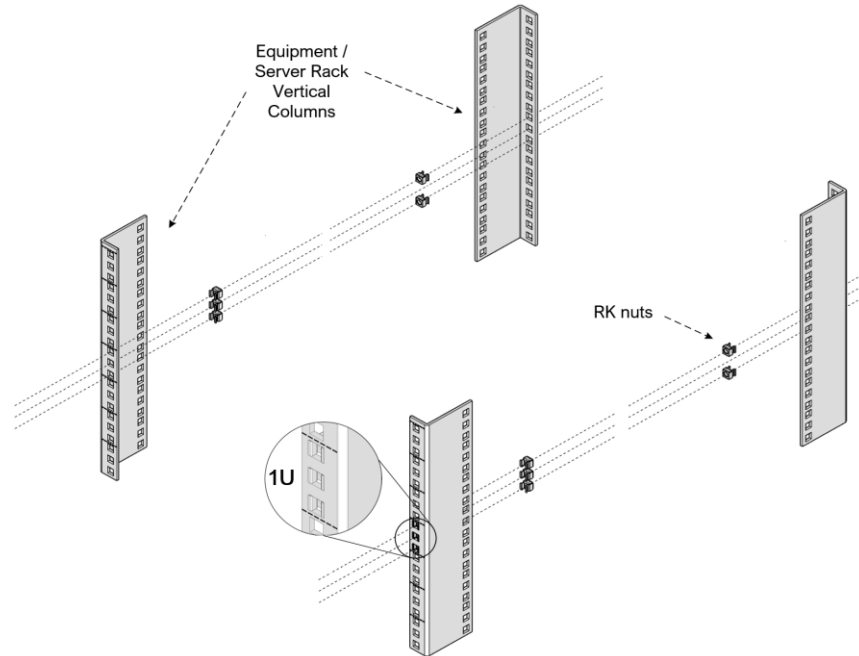
Extend the parts of the Sliding rail to reveal the WHITE color latch on the Inner Rail.

Pull and hold the **WHITE** color latch outwards, while simultaneously pulling the Inner Rail in an outward direction. This shall remove the Inner Rail from the assembly.

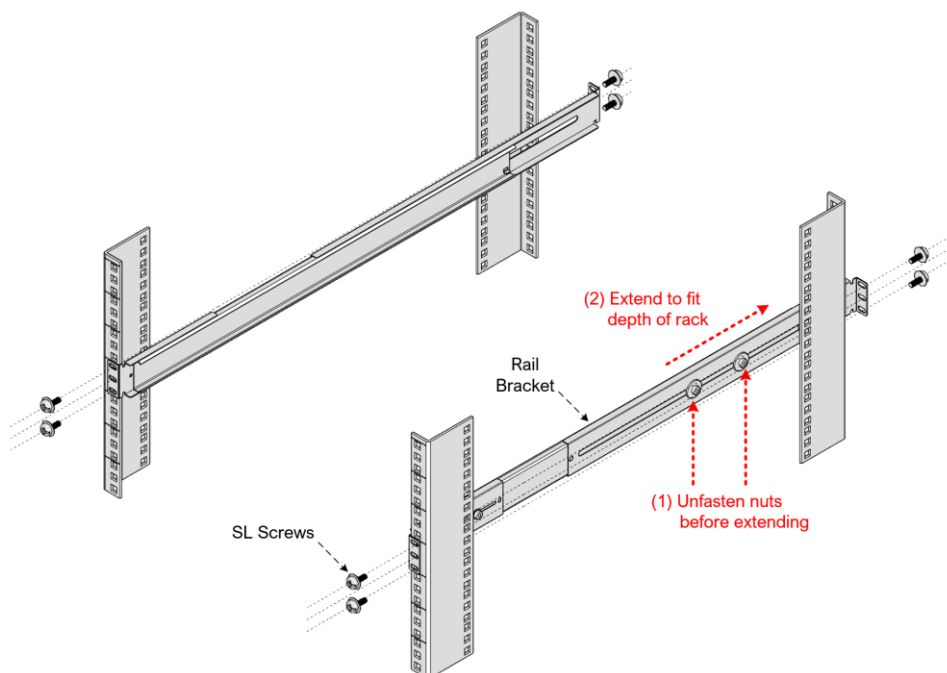


**Step 3:** Insert the RK Nutes to Equipment Rack or Server Rack.

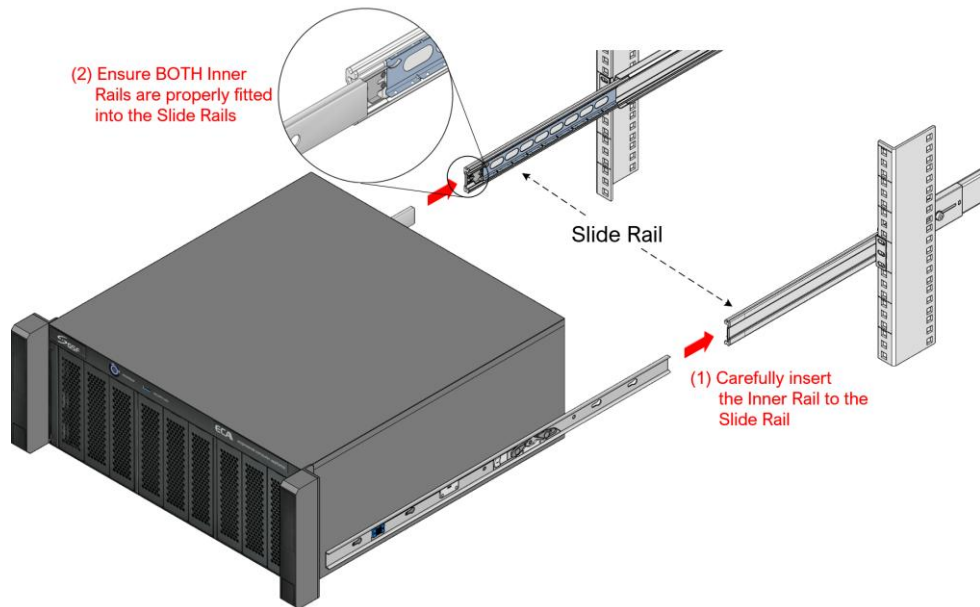
- Before inserting the nuts, make sure to reserve total 4U height and spacing for every ECA.
- The Sliding Rail is attached to the lowest 1U on the ECA.
- Ensure above the sliding rail, there is another 3U clearance space for the ECA.
- Take note of proper and correct spacing for 1U height



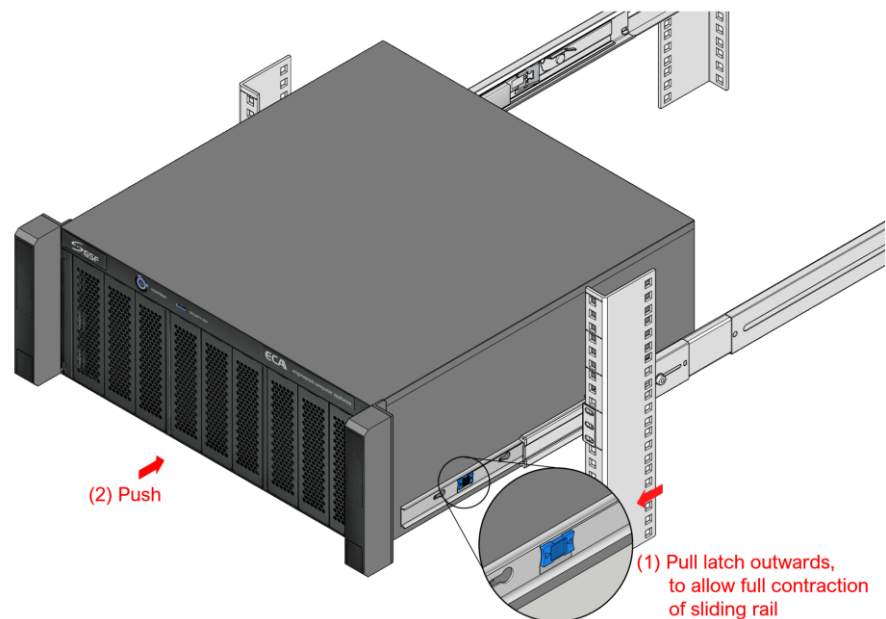
**Step 4:** Install the Rail Brackets to the Equipment rack or Server Rack. Place the Rail Brackets to the same level as the RK nuts, inserted in the previous step. Use SL screws and fasten them to the nuts. For the front, **DO NOT fasten any screw to the middle nut**. The middle nut is reserved for fastening the ECA.



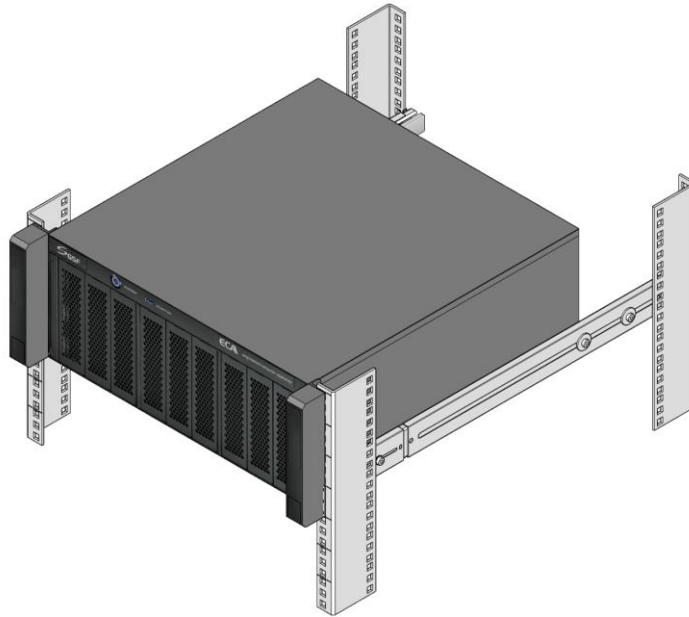
- Step 5:** Carry the ECA, which now has the Inner Rails attached, and ensure both Inner Rails are securely inserted into the Sliding Rail.



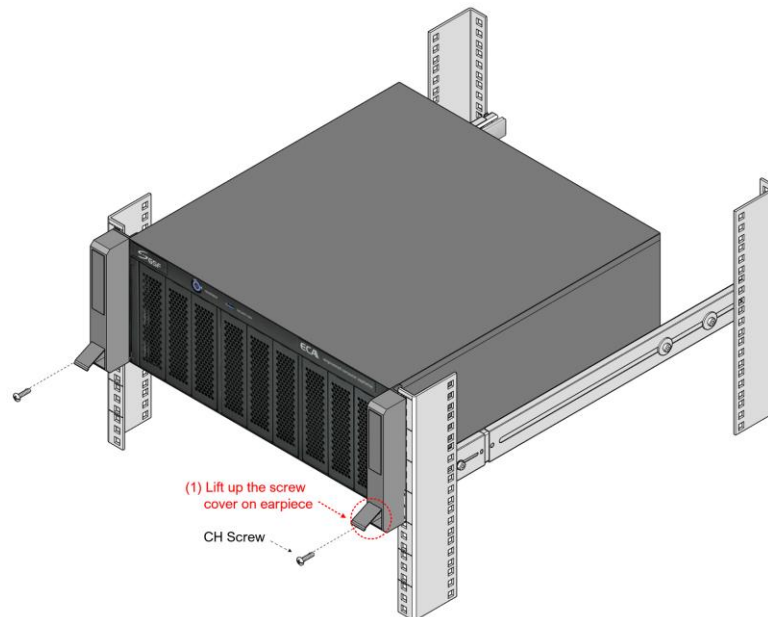
- Step 6:** Push the ECA inwards to the rack until the mounting brackets encounter the slide-rail stop. Then, simultaneously pull and hold the **BLUE** latch on the Inner Rail, while pushing the ECA inwards. This will fully contract the whole Sliding Rail assembly.



**Step 7:** The ECA, with the Sliding Rail at full contracted position, shall look like this:

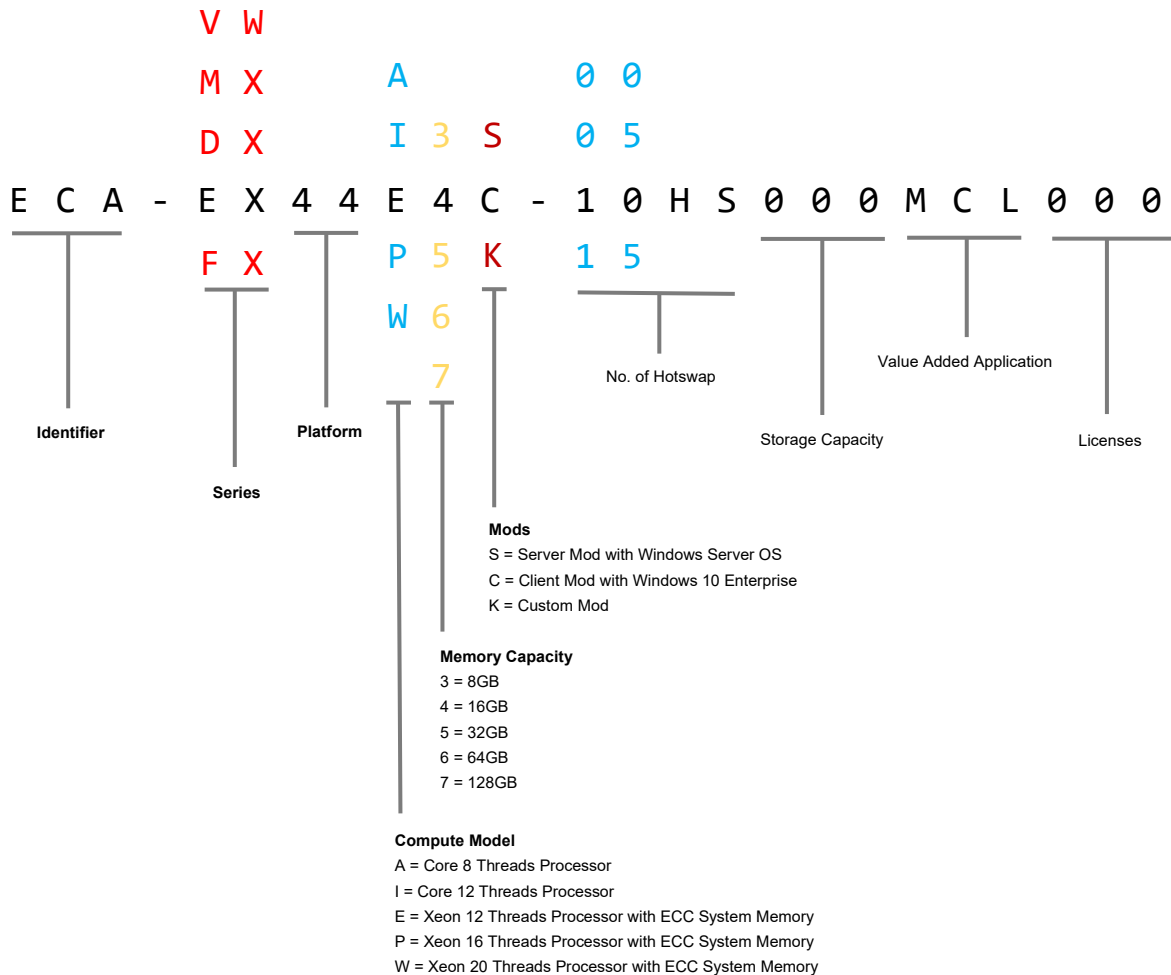


**Step 8:** Lift the screw cover on the earpiece of the ECA. Fasten ECA to the Sliding Rail using the CH Screw.



## 4 ECA Naming

The ECA naming will represent the specification of the platform.



## 5 ECA Series

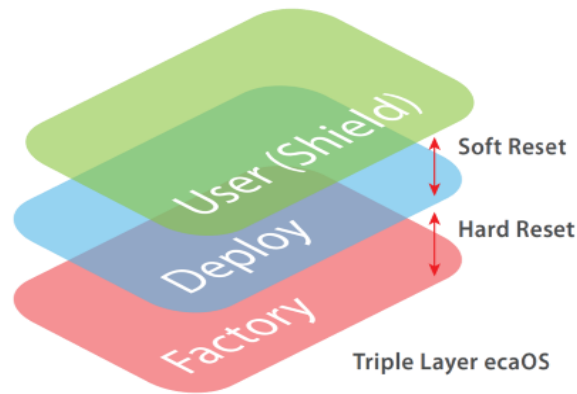


| Series                         | VW                        | MX                        | DX                                                   | EX                                             | FX                                            |
|--------------------------------|---------------------------|---------------------------|------------------------------------------------------|------------------------------------------------|-----------------------------------------------|
| Mount                          | Tower or Rack             | Rack                      | Rack                                                 | Rack                                           | Rack                                          |
| Storage                        | Internal:<br>Up to 3 HDDs | Internal:<br>Up to 3 HDDs | Hot-swap:<br>5 HDDs<br><br>Internal:<br>Up to 2 HDDs | Hot-swap:<br>10 HDDs<br><br>Internal:<br>1 HDD | Hot-swap:<br>15 HDDs<br><br>Internal:<br>None |
| Hot-swap Bay                   | None                      | None                      | 5                                                    | 10                                             | 15                                            |
| Redundant Storage System (RSS) | No                        | Yes                       | Yes                                                  | Yes                                            | Yes                                           |
| Recommended Usage              | Video Workstation         | Recording Server          | Recording Server                                     | Recording Server                               | Recording Server                              |
| HeartBeat                      | No                        | Yes                       | Yes                                                  | Yes                                            | Yes                                           |

## 6 ecaOS

ecaOS is a protected operating system environment, equipped with a unique and practical feature called Triple Layers, essential for both reliable and secure operation of the ECA.

Its ability to Soft Reset within few minutes significantly reduces system down time in the event of, though rare, system disaster, such as corrupted Video Management Software or misconfiguration.



| Layer                                             | Description                                                                                                                                                                          |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>User Layer</b><br><i>Current working layer</i> | This is a normal user operation layer with a protected OS environment, any system changes without using the Embedded Security Key will be discarded after system reboot (Fast Reset) |
| <b>Deployment Layer</b><br><i>Backup Layer</i>    | This is a good working state layer, usually saved by System Integrator with pre-configured NVR & camera settings                                                                     |
| <b>Factory Layer</b><br><i>Backup Layer</i>       | This is a good working state layer, with original default settings shipped from factory                                                                                              |

## 6.1 ecaOS Login

Some ECA may be shipped without automatic login, subject to configurations. In such case, the ecaOS prompt for OS login, as follow:

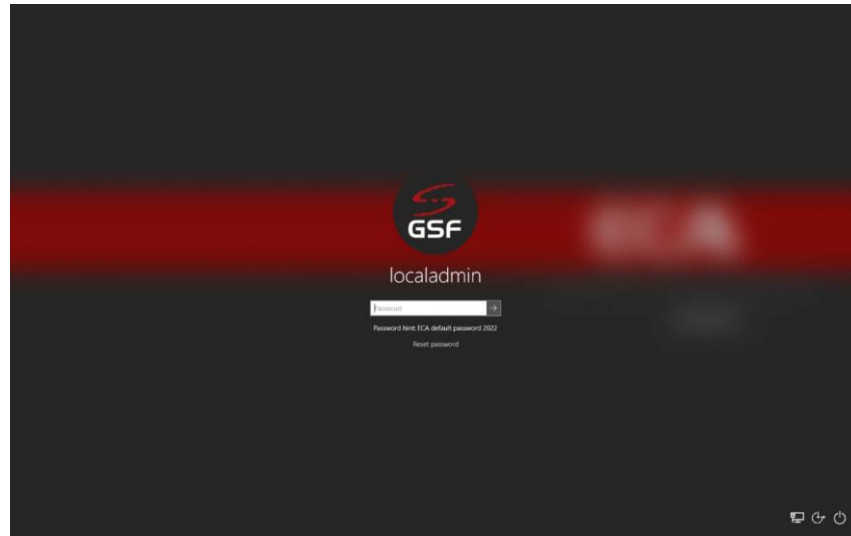


Figure 12: ecaOS Login Screen

Please contact **TrueBlue Support** to obtain the login credentials:

Email : [trueblue@gsfcorp.com](mailto:trueblue@gsfcorp.com)

Contact number : +60-3-80908277

Information to provide:

- Digital Certificate number of the ECA, usually can be found on the front panel of the ECA, and starts with **DC20XXXXXXXXXX** (14-digits)
- End-user's name

## 6.2 ecaOS Locked Out

if the password is incorrect for 3 times consecutively, the login screen will lock for 15 minutes, before allowing retry.



Figure 13: Account Locked Out

## 7 Dashboard and Notification

Location of the Dashboard application and ecaOS Notification display area.

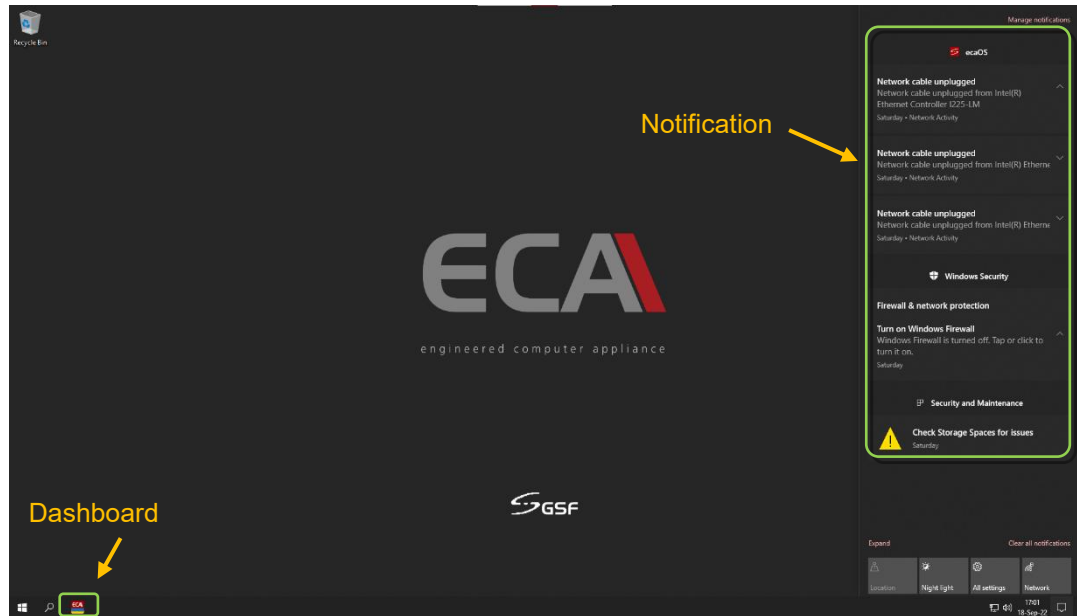


Figure 14: ecaOS Desktop

|                     |                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------|
| <b>Notification</b> | Where all the activities within the ECA will be prompted out                                     |
| <b>Dashboard</b>    | A web-based interface displaying overall information and system vitals of the ECA machine status |

## 7.1 Accessing ecaOS Dashboard

There are two ways to access ecaOS Dashboard.

1. Security Key (USB type)
2. Virtual Security Key (card with QR code)



Figure 15: Security Key & Virtual Security Key Card

## 7.2 How to use Security Key (USB)

1. Insert Security Key to **SECURITY KEY** port on front panel of ECA.

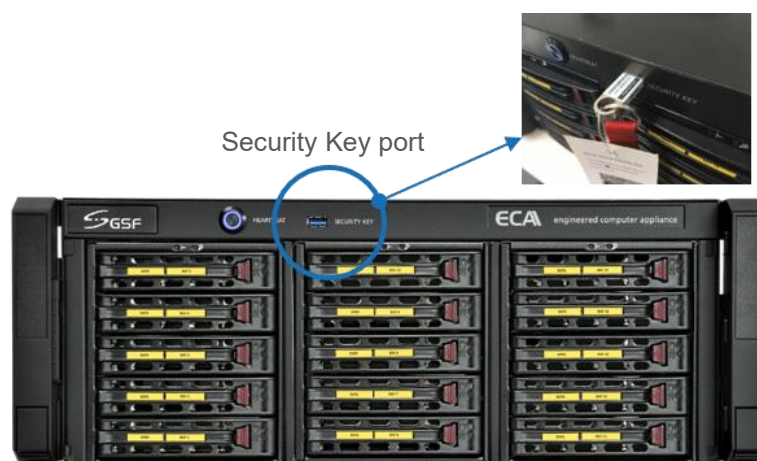


Figure 16: Security Key USB Port Location

2. Run 'ecaOS Dashboard'  from Taskbar.

### 7.3 How to use Virtual Security Key (ECA Access Code)

1. Run 'ecaOS Dashboard'  from Taskbar.
2. Enter **Access Code** from authenticator apps.

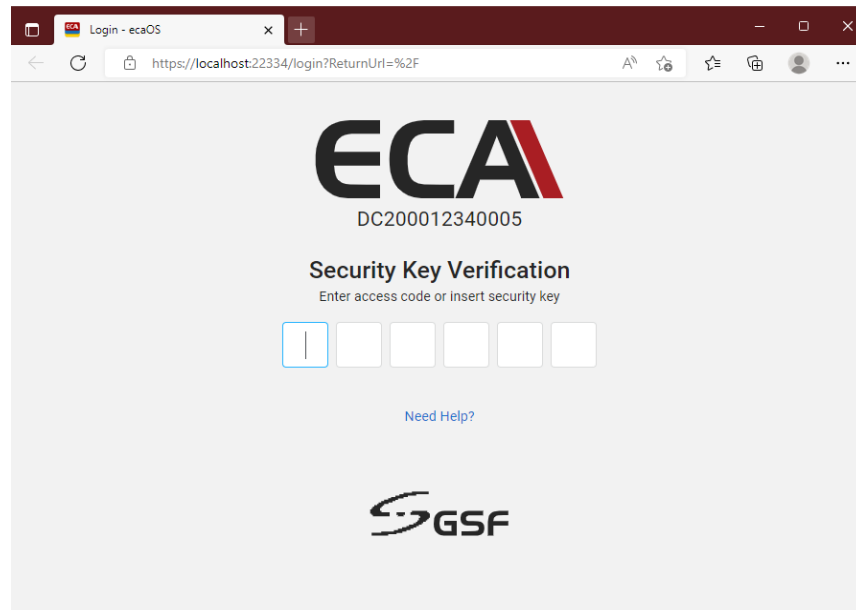


Figure 17: Dashboard Login Page

### 7.4 Get Virtual Security Key (ECA Access Code)

ECA Access code is mandatory for logging into the Dashboard. To obtain the ECA Access code, follow the procedures below:

1. Download an Authenticator app.
  - For **Android** user, go to **Google Play**.
  - For **iOS** user, go to **App Store**.
2. Search for 'authenticator'. Then, **Google Authenticator** or **Microsoft Authenticator** should appear in the result. You can install either one as the authenticator to use with ecaOS for obtaining the Access code.



Figure 18: App search results

3. The following procedure is based on using Google Authenticator.



Before using an authenticator app, ensure that your device's time is synchronized with ECA's time. If it is not, the code may not work correctly

4. Run Google Authenticator on your device. Click **Begin** button.

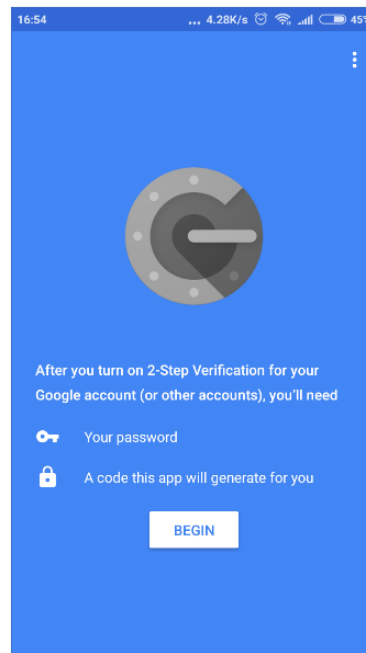


Figure 19: Authenticator Setup

5. Choose **Scan a barcode** to start scanning the QR code found on the Virtual Security Key card.

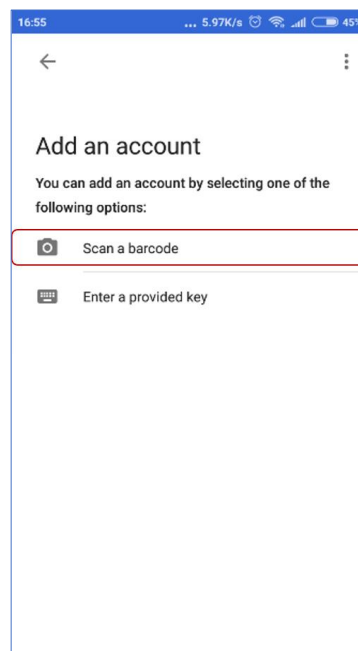


Figure 20: Authenticator Setup

6. Ensure the QR code is positioned correctly within the scanner frame.



Figure 21: Authenticator Setup

7. Once successful, the Access code will display in the app.

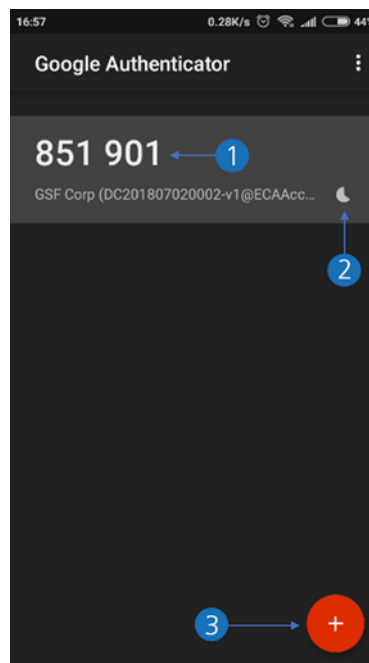


Figure 22: Authenticator Setup (4 of 4)

1. Access Code
2. Access Code will change for every 30 seconds
3. Click here to scan another QR Code for others ECA 'Virtual Security Key'.

8. Enter the 6-digits One-Time-Passcode (OTP) access code into the Security Key Verification page (ecaOS Dashboard login page).

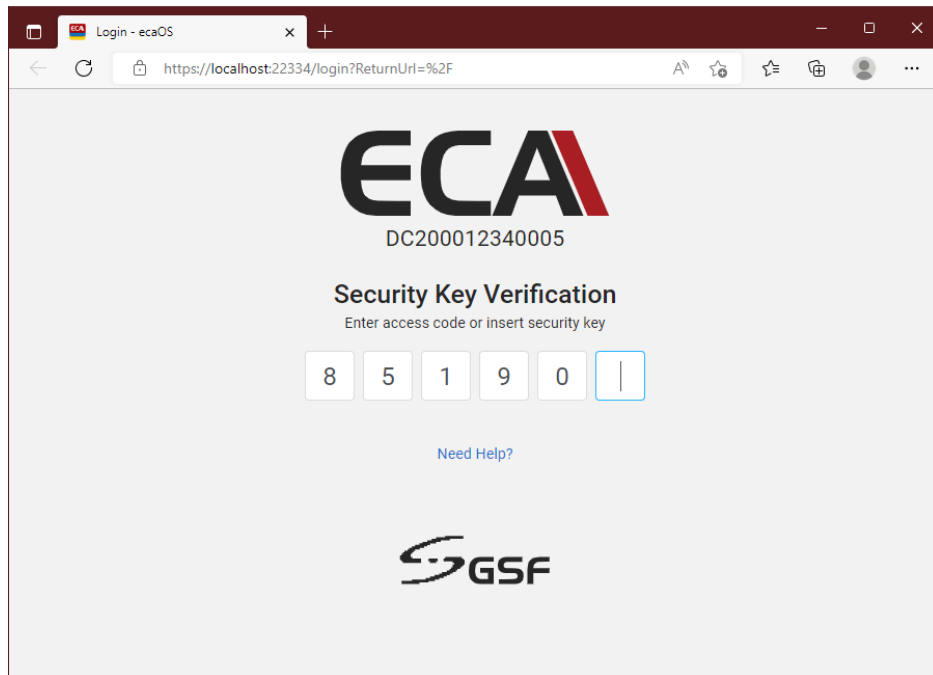


Figure 23: ecaOS Dashboard Login Page

## 7.5 Accessing ecaOS Dashboard Remotely

1. Open web browser on the remote computer.
2. In the web browser's address bar, enter the IP address of the ECA, in this format:

`https://<ipaddress>`

Example: <https://10.0.0.39>

Alternatively, you may also insert the ECA's Digital Certificate (DC number), also known as the serial number, in the following format:

`https://<ECA serial number>`

Example: <https://DC200012340005>



Default access port number for ecaOS Dashboard is **443**. This port number is customizable in the Dashboard configuration.

3. Click **Advanced**.

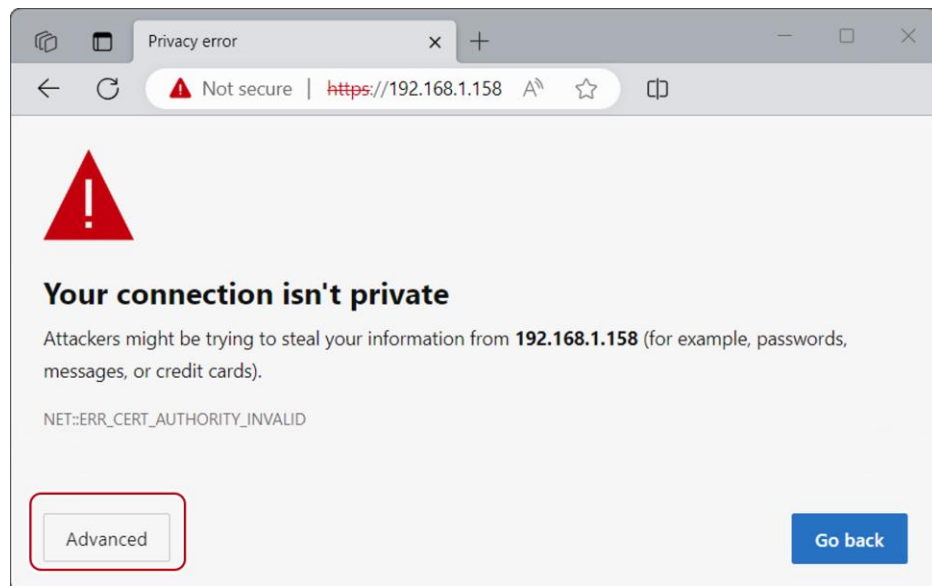


Figure 24: Dashboard Remote Access (1 of 2)

- Click the link **Continue to dcxxxxxxxxxx (unsafe)**

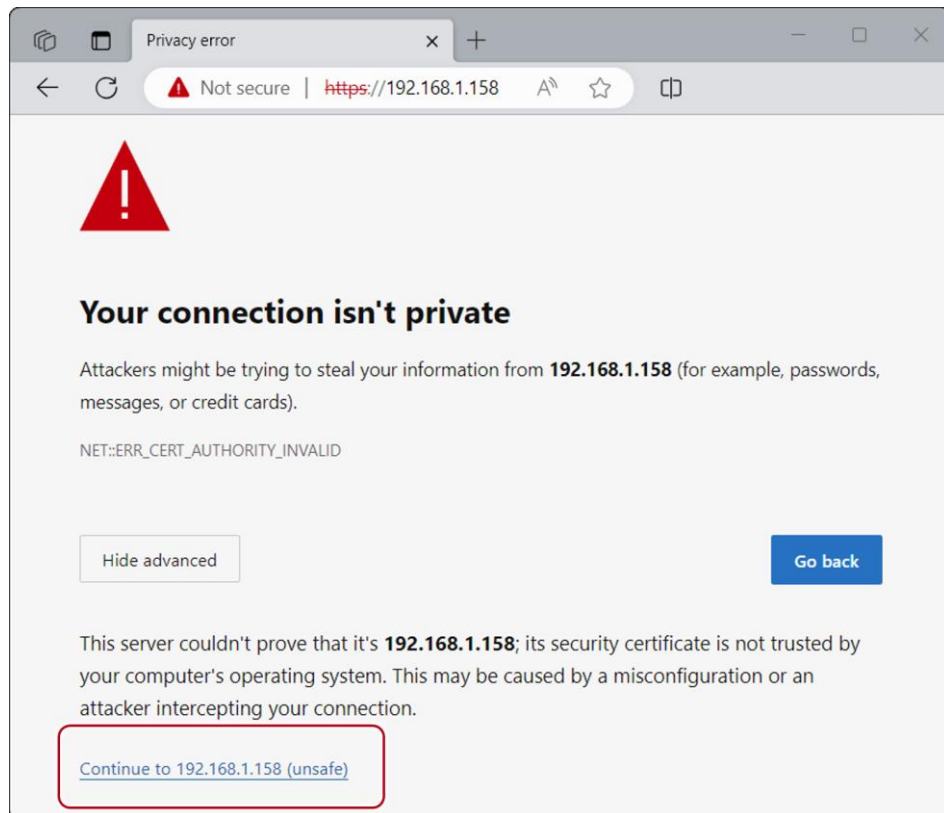


Figure 25: Dashboard Remote Access (2 of 2)

## 7.6 ecaOS Dashboard Summary

The Dashboard Summary shows overall information about the ECA machine and some of its system vitals. The information is summarized in a card style display.

Example of information and status display in the Dashboard are:

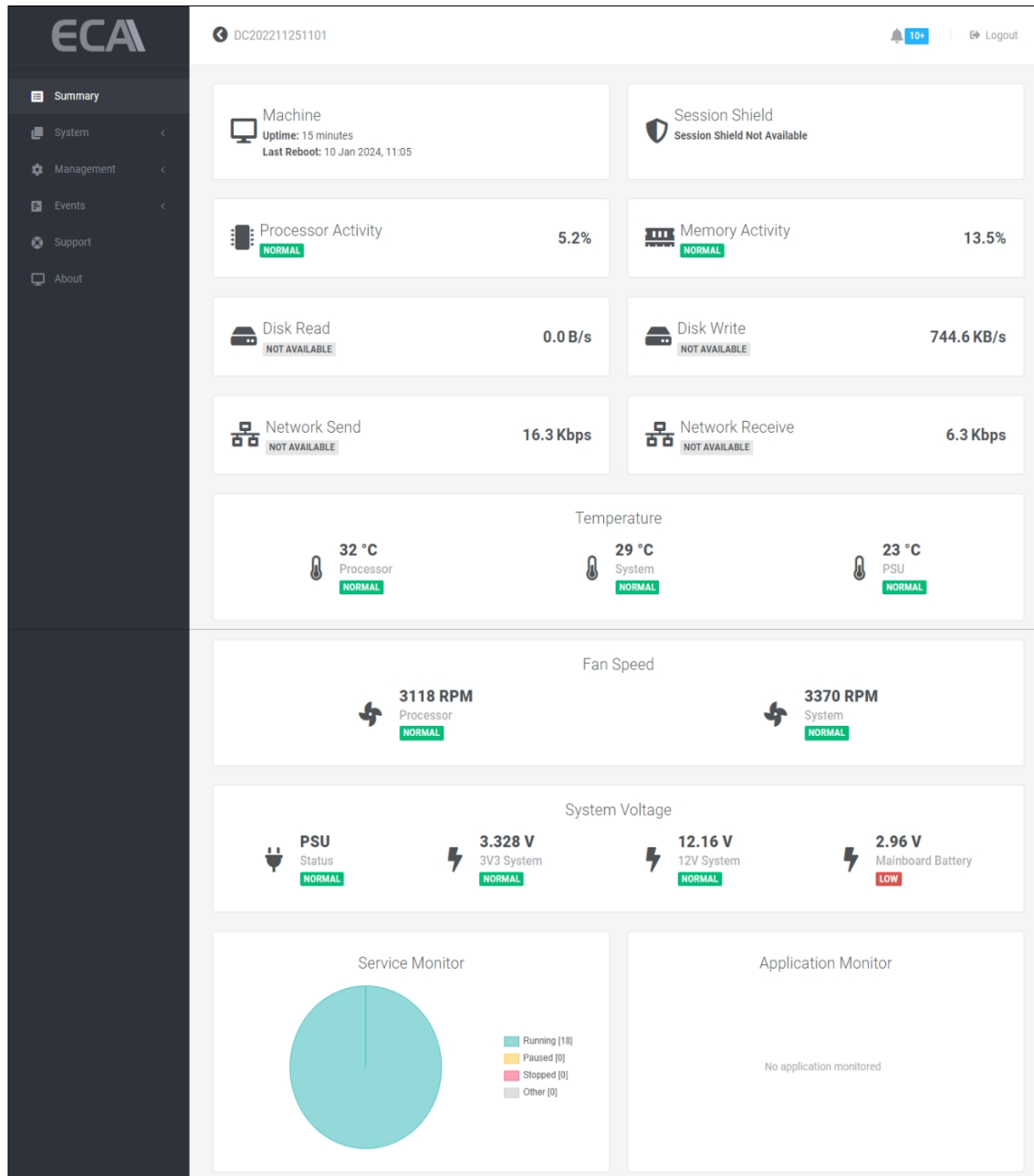


Figure 26: ecaOS Dashboard Summary

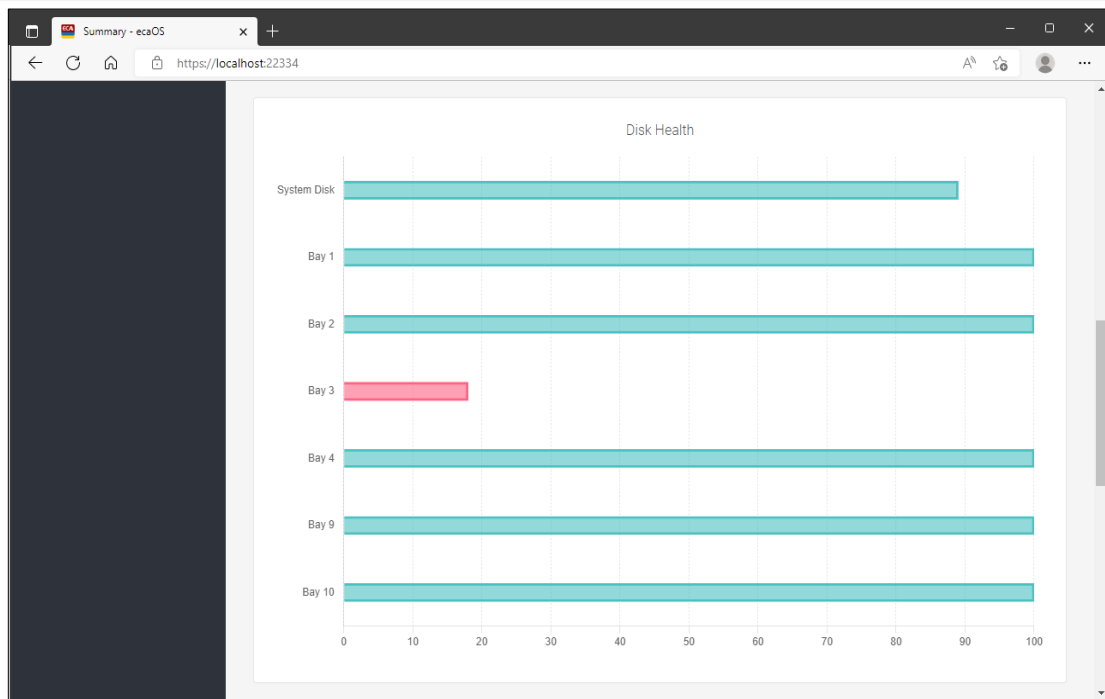
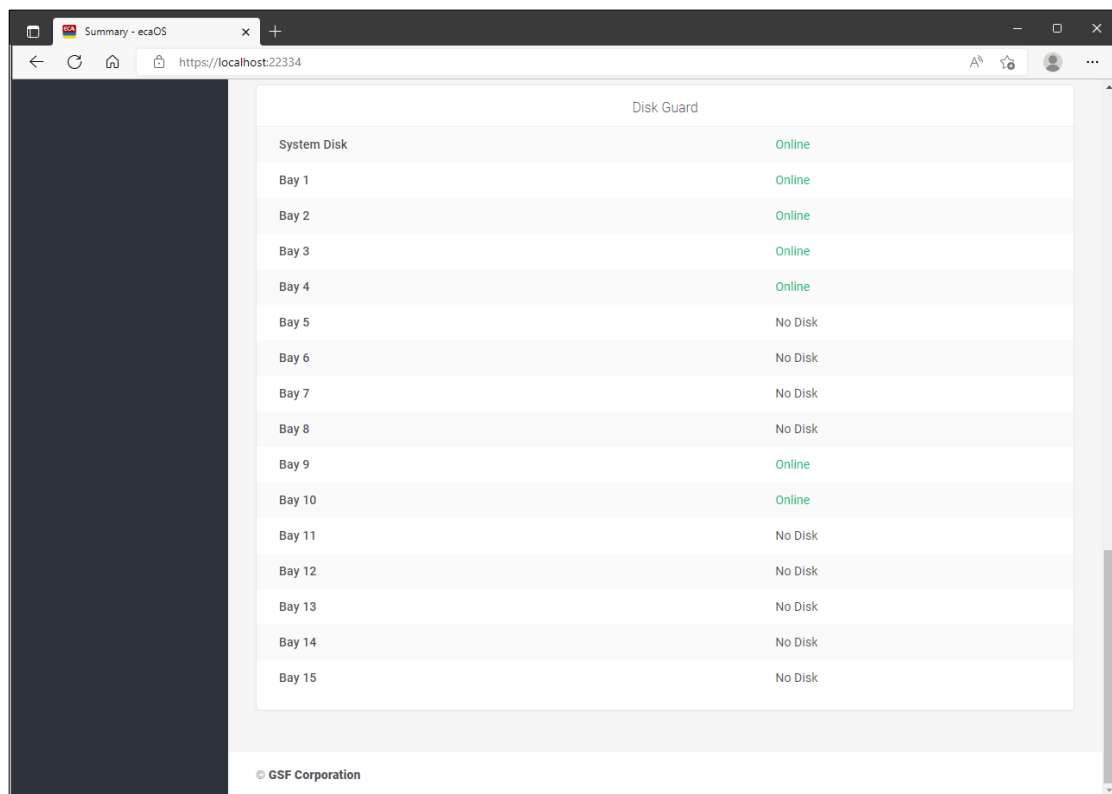


Figure 27: ecaOS Dashboard Summary – Disk Health



| Component   | Status  |
|-------------|---------|
| System Disk | Online  |
| Bay 1       | Online  |
| Bay 2       | Online  |
| Bay 3       | Online  |
| Bay 4       | Online  |
| Bay 5       | No Disk |
| Bay 6       | No Disk |
| Bay 7       | No Disk |
| Bay 8       | No Disk |
| Bay 9       | Online  |
| Bay 10      | Online  |
| Bay 11      | No Disk |
| Bay 12      | No Disk |
| Bay 13      | No Disk |
| Bay 14      | No Disk |
| Bay 15      | No Disk |

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Figure 28: ecaOS Dashboard Summary – Disk Guard

## 8 System

### 8.1 System Monitor

System Monitor provides users with real-time information on Processor Temperature, Mainboard Temperature, PSU Temperature\*, Processor and System Fan Speeds, as well as 3.3V System Voltage, 12V System Voltage, and Mainboard Battery Voltage.

 \*Only applicable to ECA4.5 and above, with TBSP-ECAPSE-R600 power supply unit (PSU).

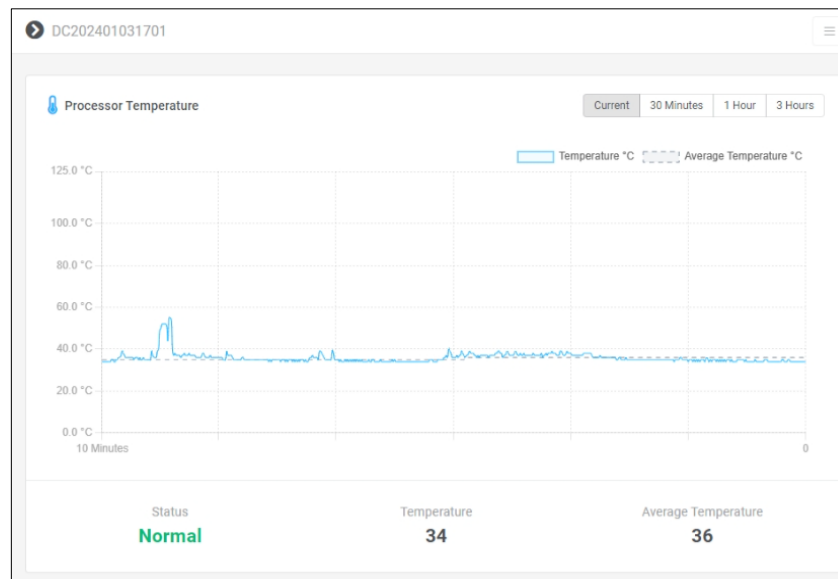


Figure 29: Processor Temperature monitor

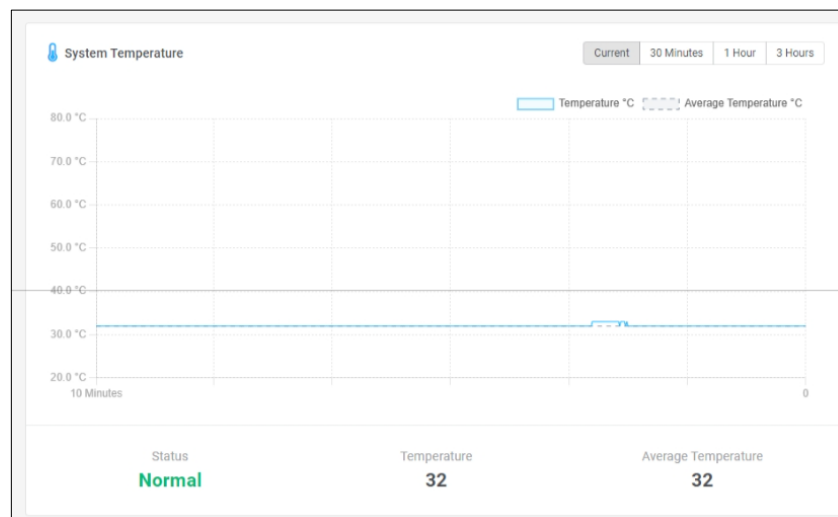


Figure 30: System Temperature monitor

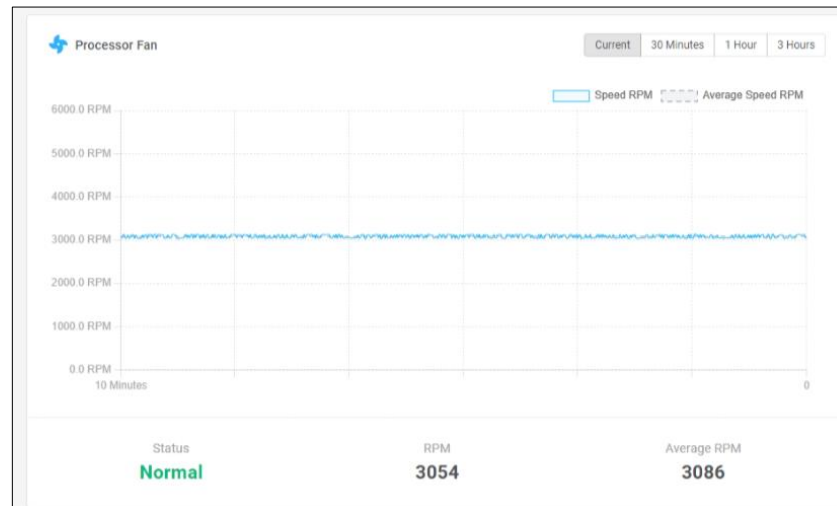


Figure 31: Processor Fan monitor

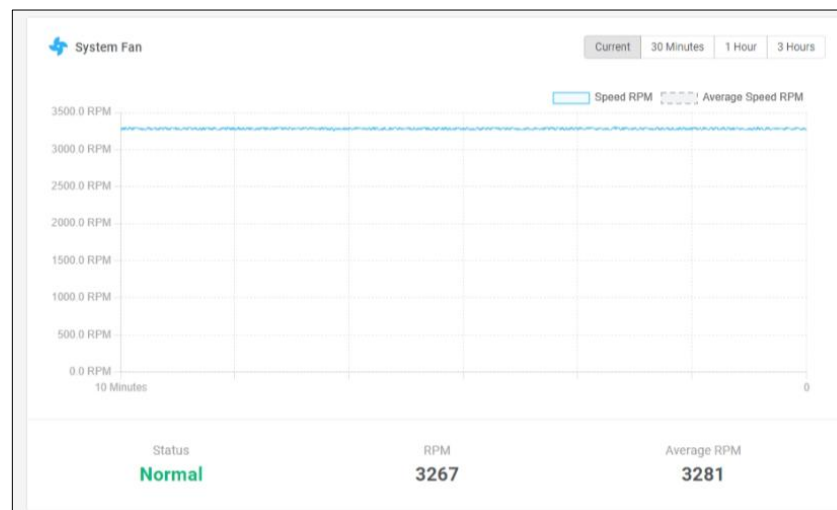


Figure 32: System Fan monitor

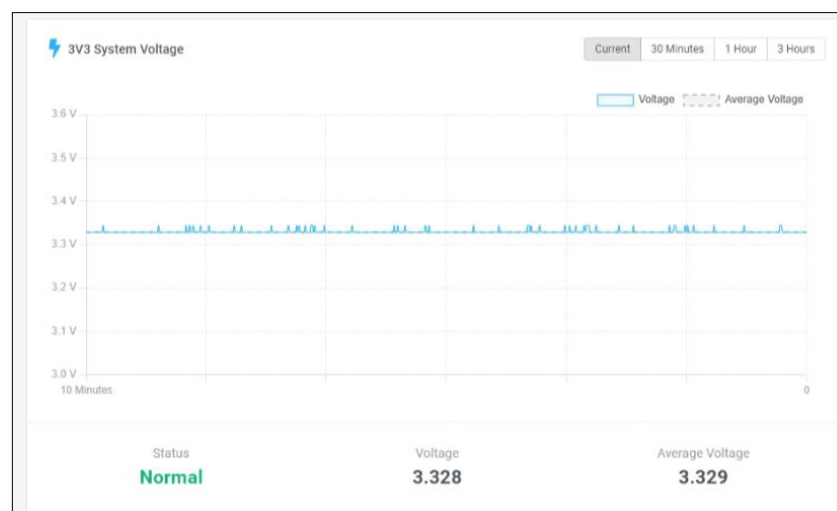


Figure 33: 3V3 System Voltage monitor

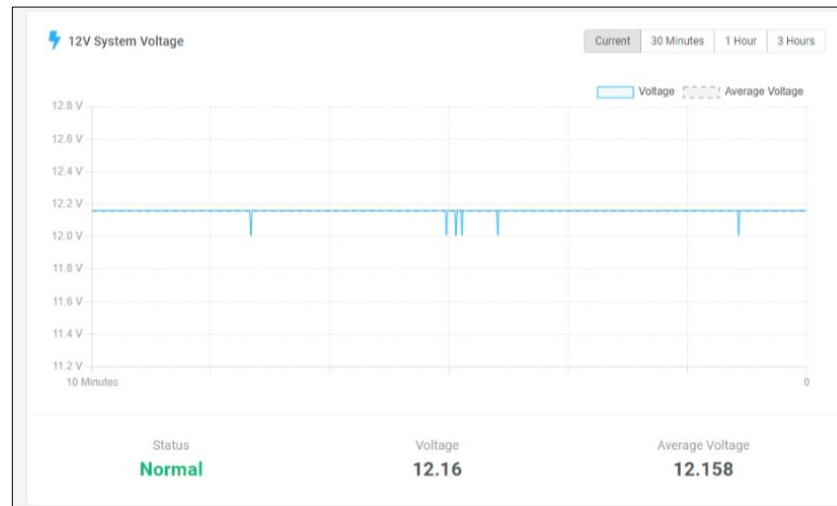


Figure 34: 12V System Voltage Monitor

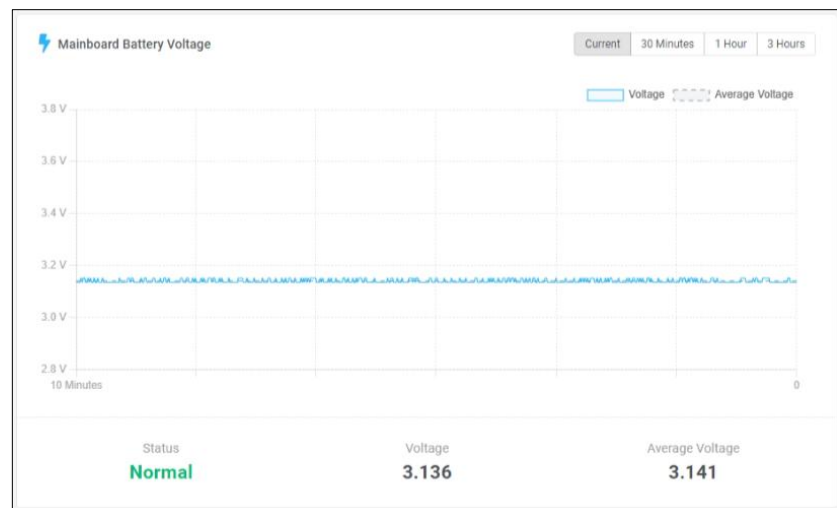


Figure 35: Mainboard Battery Voltage monitor



Figure 36: PSU Temperature monitor\* (only applicable with TBSP-ECAPSE-R600 PSU).

## 8.2 App Monitor

The App Monitor displays the status of applications tracked by the Application Monitor, as well as services within ecaOS that have been included in the Service Monitor.

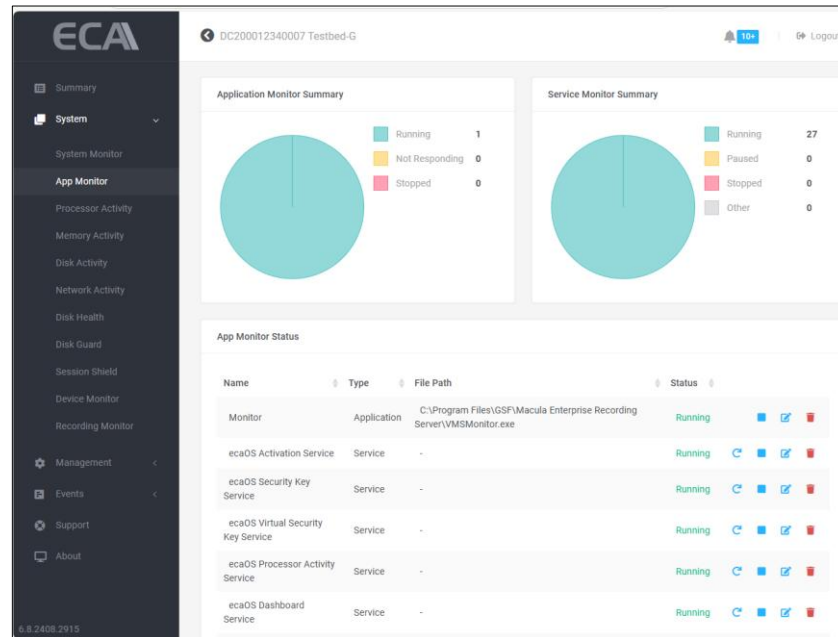


Figure 37: Service Monitor Summary

### 8.2.1 Add Application

1. To add application, click the **Add Application** button.

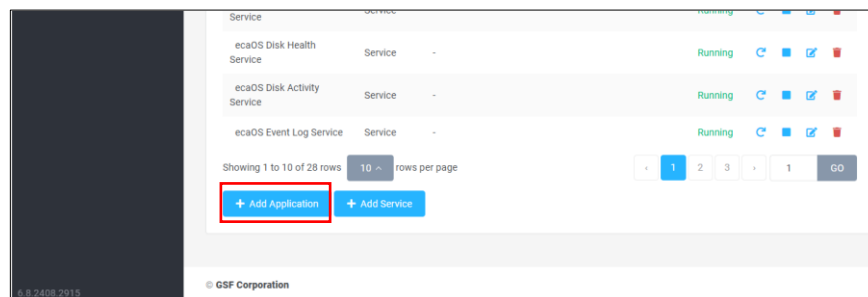


Figure 38: Add Applications

2. Enter the application name

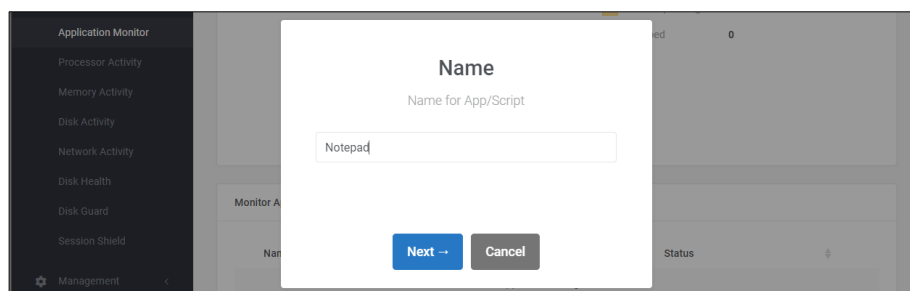


Figure 39: Application Monitor (1 of 4)

3. Insert the path to the application to be added. Then, press **Next**.

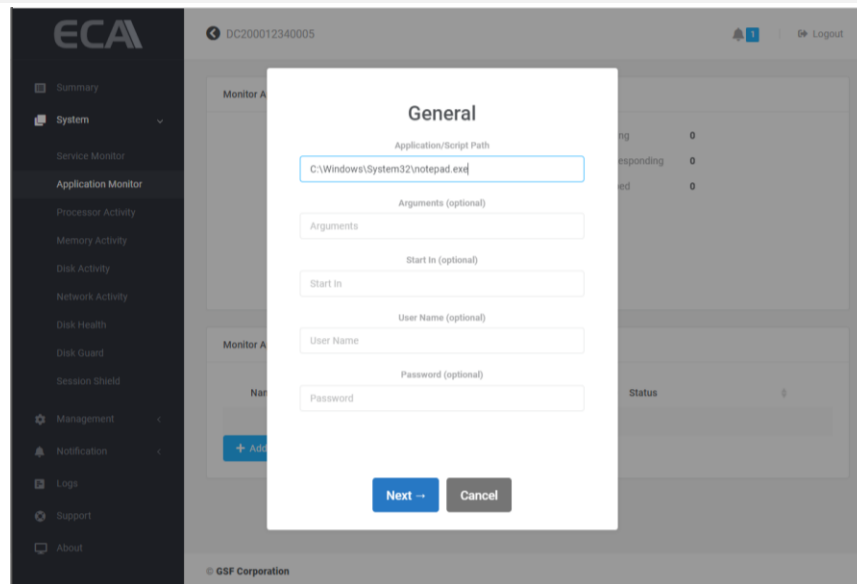


Figure 40: Application Monitor (2 of 4)

#### 4. Apply setting

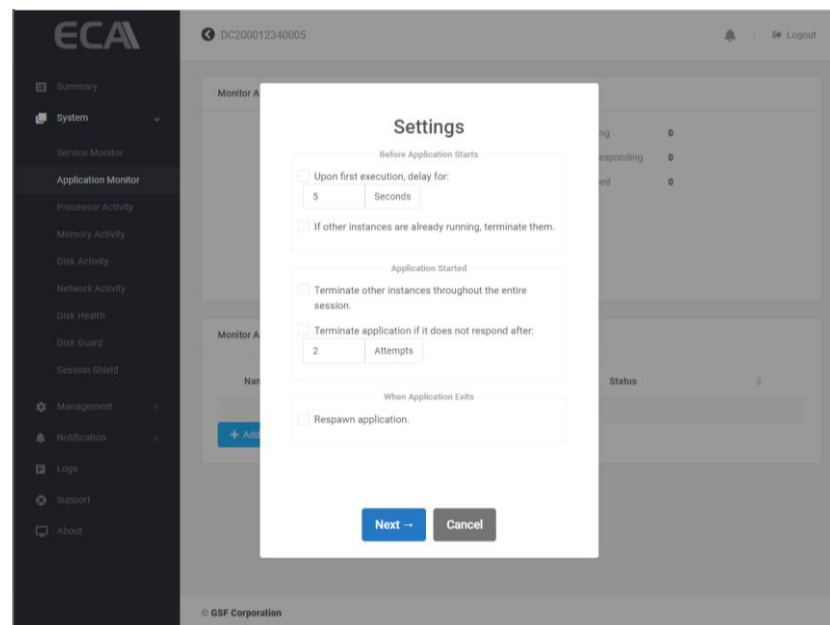


Figure 41: Application Monitor (3 of 4)

| Settings                                                              | What it does                                                                                                                                            |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Upon first execution delay for</b>                                 | Set the delay before starting the application                                                                                                           |
| <b>If other instance(s) are already running, terminate them</b>       | If another instance of the same application is already started (not by Application Manager) terminate that instance.                                    |
| <b>Terminate other instance(s) throughout the entire session</b>      | If another instance attempts to start again after the Application Monitor has started the application, terminate it. This prevents duplicated instance. |
| <b>Terminate application if it does not respond after __ attempts</b> | If the application does not respond after the number of attempts specified, the Application Monitor will terminate it.                                  |
| <b>Respawn application</b>                                            | The Application Monitor will respawn the application if it is not running, or if it is closed. This ensures the application is always running.          |

- Once the application has been successfully added, its status will appear on the 'Application Monitor'

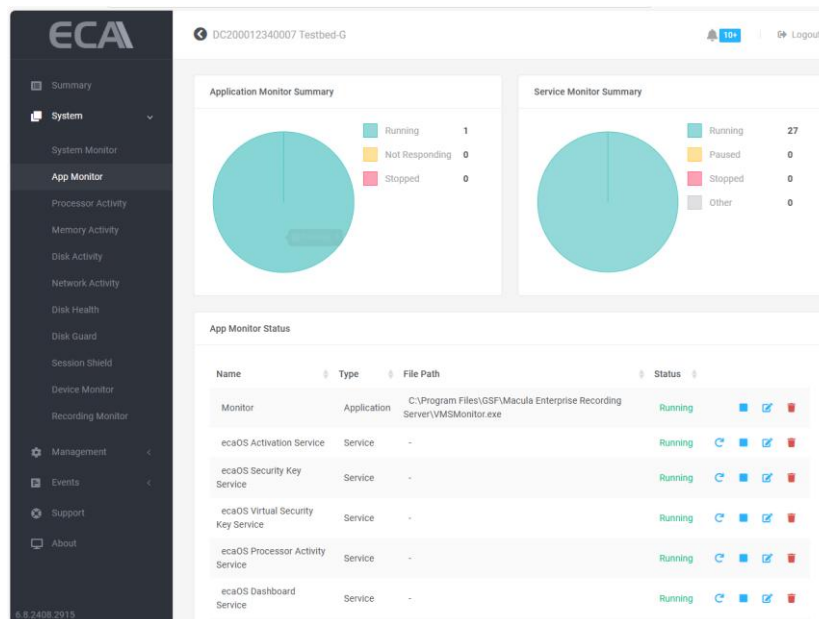


Figure 42: Application Monitor (4 of 4)

## 8.2.2 Delete Application

- To delete application to be monitor, click the  button of the application to be delete

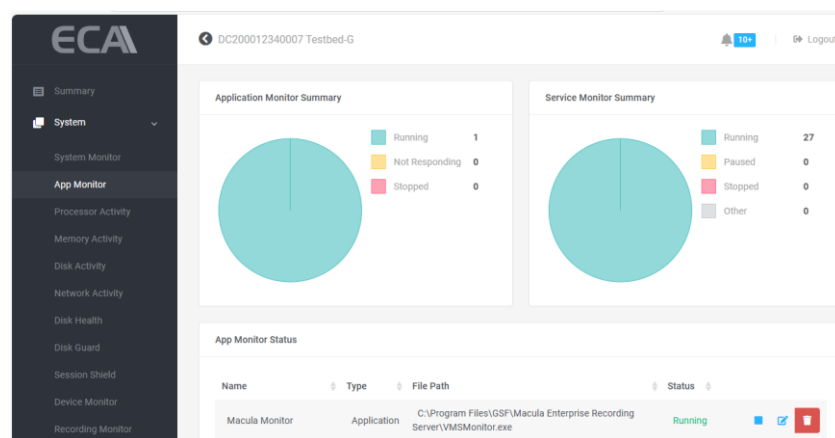


Figure 43: Delete monitored application (1 of 2)

- Click on  to proceed with the deletion

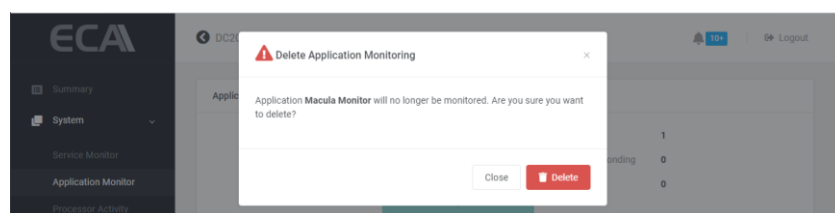


Figure 44: Delete monitored application (2 of 2)

### 8.2.3 Add Services

1. To add services, click the Add Service button.

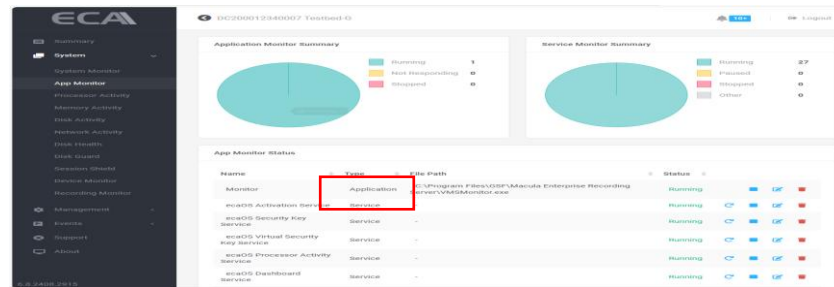


Figure 45: Add Services

2. Click the drop-down button.

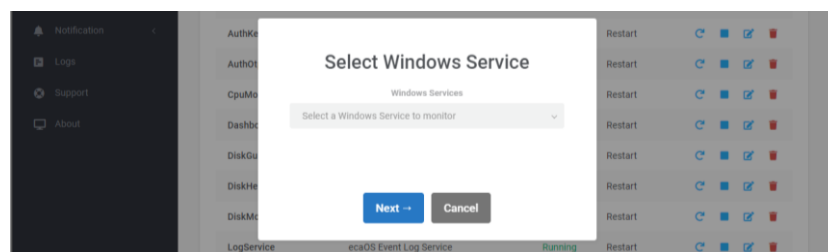


Figure 46: Select Windows Services (1 of 4)

3. Select the services to be added into Service Monitor.

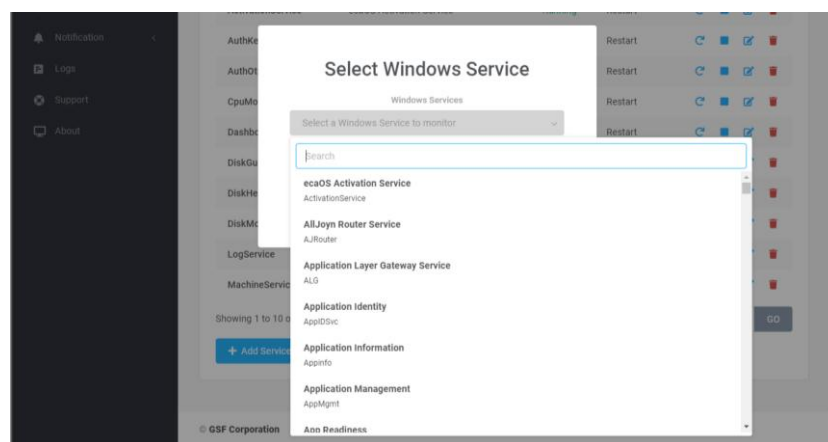
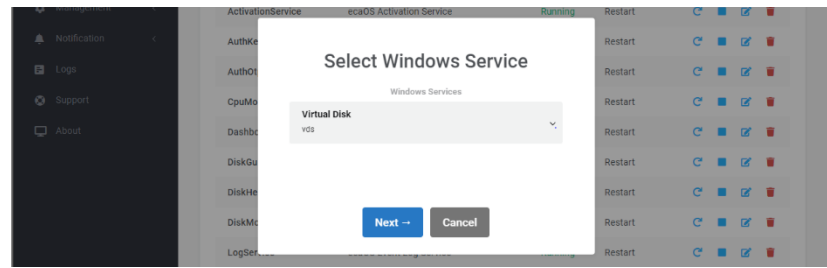


Figure 47: Select Windows Services (2 of 4)

4. Click **Next →** button



5. Select the actions that Service Monitor should perform when the services stop working. Click **Save** to save the setting.

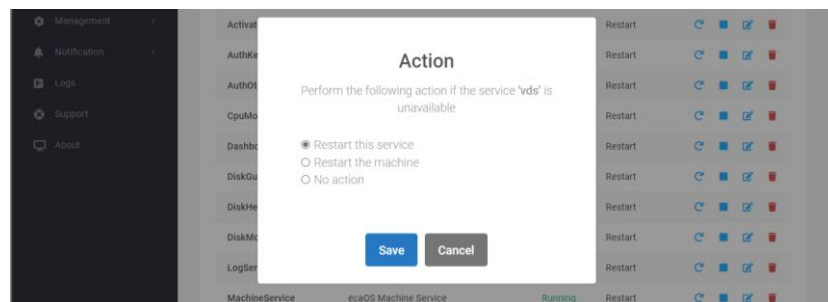


Figure 48: Select Windows Services (4 of 4)

## 8.2.4 Delete Services

1. To delete services, click the  button of the service to be deleted.

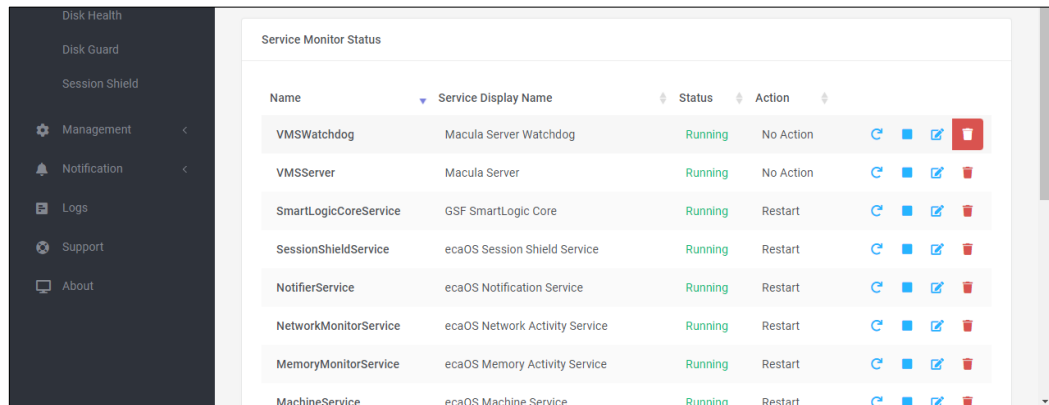


Figure 49: Delete Services (1 of 2)

2. Click on  to proceed with the deletion.

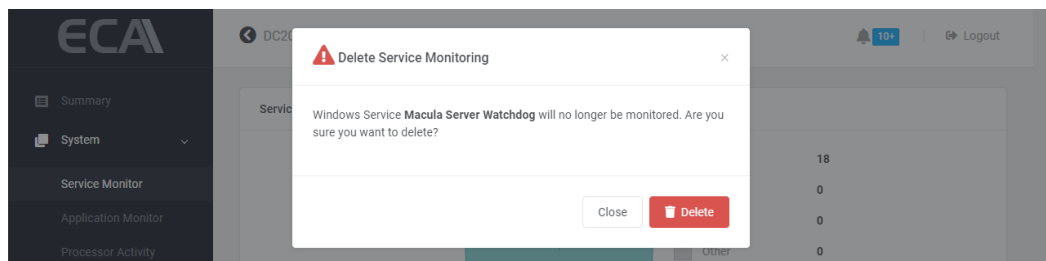


Figure 50: Delete Services (2 of 2)

## 8.3 Processor Activity

This application monitors CPU usage and notify via email when the usage above the threshold value.

ecaOS can generate notification to alert users, when ECA CPU Alert utilization goes above the configured threshold for a pre-defined period.

**CPU Activity:** The status will be based on Average CPU Utilization. The status will change to **High** if average CPU Utilization exceeds the threshold set under **Processor Activity Monitor**.

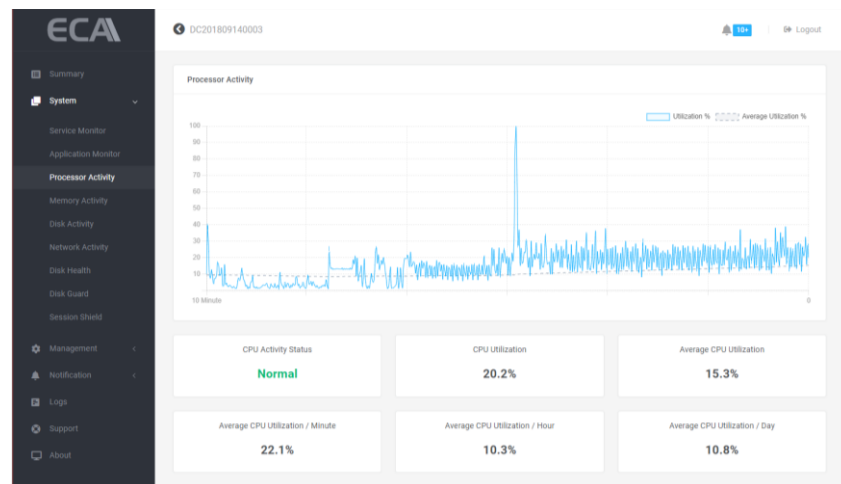


Figure 51: Processor Activity (1 of 2)

The example below demonstrates the Processor Activity Monitor configured with a threshold of 80% over 10 minutes. If the average CPU utilization exceeds 80% for more than 10 minutes, the CPU activity status will change to "High." This event will trigger an email notification and an alert in the notifications panel.

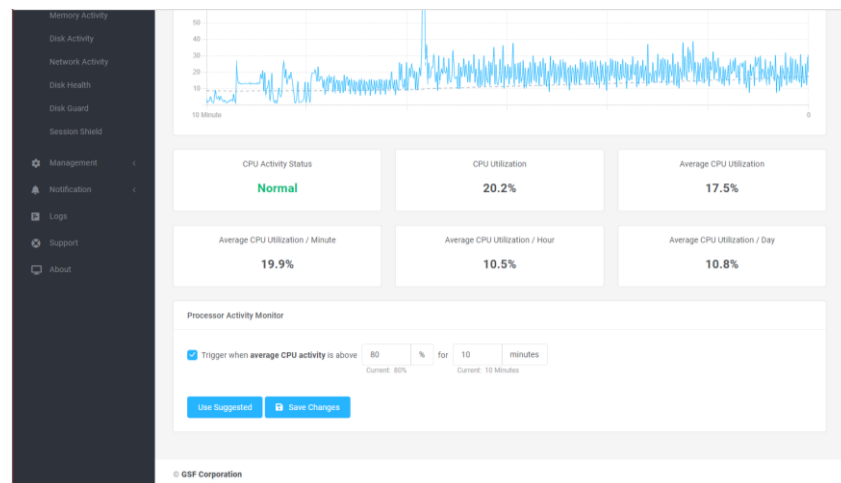


Figure 52: Processor Activity (2 of 2)

### NOTE:

- Click on **Use Suggested** for recommended value calculated by the system based on real-time usage.
- For email and notification setting, refer to [Events](#)
- Sample email of the CPU activity event can be found in the [Appendix Processor Activity](#)

## 8.4 Memory Activity

Monitor the memory usage and notify/email if the usage above the threshold value. ecaOS can generate notification to alert users when ECA Memory utilization goes above the configured threshold for a pre-defined period.

**Memory Activity:** The status will be based on Average Memory Usage. The status will change to High if the Average Memory Usage is higher than threshold set under Memory Activity Monitor.

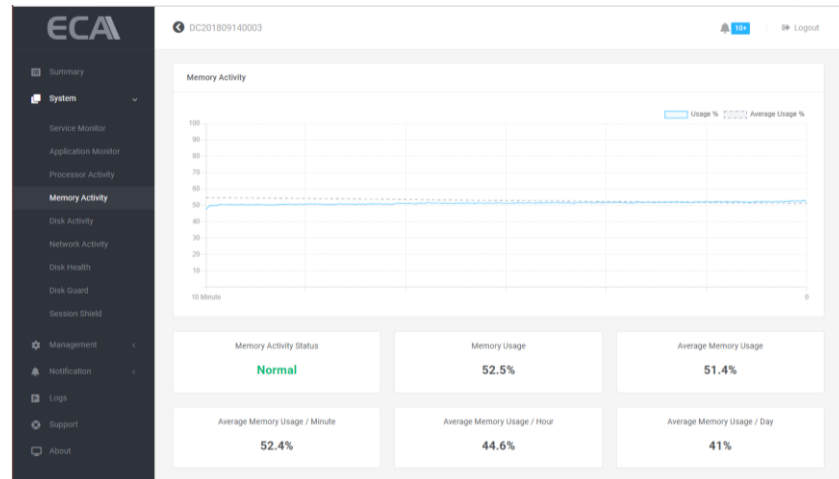


Figure 53: Memory Activity (1 of 2)

The example below to demonstrate that the Memory Activity Monitor set to enable, the threshold set to 80% for 10 minutes. The Memory Activity status will change to High if the Average Memory Utilization is higher than 80% for more than 10 minutes. This event will be notified by email and at the notification.

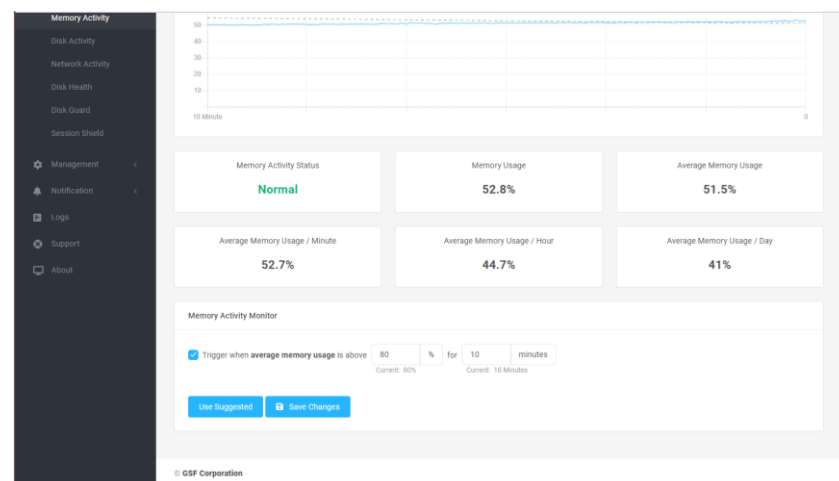


Figure 54: Memory Activity (2 of 2)

### NOTE:

- Click on 'Use Suggested' for reference value calculated by the system.
- For email and notification setting, go to [Events](#)
- Example email of the Memory activity event in the [Appendix Memory Activity](#)

## 8.5 Disk Activity

Disk Activity provides real-time monitoring of disk usage, tracking average activity per minute, hour, and day. It includes automatic alerts if disk read or write activity deviates above or below predefined threshold limits for a specified duration. This feature is particularly useful for detecting issues such as accidental deactivation of the recording function in VMS software. When recording is turned off, disk writing ceases, prompting the system to alert users of potential CCTV recording interruptions.

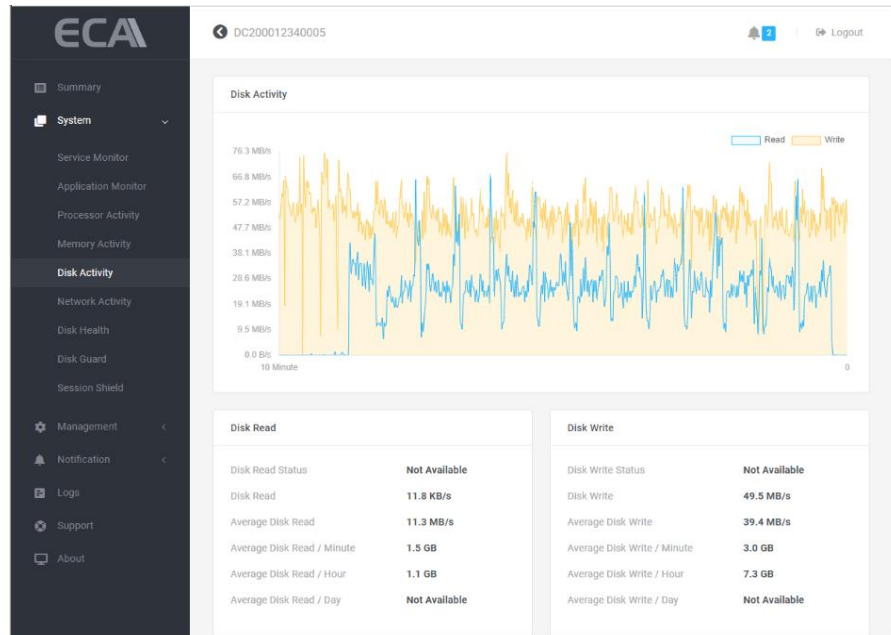


Figure 55: Disk Activity (1 of 2)

The following example demonstrates the configuration of the Disk Activity Monitor for both read and write operations.

The average disk read threshold is set to exceed 10 GB/s for 10 minutes, while the average disk write threshold is configured to drop below 15 GB/s for the same duration. If these thresholds are exceeded, the system will send a notification via email and display an alert in the notification panel.

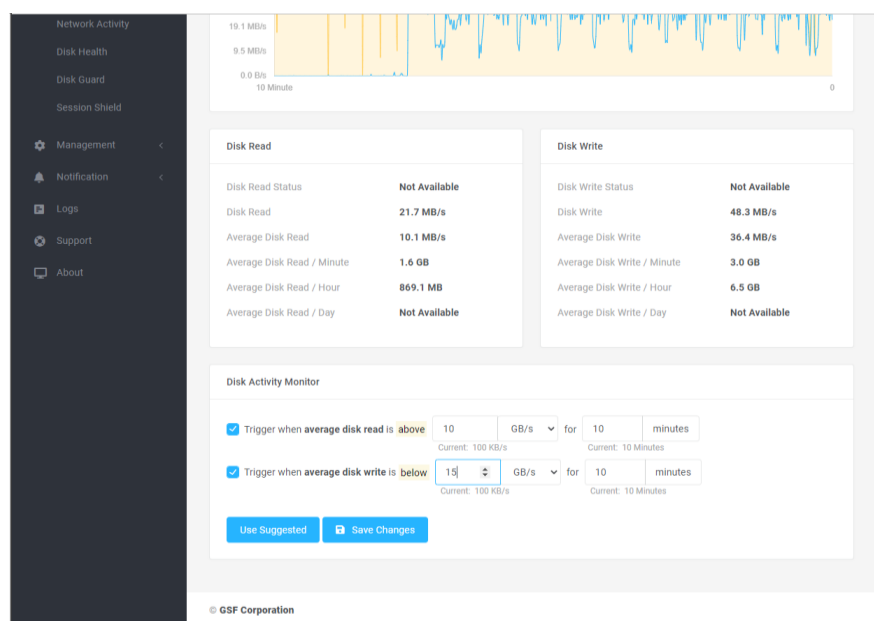


Figure 56: Disk Activity (2 of 2)

**NOTE:**

- Click on 'Use Suggested' for reference value calculated by the system.
- For email and notification setting, go to [Events](#)
- Example email of the Disk activity event in the [Appendix Disk Activity](#)

## 8.6 Network Activity

Network Activity displays real time network usage activity. It can automatically calculate average network utilization per minute, per hour or per day. This average value is important for the estimation and observation of network utilization, as incoming throughput from the network cameras or video sources varies throughout the day, where daytime throughput is usually higher than nighttime.

Automatic alert if network received or sending is fall or raise above threshold limit for a period of time. This is very useful if some of the cameras was accidentally offline due to faulty PoE switch.

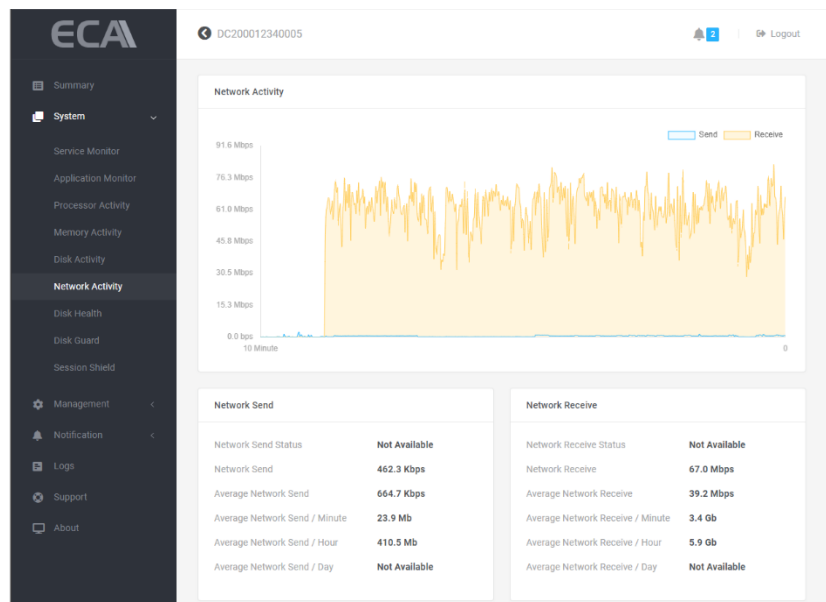


Figure 57: Network Activity (1 of 2)

By the example below to demonstrate that the Network Activity set to trigger email & desktop notifications.

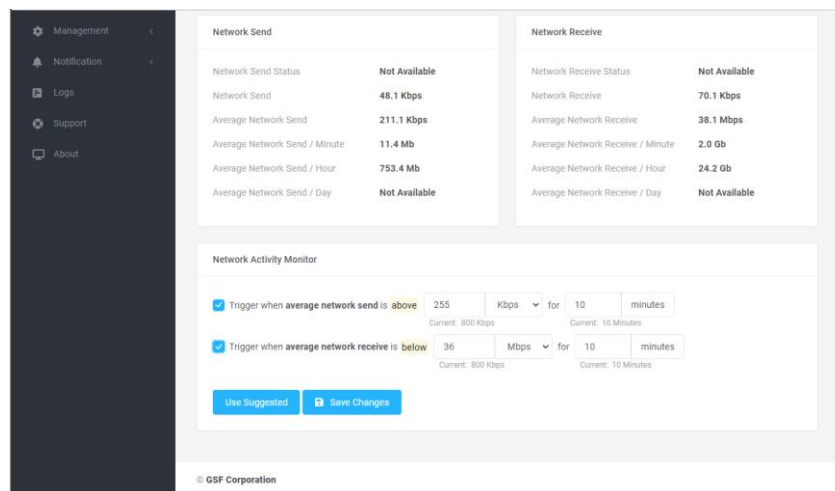


Figure 58: Network Activity (2 of 2)

It will trigger when the data send over network above 255Kbps for 10 minutes

It will trigger when the data receive below set threshold 36Mbps for 10 minutes

NOTE:

- Click on 'Use Suggested' for reference value calculate by the system.
- For email and notification setting, go to [Events](#)
- Example email of the Network activity event in the [Appendix Network Activity](#)

## 8.7 Disk Health

'Disk Health' able to show information of individual disk connected to ECA. 'Disk Health' also monitor disk status and notify whenever detected the health below certain threshold.

Oversee disk information and health such as, disk health, SMART value, temperature, drive wear level, power on hours, capacity, model and serial numbers, etc.

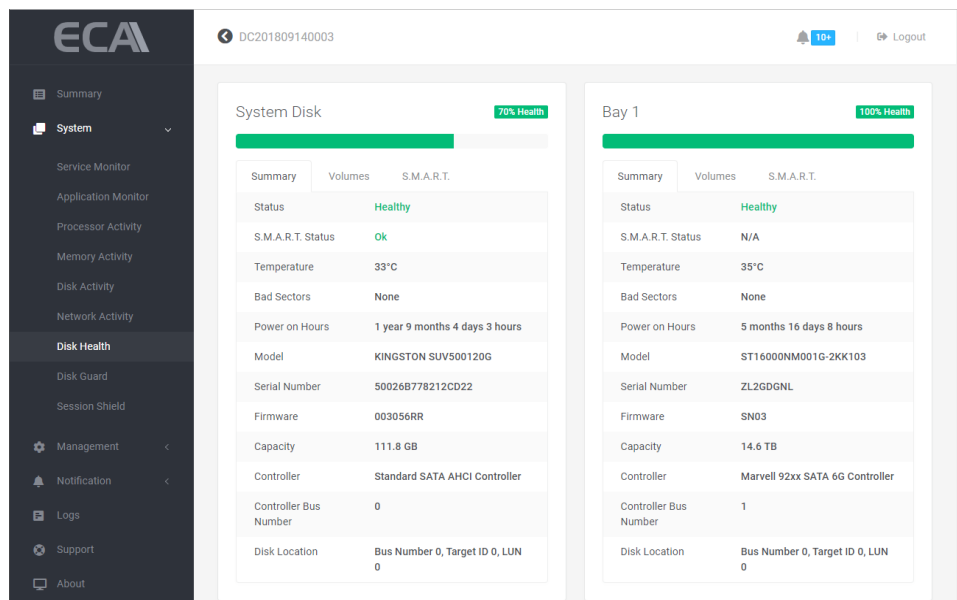


Figure 59: Disk Health (1 of 3)

Under Summary tab, can found drive information such health status, bad sector, temperature, model etc.

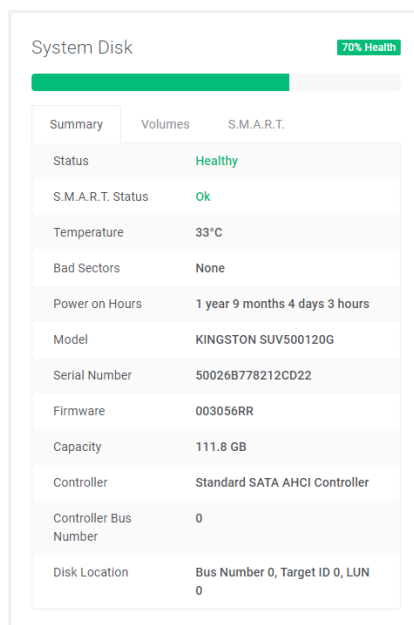


Figure 60: Disk Health – Healthy Disk (2 of 3)

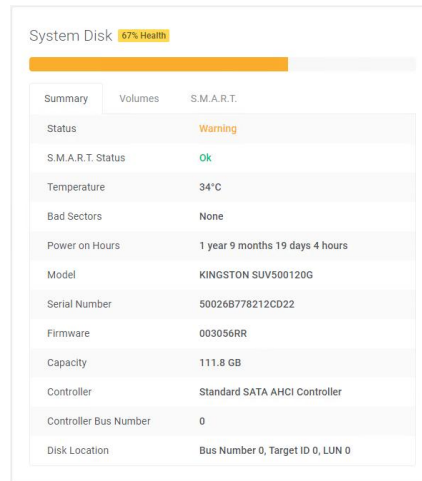


Figure 61: Disk Health – Warning Status Disk (2 of 3)

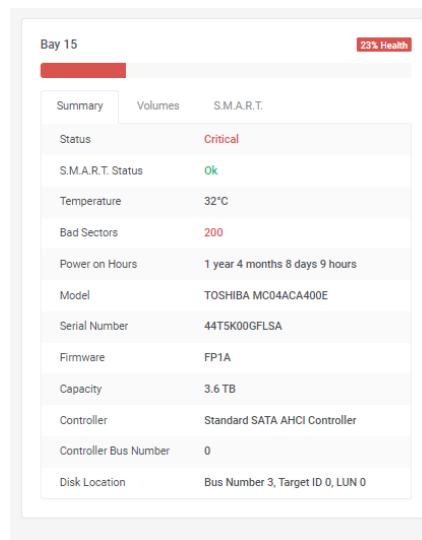


Figure 62: Disk Health – Critical Status Disk with Bad Sectors (2 of 3)

Under Volume, display partition & free space available information

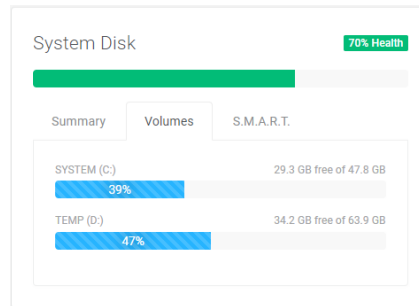
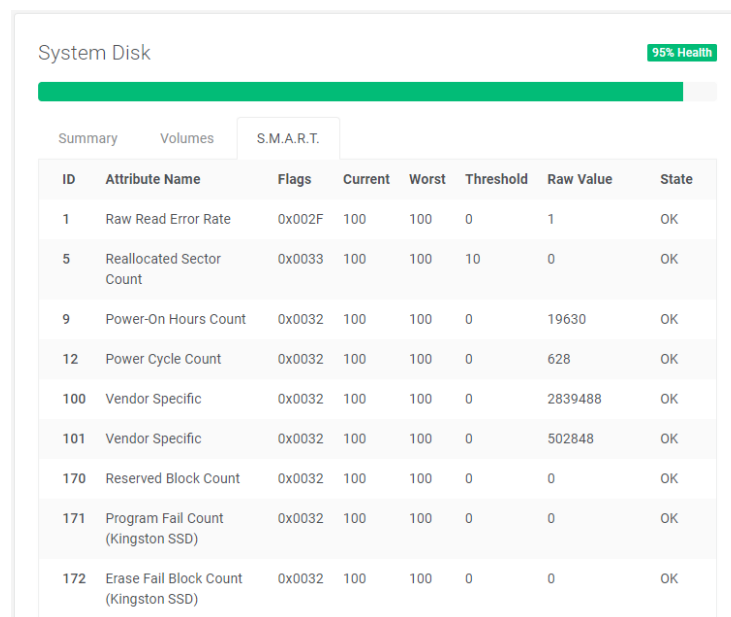


Figure 63: Disk Health (3 of 3)

Under S.M.A.R.T (Self-Monitoring, Analysis and Reporting Technology), will display S.M.A.R.T value. Its primary function is to detect and report various indicators of drive reliability with the intent of anticipating imminent hardware failures.



System Disk **95% Health**

Summary Volumes S.M.A.R.T.

| ID  | Attribute Name                        | Flags  | Current | Worst | Threshold | Raw Value | State |
|-----|---------------------------------------|--------|---------|-------|-----------|-----------|-------|
| 1   | Raw Read Error Rate                   | 0x002F | 100     | 100   | 0         | 1         | OK    |
| 5   | Reallocated Sector Count              | 0x0033 | 100     | 100   | 10        | 0         | OK    |
| 9   | Power-On Hours Count                  | 0x0032 | 100     | 100   | 0         | 19630     | OK    |
| 12  | Power Cycle Count                     | 0x0032 | 100     | 100   | 0         | 628       | OK    |
| 100 | Vendor Specific                       | 0x0032 | 100     | 100   | 0         | 2839488   | OK    |
| 101 | Vendor Specific                       | 0x0032 | 100     | 100   | 0         | 502848    | OK    |
| 170 | Reserved Block Count                  | 0x0032 | 100     | 100   | 0         | 0         | OK    |
| 171 | Program Fail Count (Kingston SSD)     | 0x0032 | 100     | 100   | 0         | 0         | OK    |
| 172 | Erase Fail Block Count (Kingston SSD) | 0x0032 | 100     | 100   | 0         | 0         | OK    |

Figure 64: Disk Health (3 of 3)

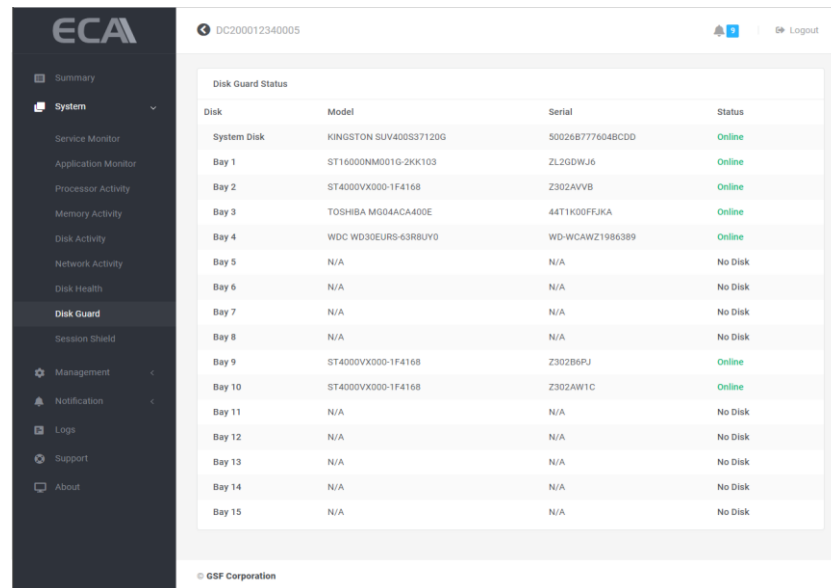
**NOTE:**

- Click on 'Use Suggested' for reference value calculate by the system.
- For email and notification setting, go to [Events](#)
- Example email of the Disk Health event in the [Appendix Disk Health](#)

## 8.8 Disk Guard

Display status all connected hard disk to the ECA.

HDD stores important video evidence data. It is important to ensure the data remains intact in the ECA. Disk Guard monitors HDD insertion and removal events on the ECA.



| Disk        | Model                  | Serial           | Status  |
|-------------|------------------------|------------------|---------|
| System Disk | KINGSTON SUV400S37120G | 50026B777604BCDD | Online  |
| Bay 1       | ST1600NM001G-2KK103    | ZL2GDWJ6         | Online  |
| Bay 2       | ST4000VX000-1F4168     | Z302AIVB         | Online  |
| Bay 3       | TOSHIBA MG04ACA400E    | 44T1K00FFJKA     | Online  |
| Bay 4       | WDC WD30EURS-63R8UY0   | WD-WCAWZ1986389  | Online  |
| Bay 5       | N/A                    | N/A              | No Disk |
| Bay 6       | N/A                    | N/A              | No Disk |
| Bay 7       | N/A                    | N/A              | No Disk |
| Bay 8       | N/A                    | N/A              | No Disk |
| Bay 9       | ST4000VX000-1F4168     | Z302B6PJ         | Online  |
| Bay 10      | ST4000VX000-1F4168     | Z302AW1C         | Online  |
| Bay 11      | N/A                    | N/A              | No Disk |
| Bay 12      | N/A                    | N/A              | No Disk |
| Bay 13      | N/A                    | N/A              | No Disk |
| Bay 14      | N/A                    | N/A              | No Disk |
| Bay 15      | N/A                    | N/A              | No Disk |

Figure 65: Disk Guard

Disk list shown depending on the ECA model:

- ECA-FX44: System Disk, Bay 1 – Bay 15
- ECA-EX44: System Disk, Bay 1 – Bay 10 & HD1
- ECA-DX44: System Disk, Bay 1 – Bay 5, HDD1, HDD 2
- ECA-MX44: System Disk, HDD1, HDD 2
- ECA-VW44: System Disk, HDD1, HDD 2

Status:

- **Online:** Hard disk installed. Using by OS
- **Offline:** Hard disk installed. Not using by OS
- **No Disk:** No hard disk installed.
- **Removed:** Previous hard disk has been removed.
- **Replaced:** Hard disk has been replaced with different serial number.

NOTE:

- System Disk is the drive containing operating system.
- Hard disks insert in the hotswap bay will label shows as a 'Bay'.
- Internal hard disk will label HDD1 & HDD2 is for the internal hard disk.
- When hard disk removed, the hard disk information still shown with 'Removed' status. Acknowledge the removed hard disk will change to latest status.

|        |          |                      |         |                             |
|--------|----------|----------------------|---------|-----------------------------|
| Bay 12 | ZL2GDQ7V | ST16000NM001G-2KK103 | Removed | <a href="#">Acknowledge</a> |
|--------|----------|----------------------|---------|-----------------------------|

Figure 66: Disk removed

- For email and notification setting, go to [Events](#)
- Example email of the Disk Guard event in the [Appendix Disk Guard](#)

### 8.2.5 Hard disk change during ECA Power Off

Dashboard will be sending notification via email to inform there is hard disk changing during ECA off stage (power off). This feature is part of Disk Guard, to protect the Data/Evidence, ensure the same serial number was in the ECA machine before and after power on.

[DC201809140003 ecaOS 6.0.2210.0408] Hard Disks change detected - Message (HTML)

File Message Help Acrobat

Share to Teams Find

[DC201809140003 ecaOS 6.0.2210.0408] Hard Disks change detected

ECA Notifications <noreply@gsf.ms>  
To jemi

Thu 6/10/2022 5:46 PM

If there are problems with how this message is displayed, click here to view it in a web browser.



Dear user,

Hard disks placement and/or online status change detected while disk guard service was offline.

**Previous Disk Configuration:**

|             | Model                | Serial #         | Online/Offline | Status   |
|-------------|----------------------|------------------|----------------|----------|
| System Disk | KINGSTON SUV500120G  | 50026B778212CD22 | Online         | Inserted |
| Bay 1       |                      |                  |                | No Disk  |
| Bay 2       | ST16000NM001G-2KK103 | ZL2GE079         | Online         | Inserted |
| Bay 3       | ST16000NM001G-2KK103 | ZL2GDGD9         | Online         | Inserted |
| Bay 4       | ST16000NM001G-2KK103 | ZL2GE18Q         | Online         | Inserted |
| Bay 5       | ST16000NM001G-2KK103 | ZL2FP7HG         | Online         | Inserted |
| Bay 6       | ST16000NM001G-2KK103 | ZL2G88KT         | Online         | Inserted |
| Bay 7       | ST16000NM001G-2KK103 | ZL2G97VW         | Online         | Inserted |
| Bay 8       | ST16000NM001G-2KK103 | ZL2G0D00         | Online         | Inserted |
| Bay 9       |                      |                  |                | No Disk  |
| Bay 10      |                      |                  |                | No Disk  |
| Bay 11      | ST16000NM001G-2KK103 | ZL2E4RX          | Online         | Inserted |
| Bay 12      | ST16000NM001G-2KK103 | ZL2GDQ7V         | Online         | Inserted |
| Bay 13      |                      |                  |                | No Disk  |
| Bay 14      |                      |                  |                | No Disk  |
| Bay 15      | ST16000NM001G-2KK103 | ZL2GDGNL         | Online         | Inserted |

**Current Disk Configuration:**

|             | Model                | Serial #         | Online/Offline |
|-------------|----------------------|------------------|----------------|
| System Disk | KINGSTON SUV500120G  | 50026B778212CD22 | Online         |
| Bay 1       |                      |                  |                |
| Bay 2       | ST16000NM001G-2KK103 | ZL2GE079         | Online         |
| Bay 3       | ST16000NM001G-2KK103 | ZL2GDGD9         | Online         |
| Bay 4       | ST16000NM001G-2KK103 | ZL2GE18Q         | Online         |
| Bay 5       | ST16000NM001G-2KK103 | ZL2FP7HG         | Online         |
| Bay 6       | ST16000NM001G-2KK103 | ZL2G88KT         | Online         |
| Bay 7       | ST16000NM001G-2KK103 | ZL2G97VW         | Online         |
| Bay 8       | ST16000NM001G-2KK103 | ZL2G0D00         | Online         |
| Bay 9       |                      |                  |                |
| Bay 10      |                      |                  |                |
| Bay 11      |                      |                  |                |
| Bay 12      |                      |                  |                |
| Bay 13      |                      |                  |                |
| Bay 14      |                      |                  |                |
| Bay 15      | ST16000NM001G-2KK103 | ZL2GDGNL         | Online         |

Time Reported: 06-Oct-22 17:46:10 +08:00

For further assistance, please contact TrueBlue Care:  
[trueblue@gsfcorp.com](mailto:trueblue@gsfcorp.com)  
 +603-8090 8277  
 Monday - Friday, 9AM - 6PM

Figure 67: Hard Disks change detected (1 of 1)

## 8.3 Session Shield

Session shield which permanently stores all modifications into the User Layer. Without doing so, all modifications of settings, software, or Windows, are temporary only, and will be discarded once the ECA is powered off or reboot.

Total size availability will be half of the amount of the RAM.

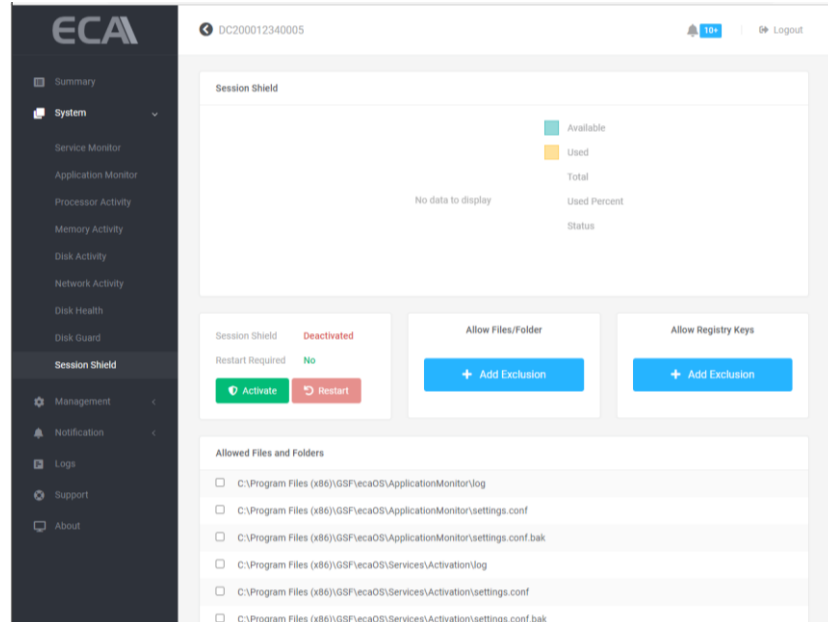


Figure 68: Session Shield

### 8.3.1 Activate Session Shield

All setting/files in the 'C:\' will be protected. All setting/files will be return to its original state after reboot the ECA.

1. Click on 'Activate'

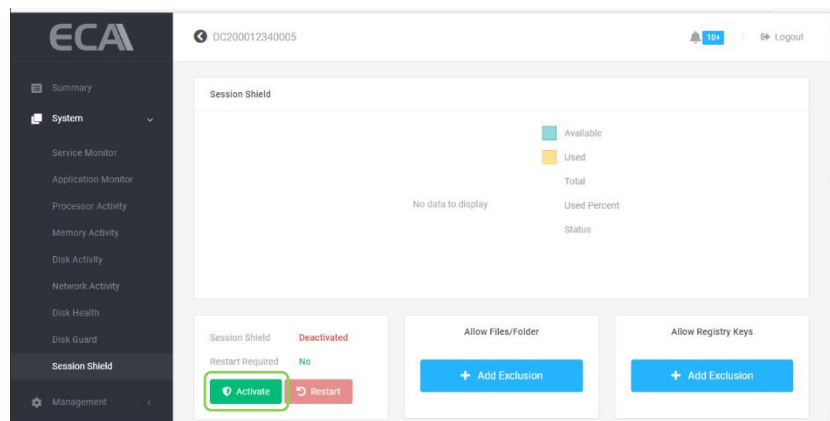


Figure 69: Activate Session Shield (1 of 5)

2. Click 'Change Settings' to save the setting

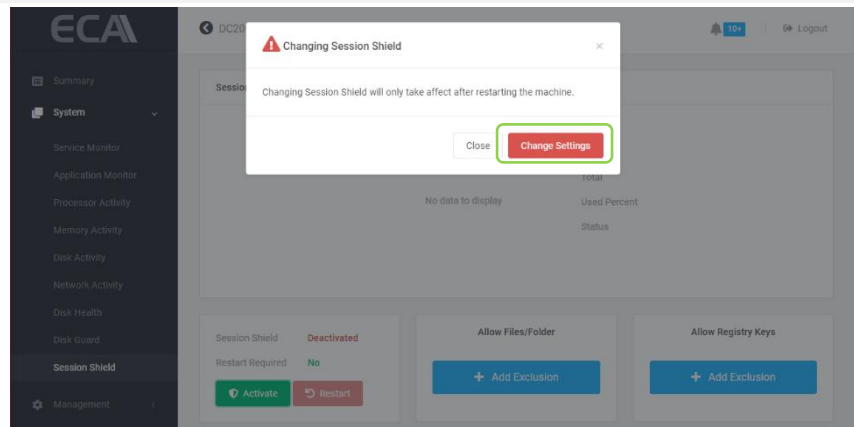


Figure 70: Activate Session Shield (2 of 5)

- Click 'Restart' to reboot ECA and apply the setting.

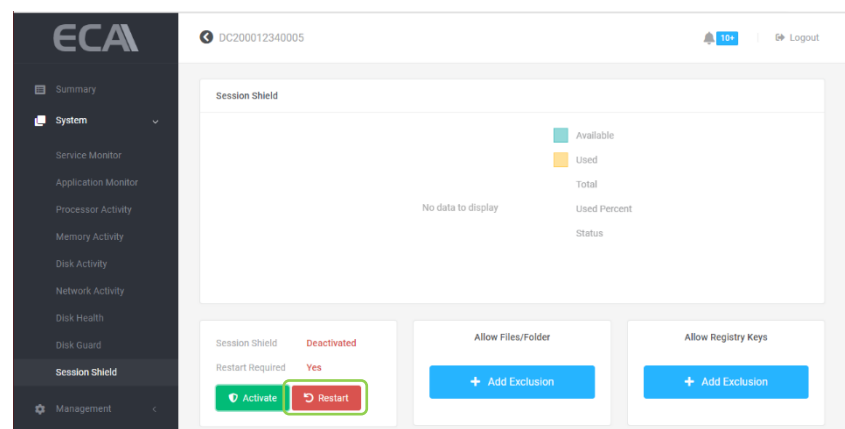


Figure 71: Activate Session Shield (4 of 6)

- Type Restart then click 'Restart' button

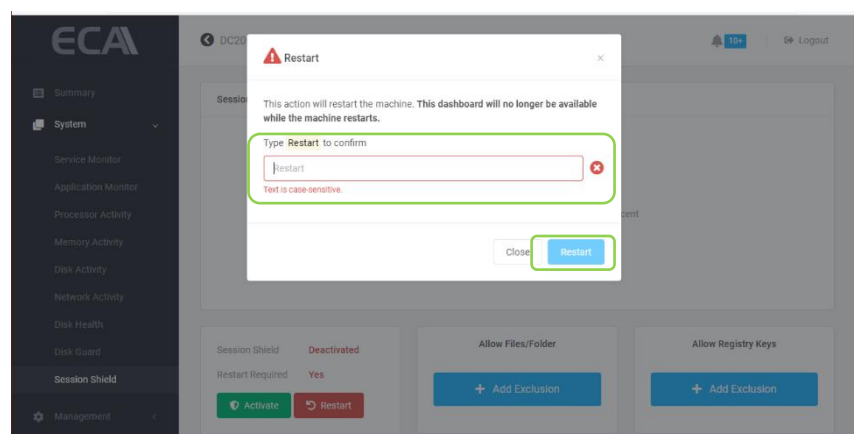


Figure 72: Activate Session Shield (5 of 6)

- Once the Session Shield successfully activated. The Session Shield information shown as below

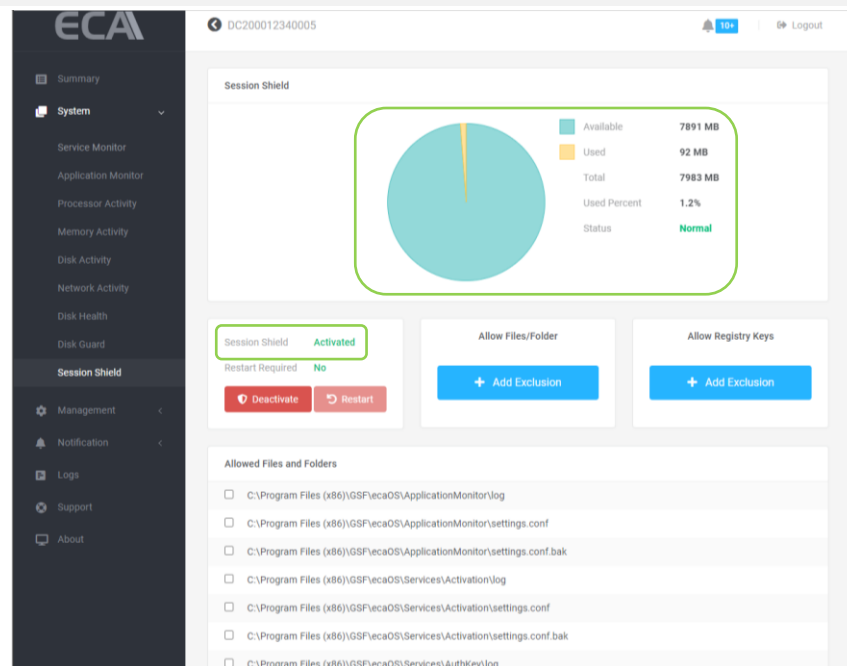


Figure 73: Activate Session Shield (6 of 6)

### 8.3.2 Deactivate Session Shield

All setting/files in the 'C:\' will not be protected. All files setting will be permanently written.

1. Click on 'Deactivate'

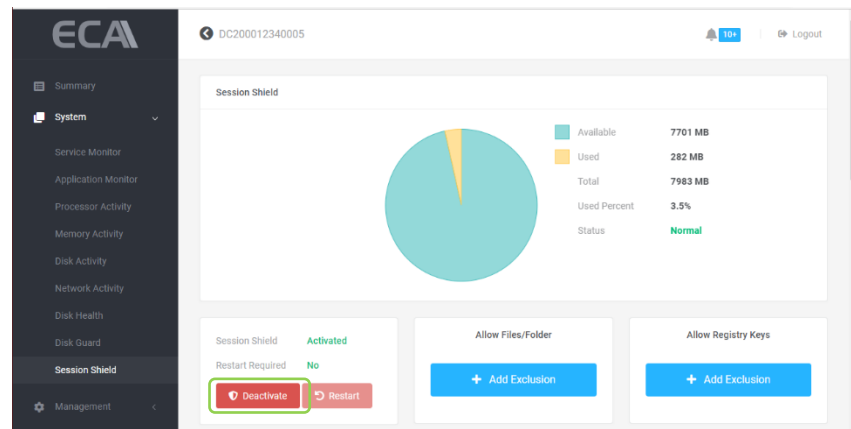


Figure 74: Deactivate Session Shield (1 of 3)

2. Click 'Change Settings' to save the setting

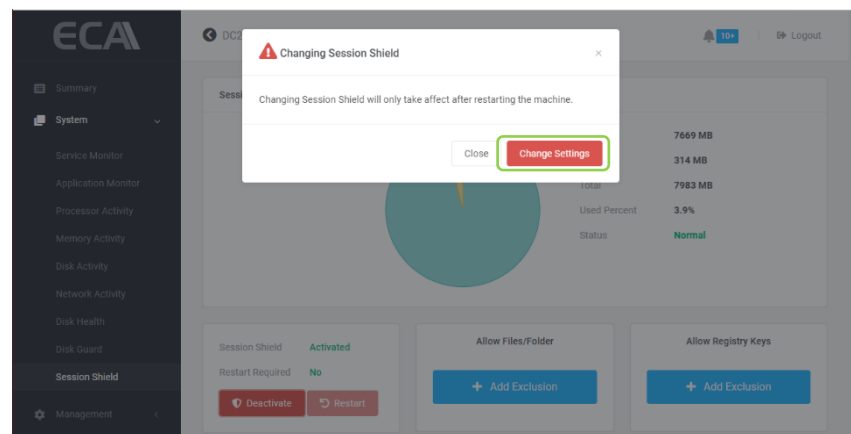


Figure 75: Deactivate Session Shield (2 of 3)

3. Click 'Restart' to reboot ECA and apply the setting

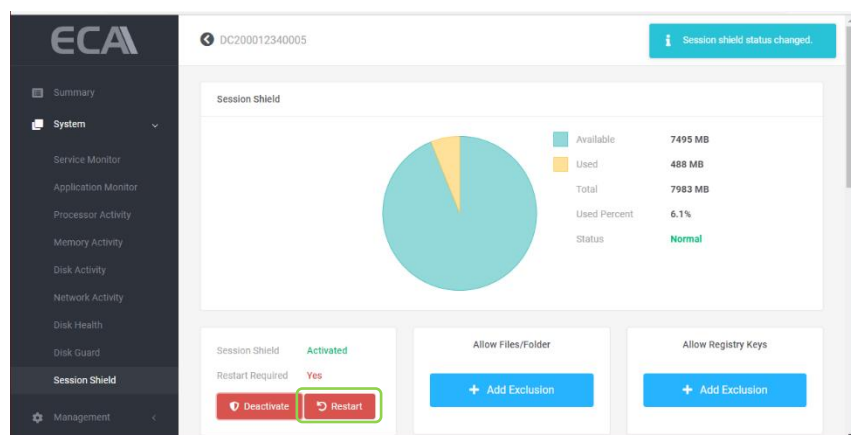


Figure 76: Deactivate Session Shield (2 of )

4. Type Restart then click 'Restart' button

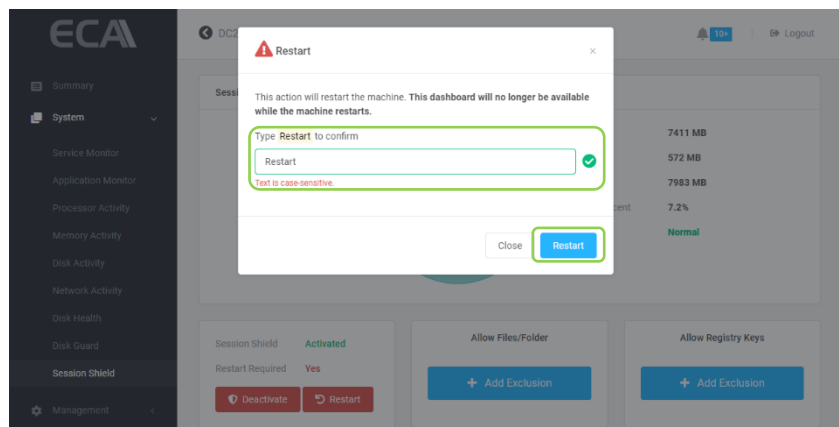


Figure 77: Deactivate Session Shield (3 of 3)

### 8.3.3 Exclusion List

All paths below will not be affected when Session Shield is activated. The data destined to these paths will be able to pass-through and written permanently:

```
C:\Program Files (x86)\GSF\ecaOS\ProcessMonitor\log
C:\Program Files (x86)\GSF\ecaOS\ProcessMonitor\settings.conf
C:\Program Files (x86)\GSF\ecaOS\ProcessMonitor\settings.conf.bak
C:\Program Files (x86)\GSF\ecaOS\Services\Activation\log
C:\Program Files (x86)\GSF\ecaOS\Services\Activation\settings.conf
C:\Program Files (x86)\GSF\ecaOS\Services\Activation\settings.conf.bak
C:\Program Files (x86)\GSF\ecaOS\Services\AuthKey\log
C:\Program Files (x86)\GSF\ecaOS\Services\AuthKey\settings.conf
C:\Program Files (x86)\GSF\ecaOS\Services\AuthKey\settings.conf.bak
C:\Program Files (x86)\GSF\ecaOS\Services\AuthOtp\log
C:\Program Files (x86)\GSF\ecaOS\Services\AuthOtp\settings.conf
C:\Program Files (x86)\GSF\ecaOS\Services\AuthOtp\settings.conf.bak
C:\Program Files (x86)\GSF\ecaOS\Services\HB2Gateway\log
C:\Program Files (x86)\GSF\ecaOS\Services\HB2Gateway\settings.conf
C:\Program Files (x86)\GSF\ecaOS\Services\HB2Gateway\settings.conf.bak
C:\Program Files (x86)\GSF\ecaOS\Services\Log\log
C:\Program Files (x86)\GSF\ecaOS\Services\Log\settings.conf
C:\Program Files (x86)\GSF\ecaOS\Services\Log\settings.conf.bak
C:\Program Files\Microsoft SQL Server\MSSQL15.SQLEXPRESS\MSSQL\DATA
C:\Program Files (x86)\GSF\ecaOS\Services\Machine\log
C:\Program Files (x86)\GSF\ecaOS\Services\Machine\settings.conf
C:\Program Files (x86)\GSF\ecaOS\Services\Machine\settings.conf.bak
C:\Program Files (x86)\GSF\ecaOS\Services\WindowsServiceMonitor\log
C:\Program Files (x86)\GSF\ecaOS\Services\WindowsServiceMonitor\settings.conf
C:\Program Files (x86)\GSF\ecaOS\Services\WindowsServiceMonitor\settings.conf.bak
C:\Program Files (x86)\GSF\ecaOS\Services\SessionShield\log
C:\Program Files (x86)\GSF\ecaOS\Services\SessionShield\settings.conf
C:\Program Files (x86)\GSF\ecaOS\Services\SessionShield\settings.conf.bak
C:\Program Files (x86)\GSF\ecaOS\Services\CPUMonitor\log
C:\Program Files (x86)\GSF\ecaOS\Services\CPUMonitor\Db
C:\Program Files (x86)\GSF\ecaOS\Services\CPUMonitor\appsettings.cpu_activity.json
C:\Program Files (x86)\GSF\ecaOS\Services\MemoryMonitor\log
C:\Program Files (x86)\GSF\ecaOS\Services\MemoryMonitor\Db
C:\Program Files (x86)\GSF\ecaOS\Services\MemoryMonitor\appsettings.memory_activity.json
C:\Program Files (x86)\GSF\ecaOS\Services\NetworkMonitor\log
C:\Program Files (x86)\GSF\ecaOS\Services\NetworkMonitor\Db
C:\Program Files (x86)\GSF\ecaOS\Services\NetworkMonitor\appsettings.network_activity.json
C:\Program Files (x86)\GSF\ecaOS\Services\DiskMonitor\log
C:\Program Files (x86)\GSF\ecaOS\Services\DiskMonitor\Db
C:\Program Files (x86)\GSF\ecaOS\Services\DiskMonitor\appsettings.disk_activity.json
C:\Program Files (x86)\GSF\ecaOS\Services\DiskHealth\log
C:\Program Files (x86)\GSF\ecaOS\Services\DiskHealth\Db
C:\Program Files (x86)\GSF\ecaOS\Services\DiskHealth\appsettings.disk_health.json
C:\Program Files (x86)\GSF\ecaOS\Services\Support\log
C:\Program Files (x86)\GSF\ecaOS\Services\Support\Db
C:\Program Files (x86)\GSF\ecaOS\Services\Support\appsettings.support.json
C:\Program Files (x86)\GSF\ecaOS\Services\DiskGuard\log
C:\Program Files (x86)\GSF\ecaOS\Services\DiskGuard\Db
C:\Program Files (x86)\GSF\ecaOS\Services\Notifier\log
```

```

C:\Program Files (x86)\GSF\ecaOS\Services\Notifier\Db
C:\Program Files (x86)\GSF\ecaOS\Services\Dashboard\log
C:\Program Files (x86)\GSF\ecaOS\Services\Dashboard\Db
C:\Program Files (x86)\GSF\ecaOS\Services\Dashboard\appsettings.json
C:\Windows\System32\config\systemprofile\AppData\Roaming\smartlogic
C:\Program Files\Windows Defender
C:\ProgramData\Microsoft\Windows Defender
C:\Windows\WindowsUpdate.log
C:\Windows\System32\winevt\Logs
C:\Windows\Logs
C:\Windows\assembly
C:\Windows\SoftwareDistribution
C:\Windows\MEMORY.DMP
C:\Users\localadmin\Desktop
C:\Users\localadmin\Documents
C:\Users\localadmin\Downloads
C:\Users\localadmin\Music
C:\Users\localadmin\Pictures
C:\Users\localadmin\Videos
C:\Program Files (x86)\GSF\ecaOS\ApplicationMonitor\log
C:\Program Files (x86)\GSF\ecaOS\ApplicationMonitor\settings.conf
C:\Program Files (x86)\GSF\ecaOS\ApplicationMonitor\settings.conf.bak
C:\Program Files (x86)\GSF\ecaOS\Services\Support\settings.conf
C:\Program Files (x86)\GSF\ecaOS\Services\Support\settings.conf.bak
C:\Program Files (x86)\GSF\ecaOS\Services\Support\TrueBlue\log
C:\Program Files (x86)\GSF\ecaOS\Services\Support\TrueBlue\Db
C:\Program Files (x86)\Google\Chrome Remote Desktop
C:\ProgramData\Google\Chrome Remote Desktop

```

### 8.3.4 Add Exclusion Files or Folder

New files or folder can be added in the Exclusion List will be allowed to be written permanently when the 'Session Shield' is activated.

1. Click 'Add Exclusion' to add new file/folder

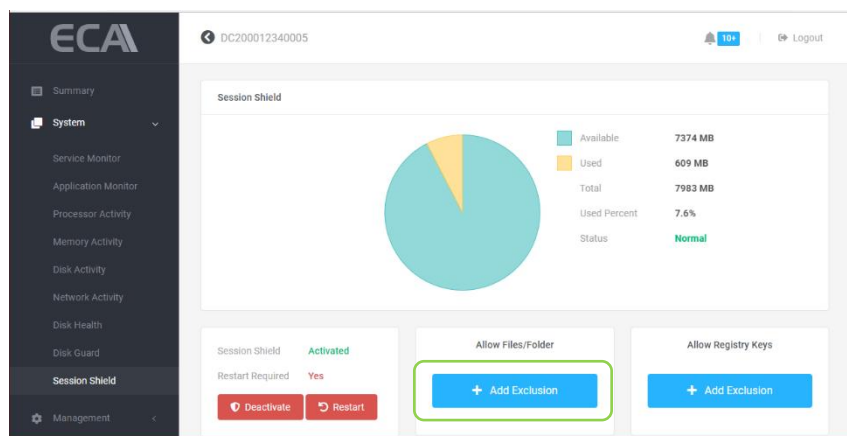


Figure 78: Allow Files/Folder (1 of 3)

2. Type or paste the new files/folder path to be include and click 'Exclude'

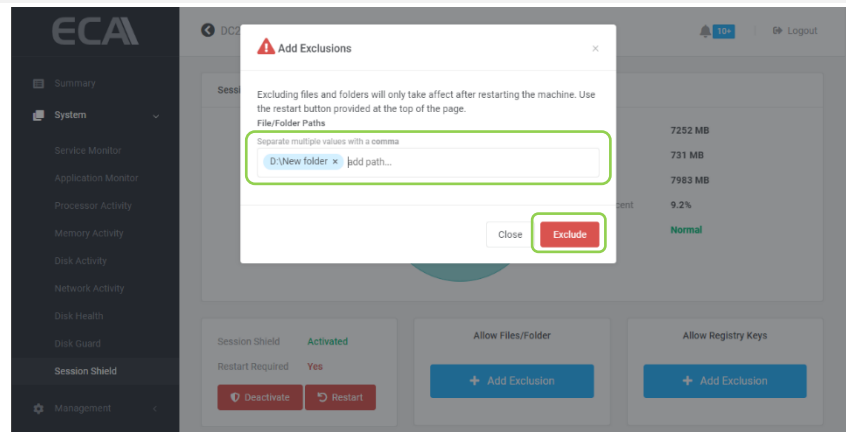


Figure 79: Allow Files/Folder (2 of 3)

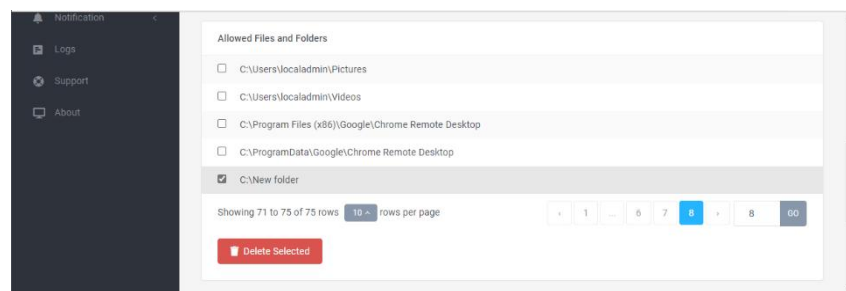


Figure 80: Allow Files/Folder (3 of 3)

### 8.3.5 Delete Exclusion Files or folder

1. Tick the check box which files/folder to be delete from the exclusion list and click 'Delete Selected'

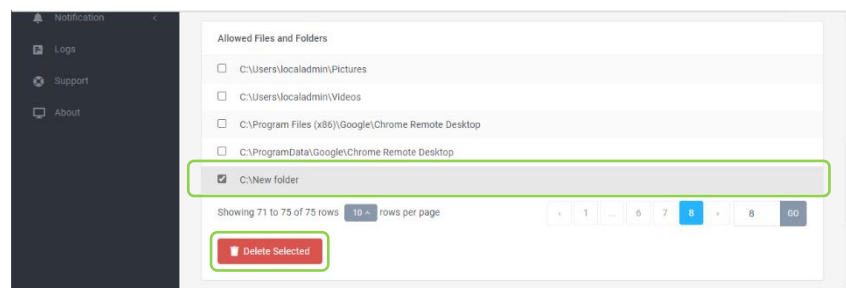


Figure 81: Delete Files/Folder (1 of 3)

2. Click 'Delete Exclusion' to confirm the operation

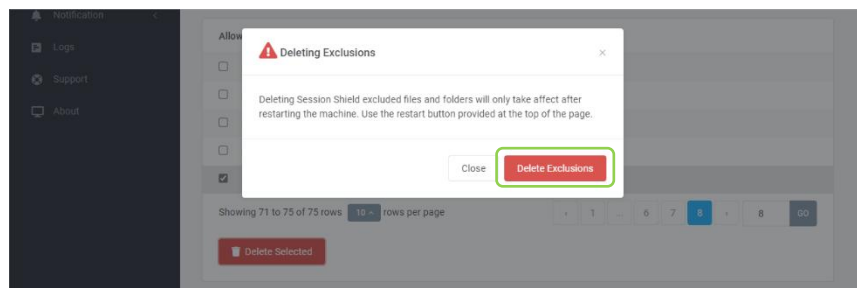


Figure 82: Delete Files/Folder (2 of 2)

### 8.3.6 Add Registry Keys

Allow to be written permanently when the 'Shield' is activated.

1. Click 'Add Exclusion' to add registry keys

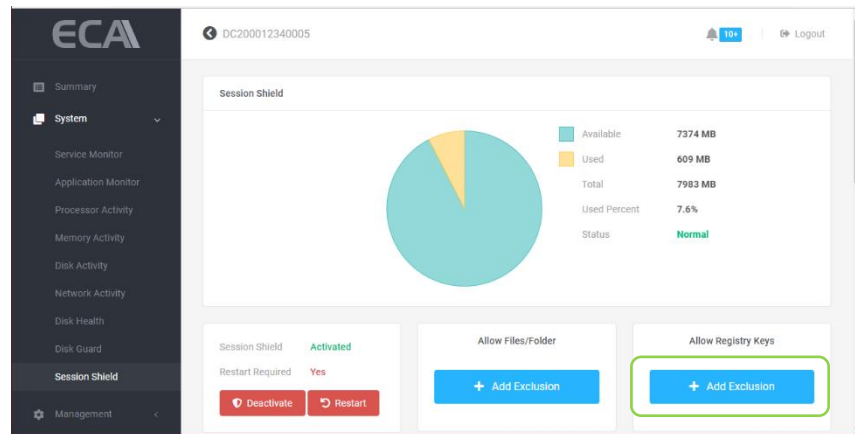


Figure 83: Allow Registry Keys (1 of 2)

2. Type or paste the registry key to be include and click 'Exclude'

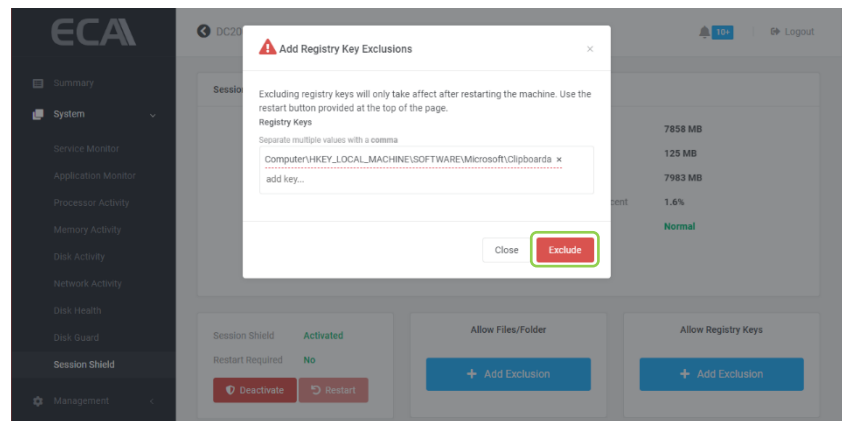


Figure 84: Allow Registry Keys (1 of 2)

### 8.3.7 Delete Exclusion Registry Key

1. Tick the check box which registry key to be delete from the exclusion list and click 'Delete Selected'

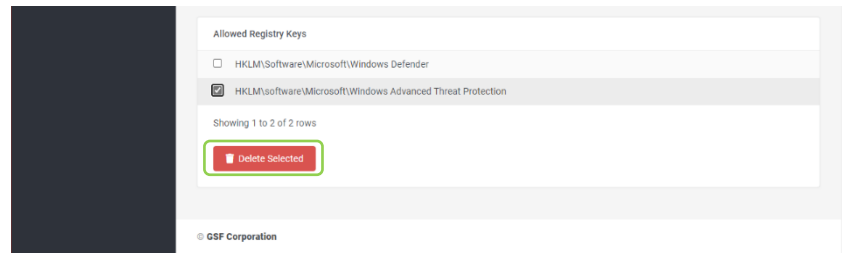


Figure 85: Delete Registry Key (1 of 2)

2. Click 'Delete Exclusion' to confirm the operation

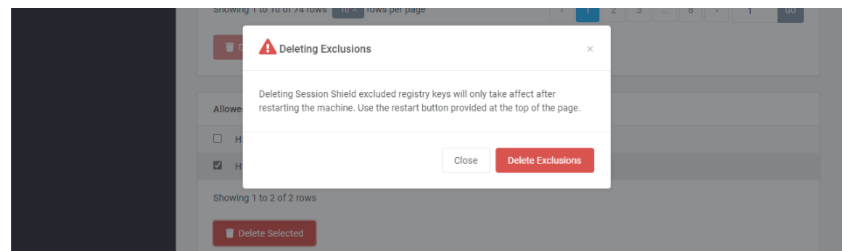


Figure 86: Delete Registry Key (2 of 2)

### 8.3.8 Status: Warning

Session shield status will turn to 'Warning' state when the used amount of space exceeds 80% of total space.

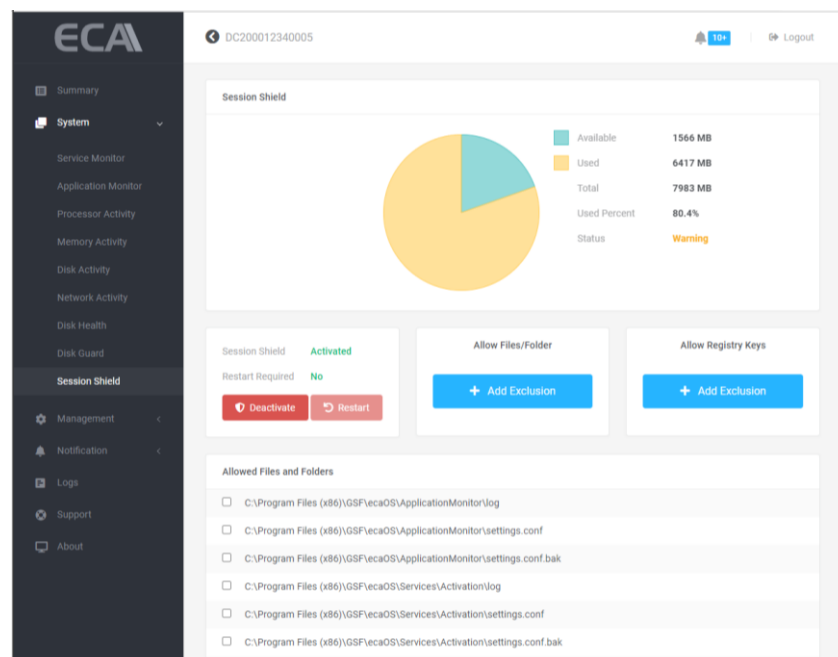


Figure 87: Warning Status

### 8.3.9 Status: Critical

Session shield status will turn to 'Critical state when the used amount of space exceeds 90% of total space. The ECA will be start the counter and restart in few minutes.

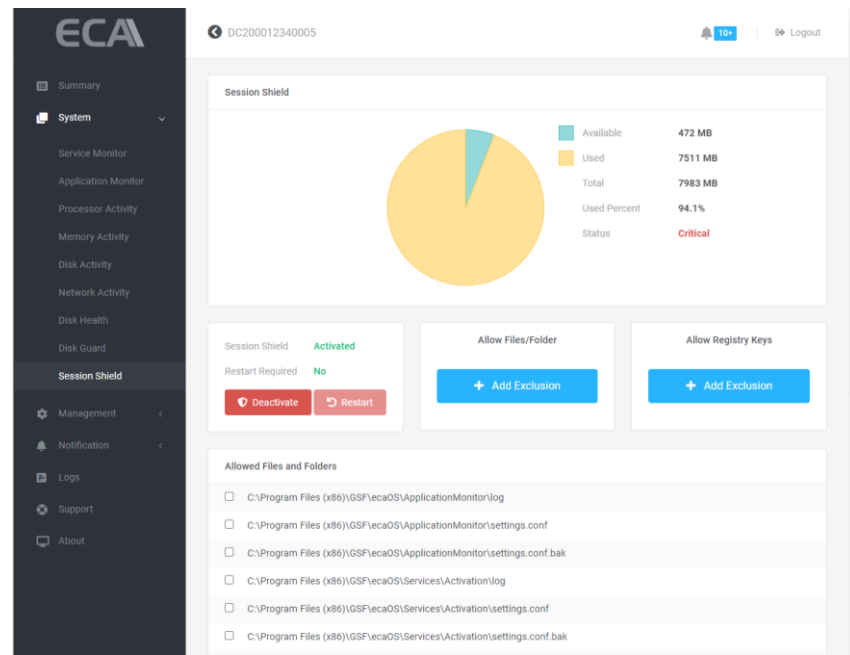


Figure 88: Critical Status

## 8.4 Device Monitor

Device Monitor is a tool to monitor the uptime percentage of a device of interest using HTTP, Keyword, Port or Ping methods.

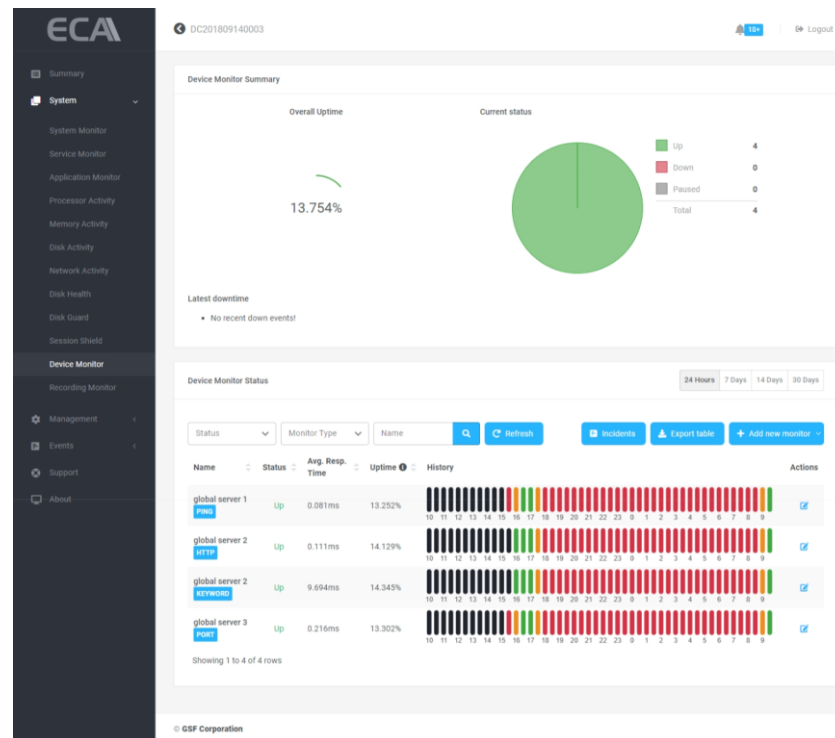


Figure 89: Device Monitor

### 8.4.1 Add New Monitor

1. Click the 'Add new monitor'.

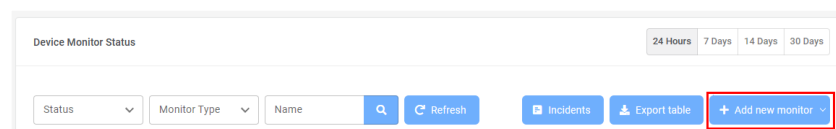


Figure 90: Add new monitor

2. Choose the desired monitor type under "Add monitor details."
3. HTTP – monitors a web server using HTTP or HTTPS. GET, POST, HEAD, and OPTIONS are supported HTTP methods.
  - a. Type in the hostname or IP and monitor name.
  - b. Pick the appropriate HTTP Method. (GET Method by default)
  - c. Set the Monitoring Interval. (by default, five minutes)
  - d. Press the Submit button.

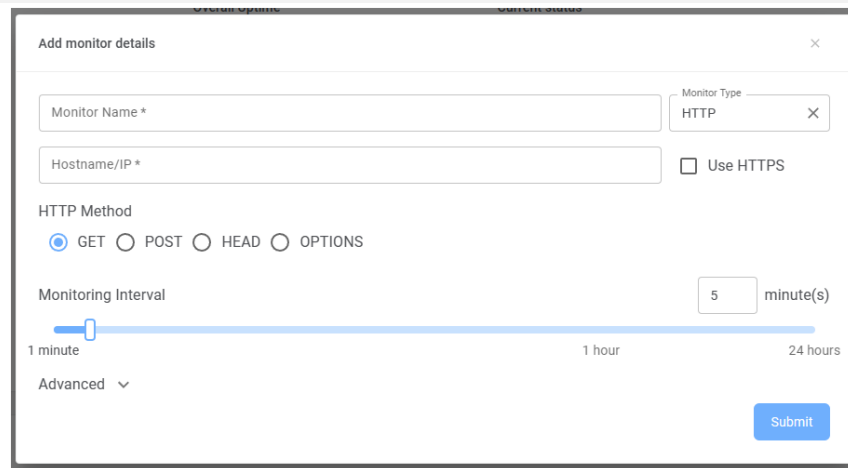


Figure 91: Monitor type - HTTP

4. Keyword – monitors a web server (HTTP or HTTPS) using keyword.
  - a. Type in the hostname or IP and monitor name.
  - b. Enter a keyword to monitor. (Case-sensitive by default)
  - c. Set the Monitor Up when keyword “Found or “Not Found” (default: Found)
  - d. Set the Monitoring Interval. (by default, five minutes)
  - e. Press the Submit button.

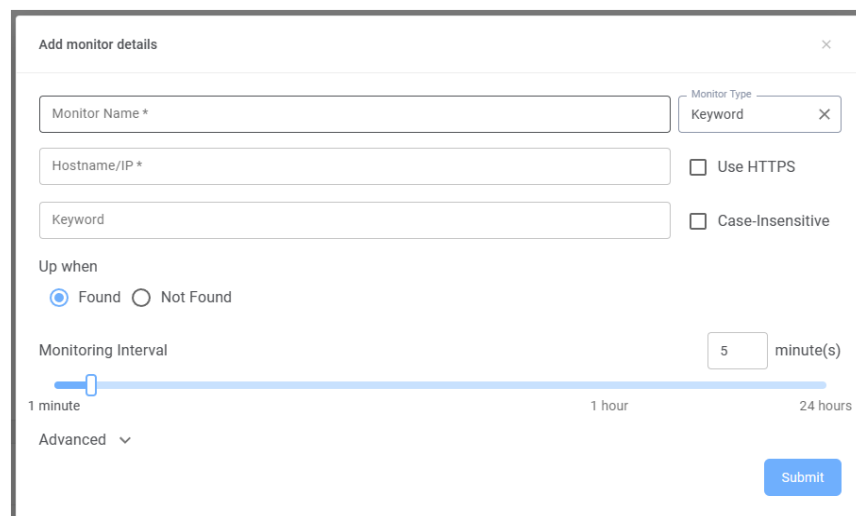
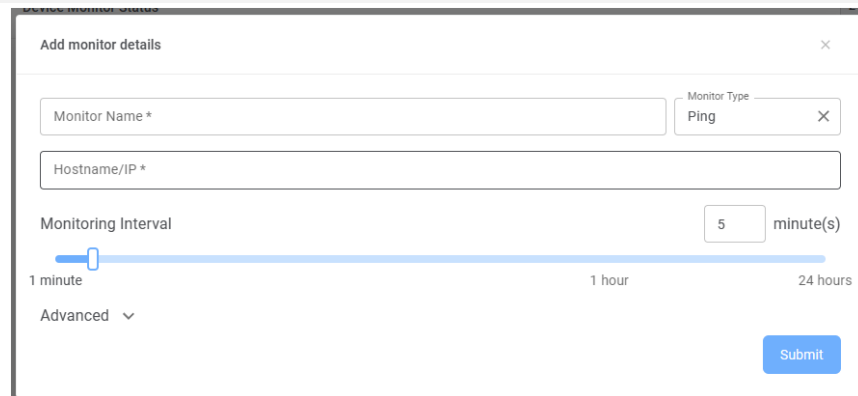


Figure 92: Monitor type - Keyword

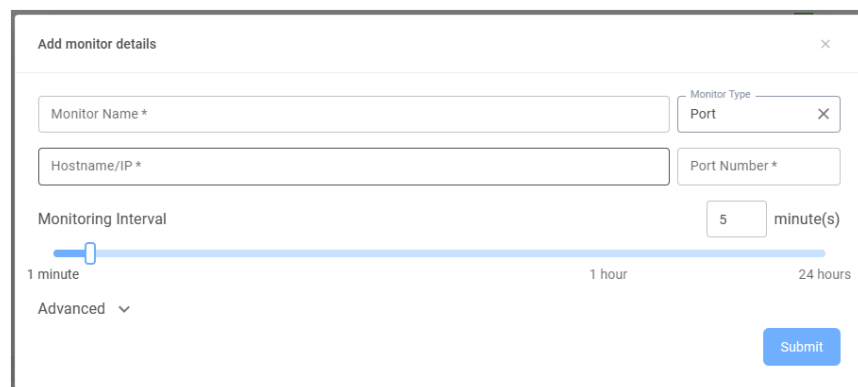
5. Ping - sends an “ICMP” echo request ("ping") to the device to monitor its availability.
  - a. Type in the Monitor name & Hostname/IP
  - b. Set the Monitoring Interval. (by default, five minutes)
  - c. Press the Submit button.



The screenshot shows the 'Add monitor details' form for a Ping monitor. It includes fields for 'Monitor Name \*', 'Hostname/IP \*', and a 'Monitoring Interval' slider set to 5 minutes. The 'Monitor Type' dropdown is set to 'Ping'. A 'Submit' button is at the bottom right.

Figure 93: Monitor type - Ping

6. Port - monitors a network service by connecting to its port.
  - a. Type in the Monitor name, Hostname/IP & Port number.
  - b. Set the Monitoring Interval. (by default, five minutes)
  - c. Press the Submit button.



The screenshot shows the 'Add monitor details' form for a Port monitor. It includes fields for 'Monitor Name \*', 'Hostname/IP \*', 'Port Number \*', and a 'Monitoring Interval' slider set to 5 minutes. The 'Monitor Type' dropdown is set to 'Port'. A 'Submit' button is at the bottom right.

Figure 94: Add Device Monitor – Port type

## 8.4.2 Delete Monitor

1. Click 'v' icon and select 'Delete monitors'.

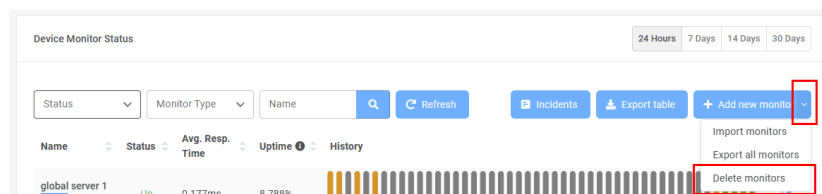


Figure 95: Delete Device Monitors (1 of 2)

2. Select the monitor to delete and type 'Delete'.
3. Press the 'Delete' button.

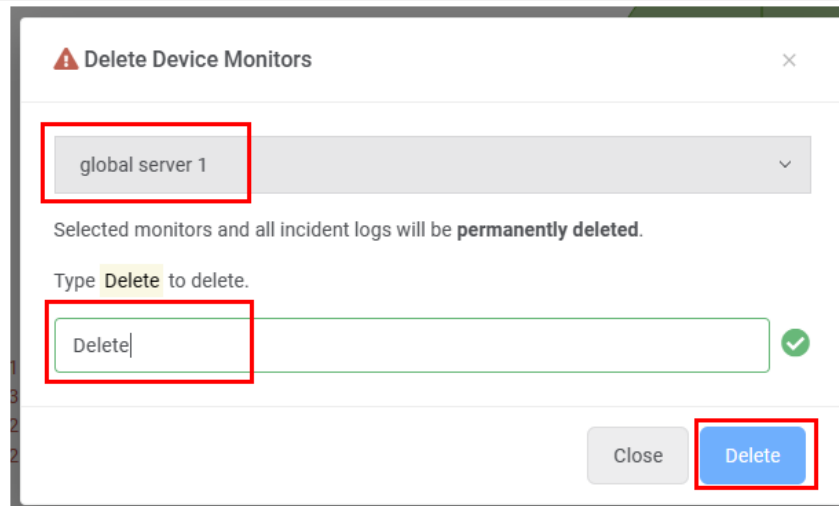


Figure 96: Delete Device Monitors (2 of 2)

## 8.5 Recording Monitor

The Recording Monitor is a tool for monitoring the channels recording status of the Macula VMS.

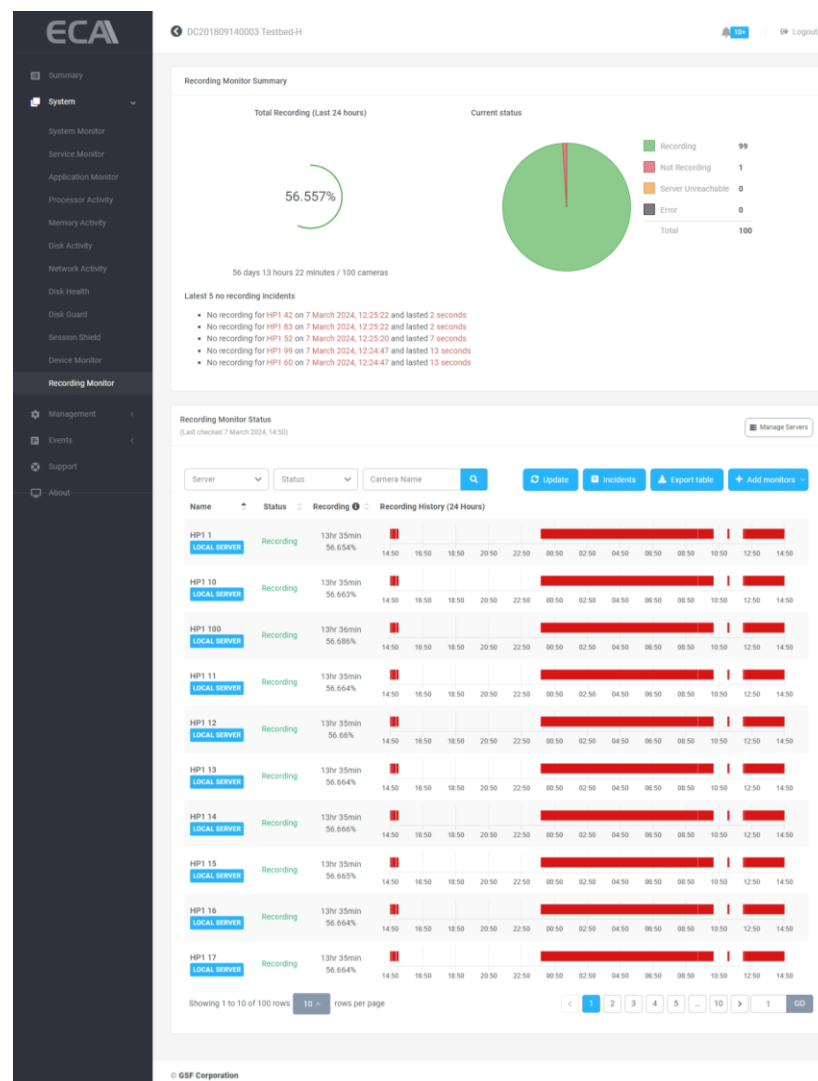


Figure 97: Device Monitor

### 8.5.1 Add New Monitor

1. Click 'Manage Servers' button.

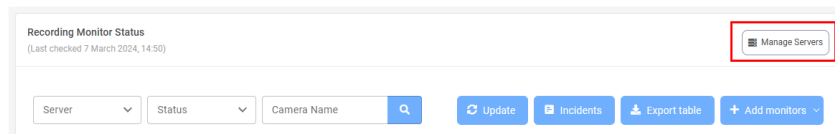


Figure 98: Add VMS server (1 of 3)

2. Click 'Add Server'.

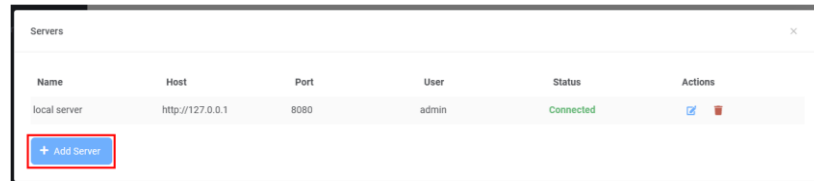


Figure 99: Add VMS server (2 of 3)

3. Enter VMS's hostname/IP, port, and login information. Please ensure that the user has the channel's 'video playback' and 'Login via HTTP' permissions.

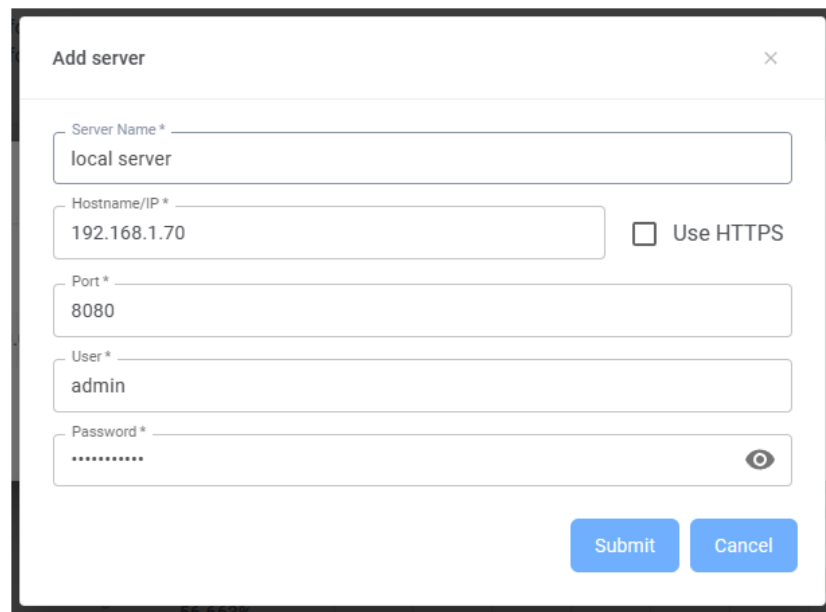


Figure 100: Add VMS server (3 of 3)

4. Click 'Add monitors'.

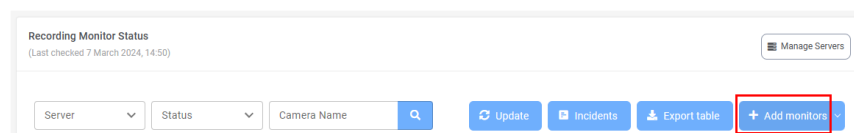


Figure 101: Add monitors (1 of 2)

5. In 'Add monitor', choose a server and channels to monitor. Then press 'Add' button.

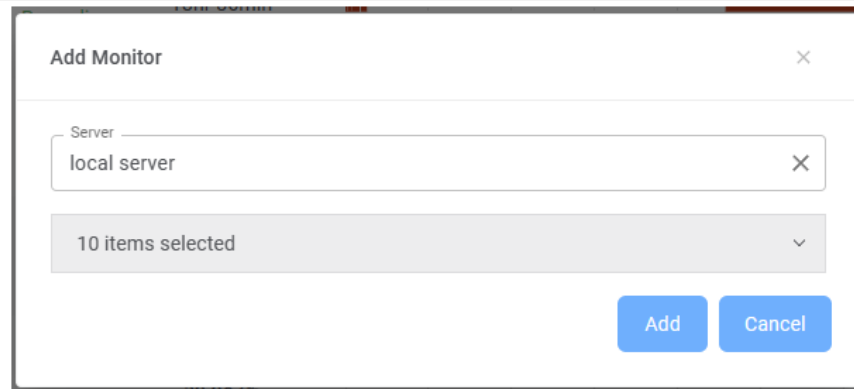


Figure 102: Add monitors (2 of 2)

### 8.5.2 Delete Monitors

1. Click 'v' icon and select 'Delete monitors'.

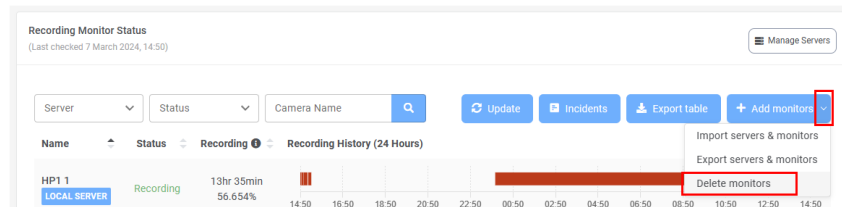


Figure 103: Delete Recording Monitors (1 of 2)

2. Select the monitor(s) to delete and type 'Delete'.
3. Press the 'Delete' button.

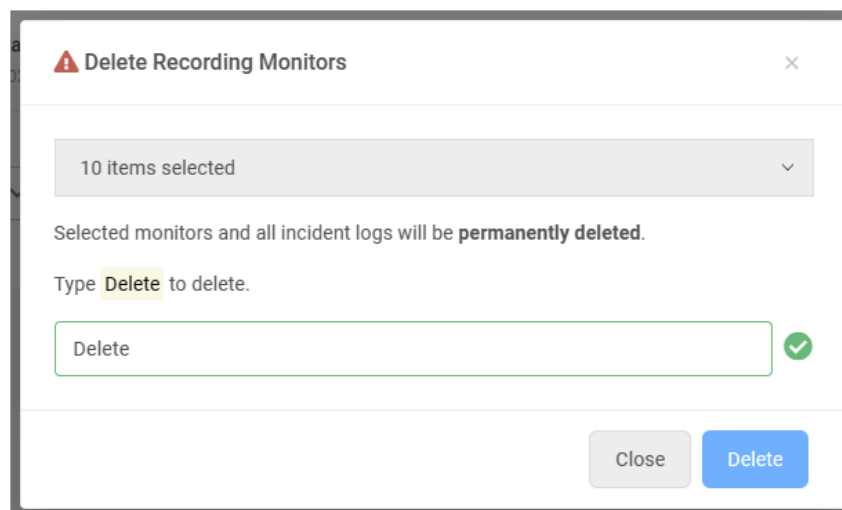


Figure 104: Delete Recording Monitors (2 of 2)

## 9 Management

### 9.1 General

Under Machine Control to Reboot or Shutdown ECA. Layer Management to save current layer as a backup layer. Backup layer can be deployed (Soft Reset & Hard Reset) in the future to restore previous setting.

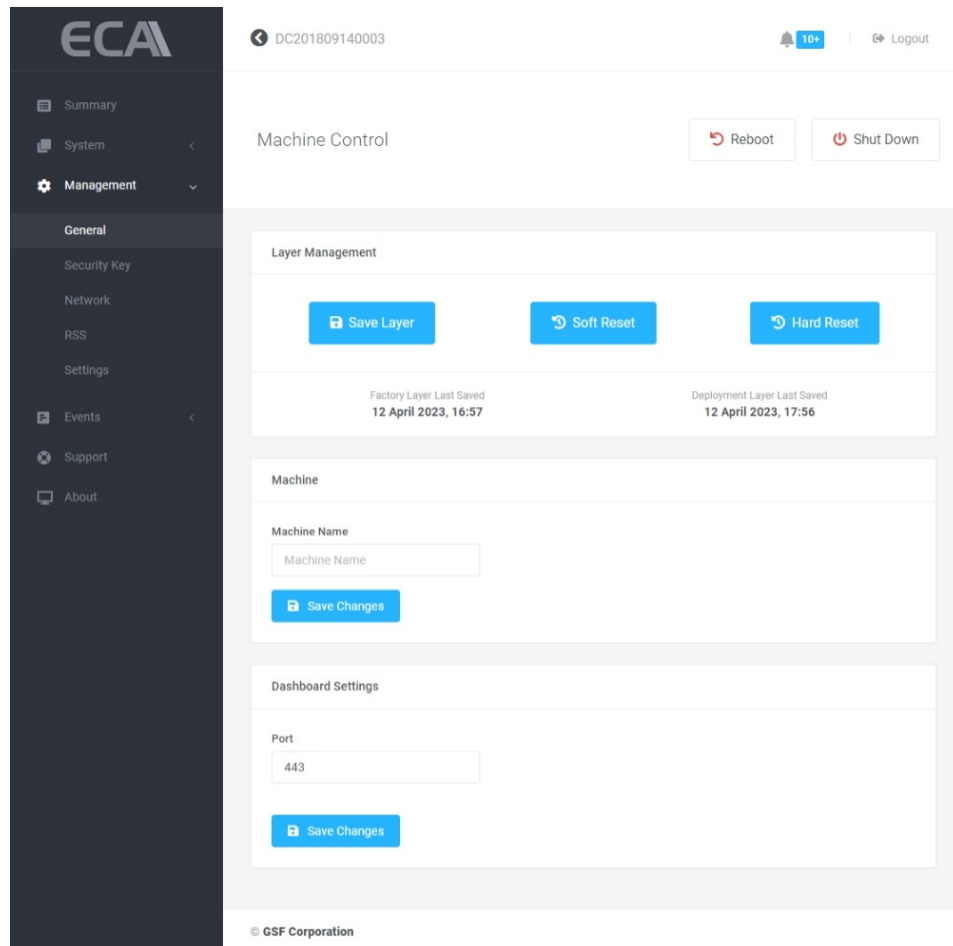


Figure 105: General

#### 9.1.1 Authorize Restart

Only restart through the Dashboard will consider as authorize restart.

1. Click on 'Restart'

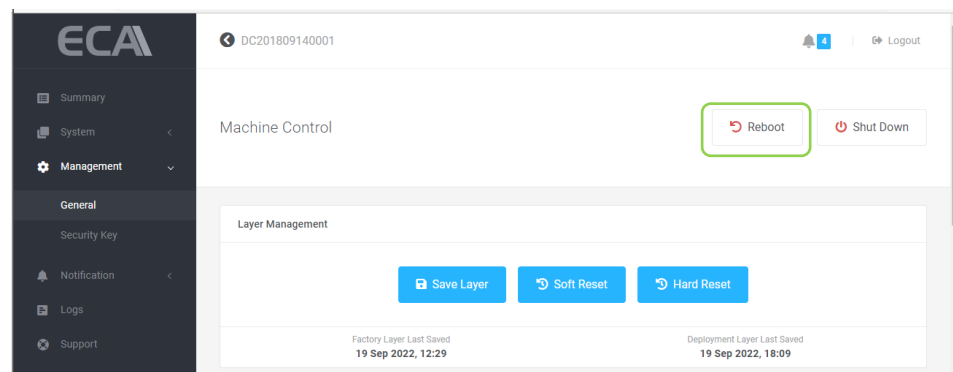


Figure 106: Authorize Restart (1 of 2)

2. Type **Restart** then click 'Restart' button

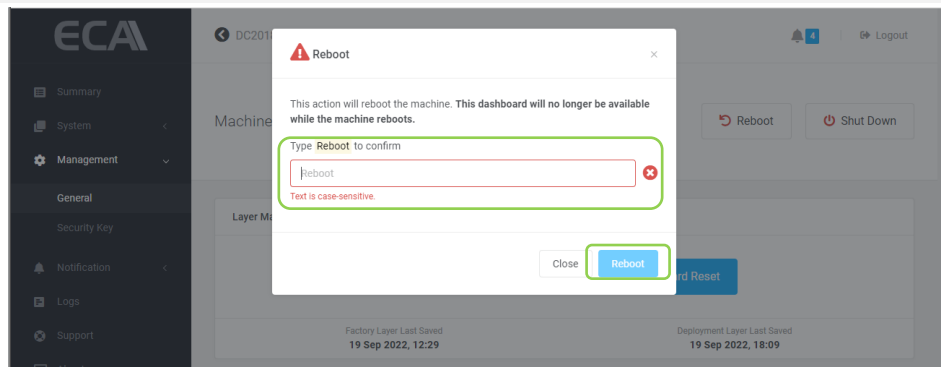


Figure 107: Authorize Restart (2 of 2)

### 9.1.2 Authorize Shutdown

To shutdown ECA, only through the Dashboard will consider as authorize restart. Shutdown ECA not via dashboard will consider as unauthorized shutdown. HB will reboot the ECA.

1. Click on 'Shut Down'

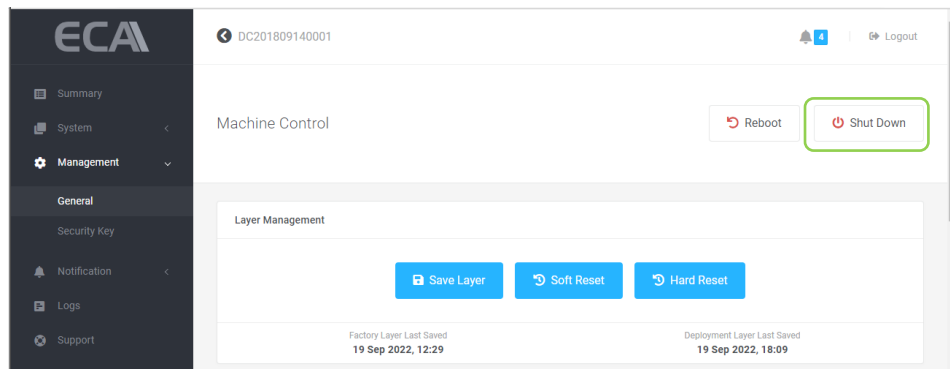


Figure 108: Authorize Shut Down (1 of 2)

2. Type **Shutdown** then click 'shutdown' button

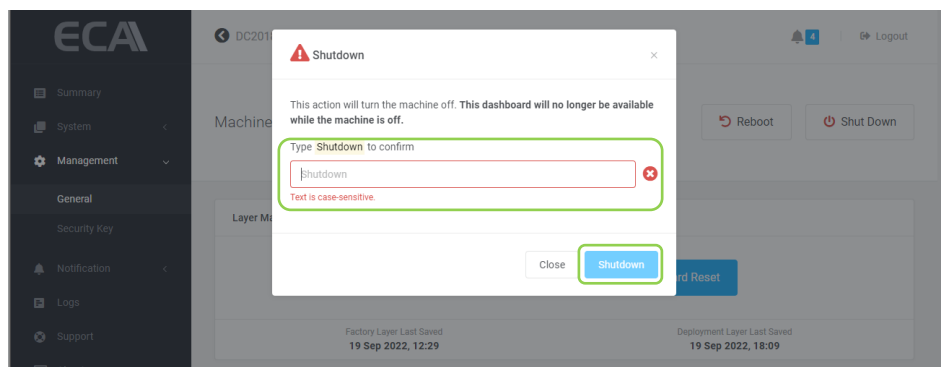


Figure 109: Authorize Shut Down (2 of 2)

### 9.1.3 Saving & Deploy Layer

It is recommended to perform 'Save Layer' for any changes under system including video management software such as added new camera.

#### 9.1.3.1 Save Layer

Save current user working layer as a deployment layer. This layer will content all current working setting. If in the future suddenly the OS corrupt, this layer can recall (Soft Reset) to deploy previous working state.

NOTE:

Performing Save Layer, Soft Reset & Hard Reset will cause the downtime of the ECA means there will no recording & accessing to Dashboard not available during this period until the ECA complete the layer saving and reboot back to ecaOS.

1. Click on 'Save Layer'

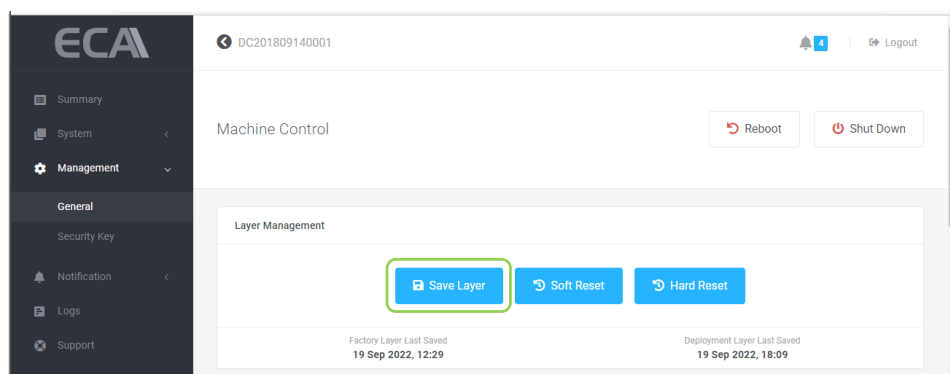


Figure 110: Save Layer (1 of 5)

2. ECA will reboot and go to Layer Manager.



Figure 111: Save Layer (2 of 5)

3. Saving layer will be start after 10 seconds countdown. To cancel the operation, click on Cancel

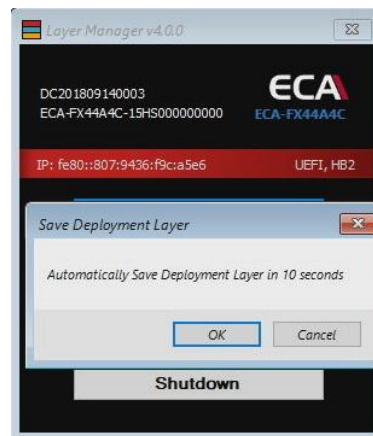


Figure 112: Save Layer (3 of 5)

4. Saving layer in progress show with percentage

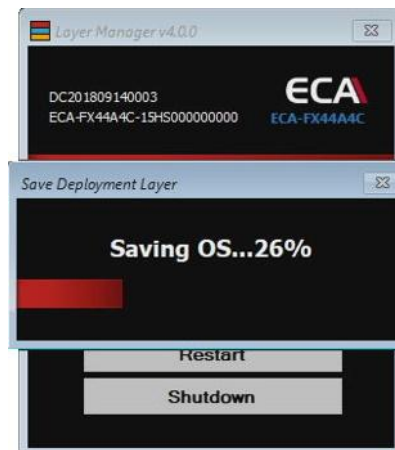


Figure 113: Save Layer (4 of 5)

5. ECA will reboot to ecaOS after complete saving layer.

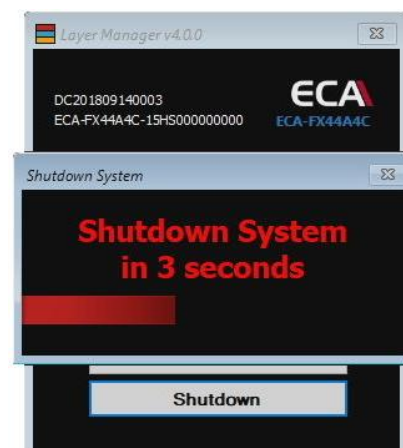


Figure 114: Save Layer (5 of 5)

### 9.1.3.2 Soft Reset

Deploy deployment layer and replace current working with previous save setting.

1. Click on 'Soft Reset'

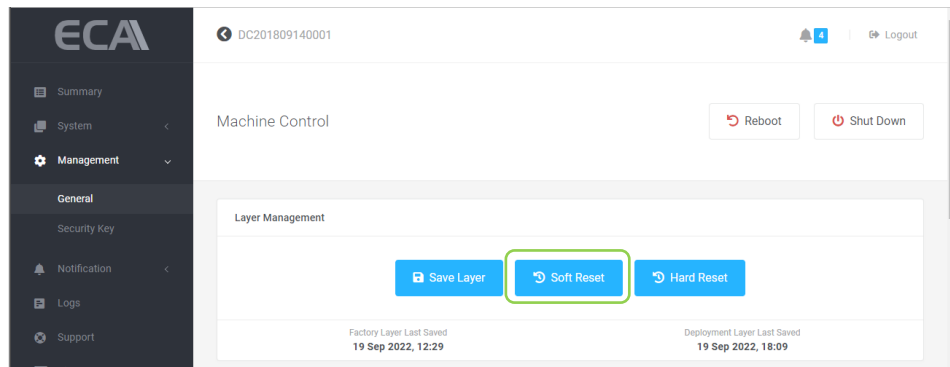


Figure 115: Soft Reset (1 of 5)

6. ECA will reboot and go to Layer Manager.



Figure 116: Save Layer (2 of 5)

7. Restoring Deployment layer will be start after 10 seconds countdown. To cancel the operation, click on Cancel

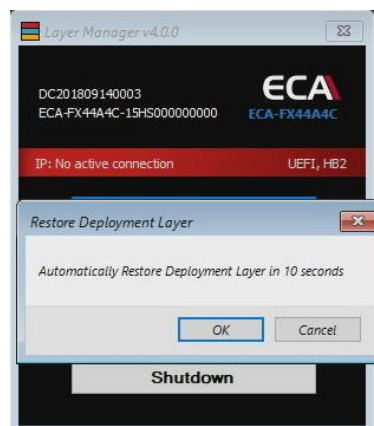


Figure 117: Save Layer (3 of 5)

8. Restoring layer in progress show with percentage

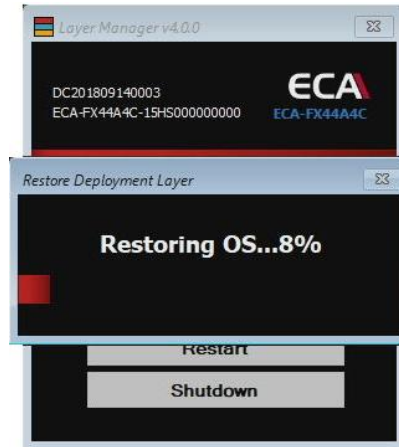


Figure 118: Save Layer (4 of 5)

9. ECA will reboot to ecaOS after complete saving layer.



Figure 119: Save Layer (5 of 5)

### 9.1.3.3 Hard Reset

Deploy default layer saved from factory.

**NOTE:** All setting previously done on site will not available after Hard Reset. Only perform Hard Reset when Soft Reset failed.

1. Click on 'Hard Reset'

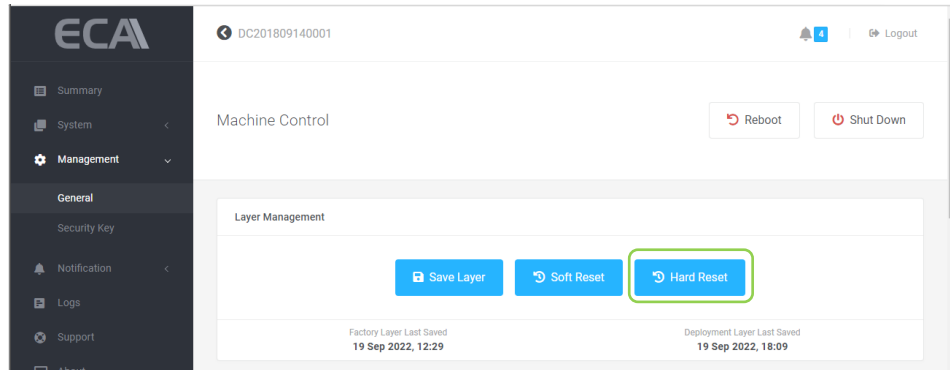


Figure 120: Soft Reset (1 of 2)

10. ECA will reboot and go to Layer Manager.

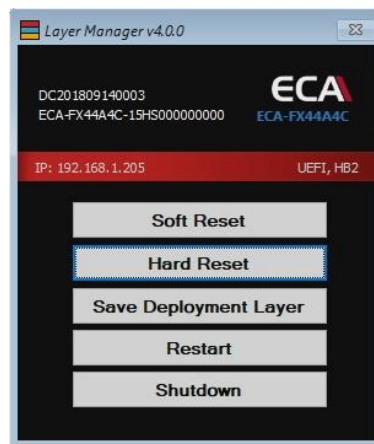


Figure 121: Save Layer (2 of 5)

11. Restoring Factory layer will be start after 10 seconds countdown. To cancel the operation, click on Cancel

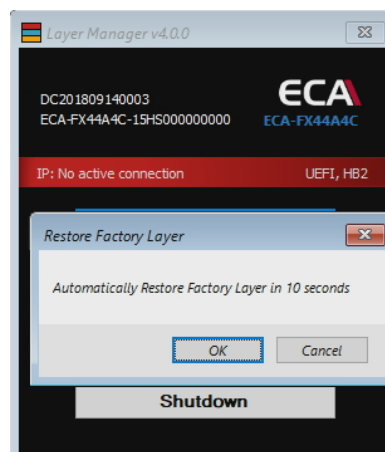


Figure 122: Save Layer (3 of 5)

12. Restoring layer in progress show with percentage

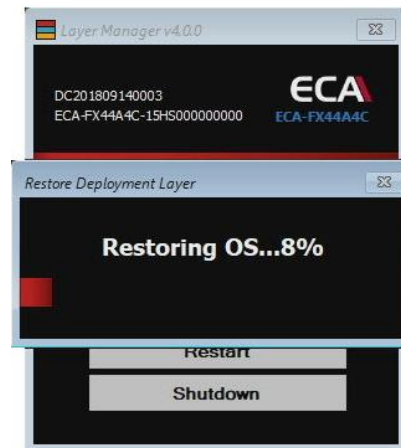


Figure 123: Save Layer (4 of 5)

13. ECA will reboot to ecaOS after complete saving layer.

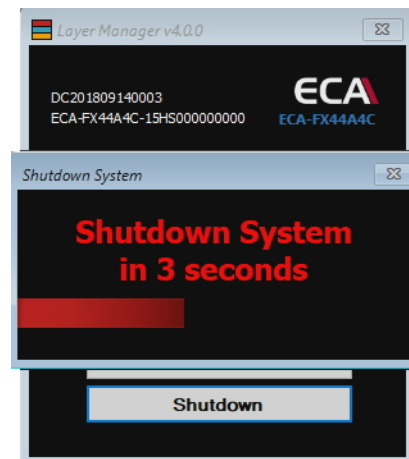


Figure 124: Save Layer (5 of 5)

### 9.1.3.4 Last Saved Layer Information

Display the last date and time of the layer last saved

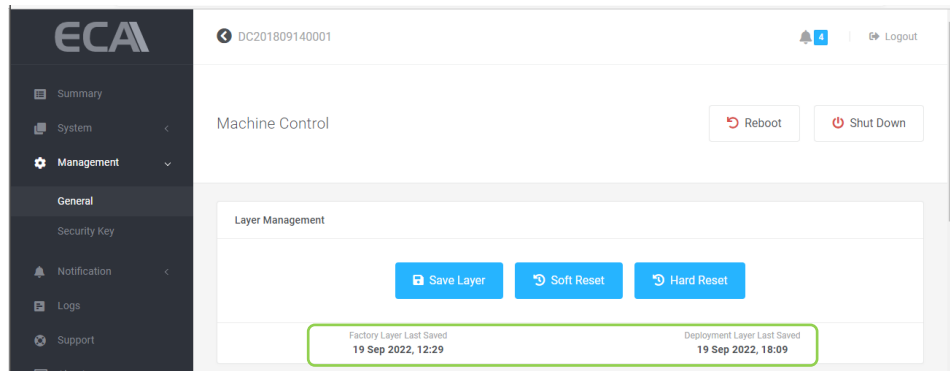


Figure 125: Information about the last saved layer

### 9.1.4 Machine Name

Assign your ECA a friendly name to make it easier to identify.

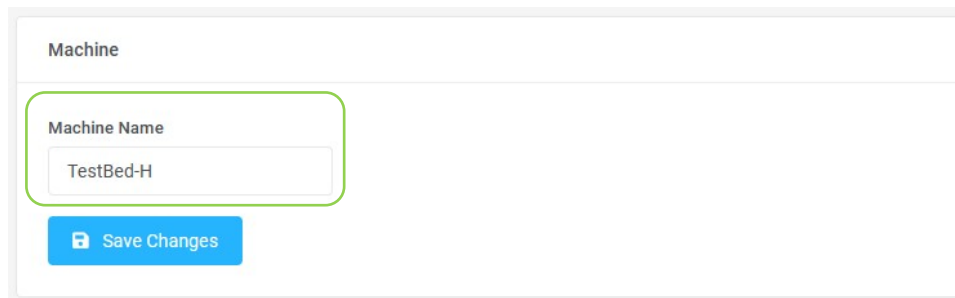


Figure 126: Machine name for ECA

### 9.1.5 Change Dashboard Port

By default, port 443 is use ECA for remotely access Dashboard from another machine via local LAN. Modify this port if the default ports already in use.

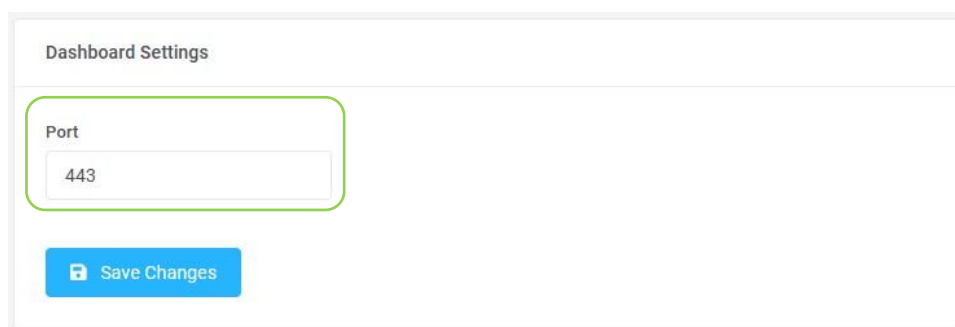


Figure 127: Port settings for Dashboard

## 9.2 Security Key

Each ECA will come with 1 unit of Security key. Any extra Security key or replacement unit require to register the Security Key to access Dashboard.

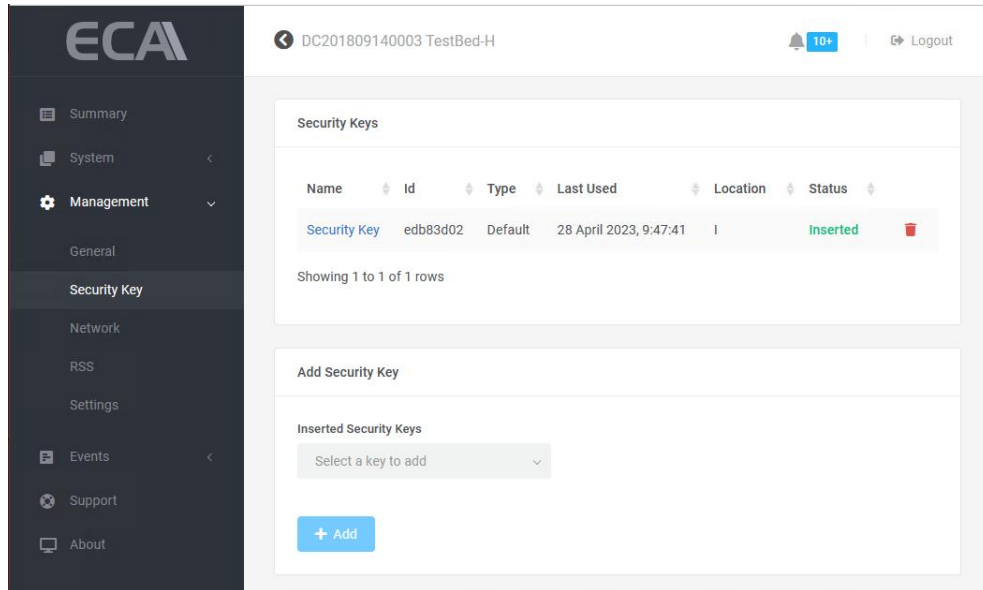


Figure 128: Security Key

### 9.2.1 Register Security Key

1. Insert valid Security Key in the USB on the ECA
2. Click on the drop-down list and select the key to register.

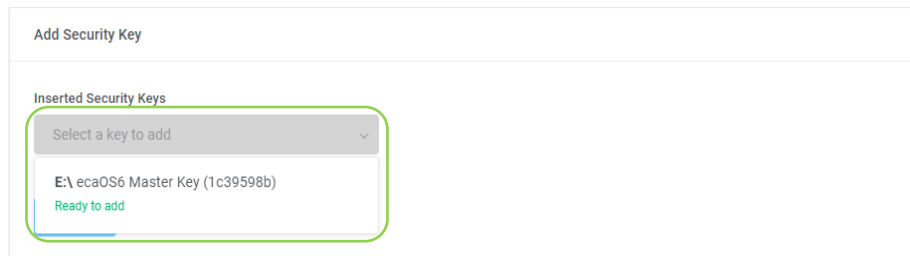


Figure 129: Register security key (1 of 3)

3. Click Add to register

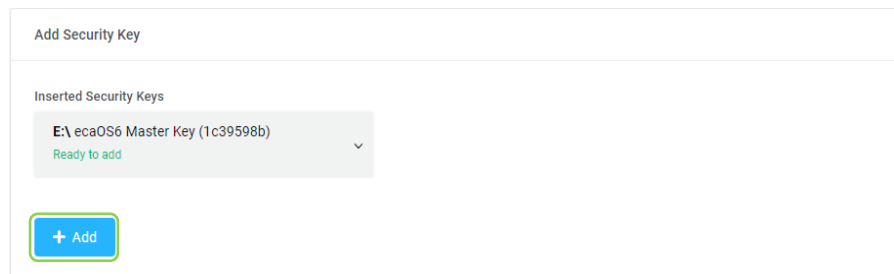


Figure 130: Register security key (2 of 3)

- Once successfully added the Security Key. The new security key will show under 'Security keys'

| Security Keys                     |          |        |           |          |          |                                                                                     |
|-----------------------------------|----------|--------|-----------|----------|----------|-------------------------------------------------------------------------------------|
| Name                              | Id       | Type   | Last Used | Location | Status   |                                                                                     |
| <a href="#">ecaOS6 Master Key</a> | 1c39598b | Master | N/A       | E        | Inserted |  |
| Showing 1 to 1 of 1 rows          |          |        |           |          |          |                                                                                     |

Figure 131: Register security key (3 of 3)

## 9.2.2 Delete Security Key

- Click on the dustbin icon of the Security key to be delete

| Security Keys                     |          |        |                       |          |          |                                                                                     |
|-----------------------------------|----------|--------|-----------------------|----------|----------|-------------------------------------------------------------------------------------|
| Name                              | Id       | Type   | Last Used             | Location | Status   |                                                                                     |
| <a href="#">ecaOS6 Master Key</a> | 1c39598b | Master | 25 Aug 2022, 12:47:26 | E        | Inserted |  |
| Showing 1 to 1 of 1 rows          |          |        |                       |          |          |                                                                                     |

Figure 132: Delete security key (1 of 2)

- Type in the field Security Key name and click 'Delete Security Key'


Delete Security Key

Security key **ecaOS6 Master Key** will not be able to access this machine after deletion.

Type **ecaOS6 Master Key** to confirm



Text is case-sensitive.

Close

Delete Security Key

Figure 133: Delete security key (1 of 2)

### 9.2.3 Add Virtual Security Key

1. Click on the 'Add' button under Virtual Security key

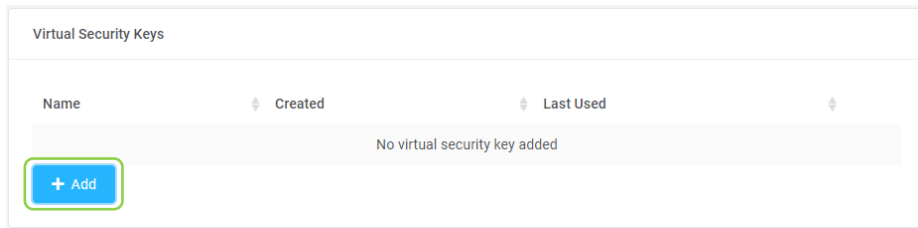


Figure 134: Add virtual security key (1 of 5)

2. Click 'Next' button

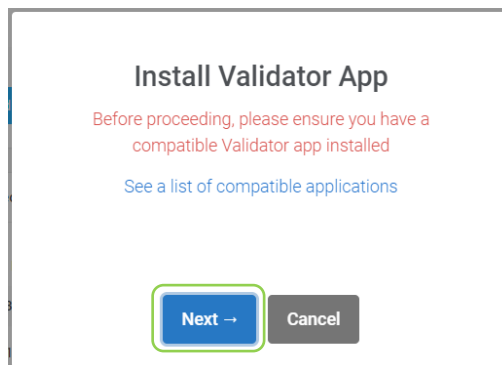


Figure 135: Add virtual security key (2 of 5)

3. Give the new virtual security key a name

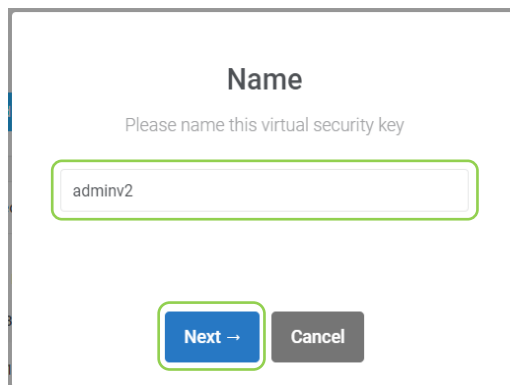
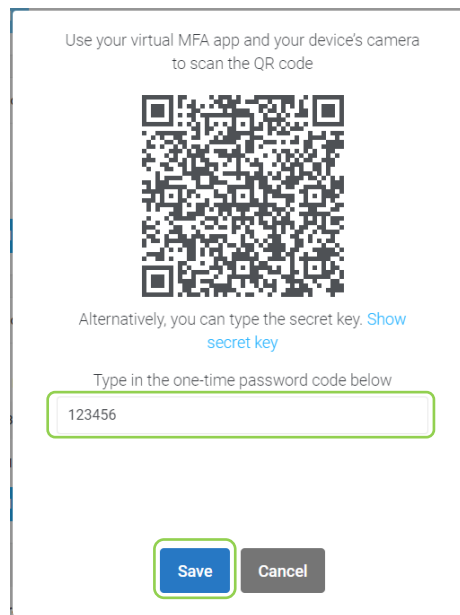


Figure 136: Add virtual security key (3 of 5)

4. Scan the QR code using authenticator application on the phone. Type the in the field and click 'Save' button one-time password for example 123456



Use your virtual MFA app and your device's camera to scan the QR code



Alternatively, you can type the secret key. [Show secret key](#)

Type in the one-time password code below

[Save](#) [Cancel](#)

Figure 137: Add virtual security key (4 of 5)

5. The new virtual security key will show under 'Virtual Security keys'

| Virtual Security Keys    |                       |           |                                                                                       |
|--------------------------|-----------------------|-----------|---------------------------------------------------------------------------------------|
| Name                     | Created               | Last Used |                                                                                       |
| adminv2                  | 25 Aug 2022, 12:56:45 | N/A       |  |
| Showing 1 to 1 of 1 rows |                       |           |                                                                                       |
| <a href="#">+ Add</a>    |                       |           |                                                                                       |

Figure 138: Add virtual security key (5 of 5)

## 9.2.4 Delete Virtual Security Key

1. Click on the dustbin icon the Virtual key to be delete

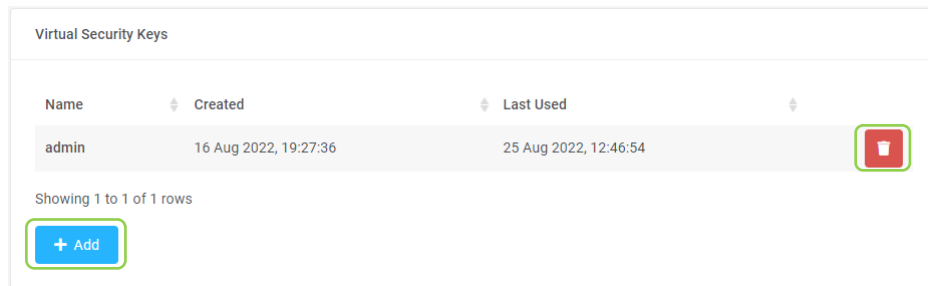


Figure 139: Delete Virtual Security Key (1 of 2)

2. Type 'admin' and click on 'Delete Virtual Security Key' button

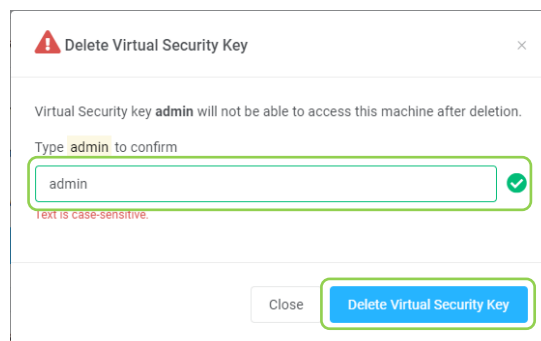


Figure 140: Delete Virtual Security Key (2 of 2)

## 9.3 Network

All ECA come with GSF DDNS. Network teaming groups multiple physical adapters together to provide better network fault tolerance.

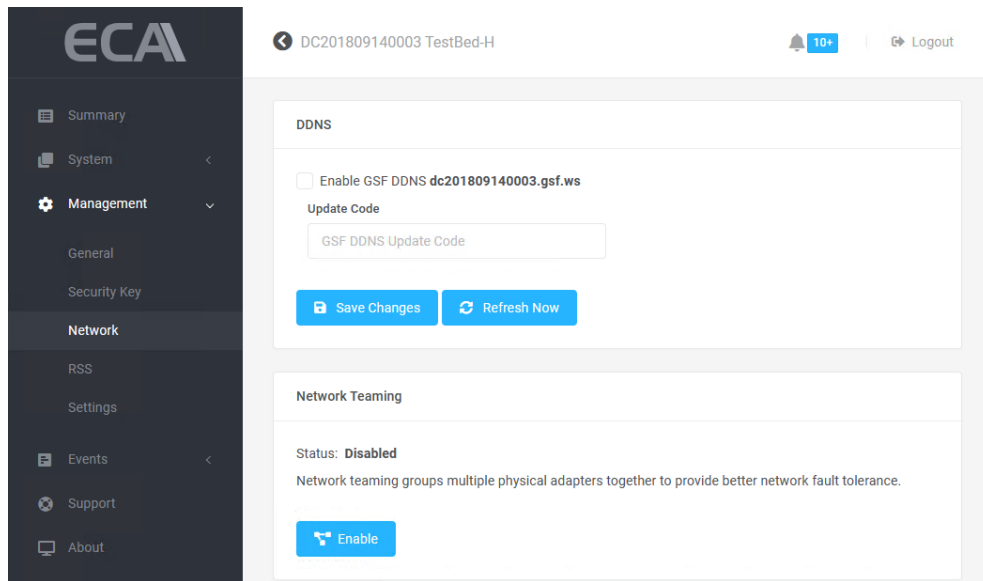


Figure 141: DDNS and Network Teaming

### 9.3.1 Enable DDNS

1. Enable GSF DDNS.
2. Enter the correct Update Code and click on 'Save Changes'. Please contact GSF to obtain your update code.

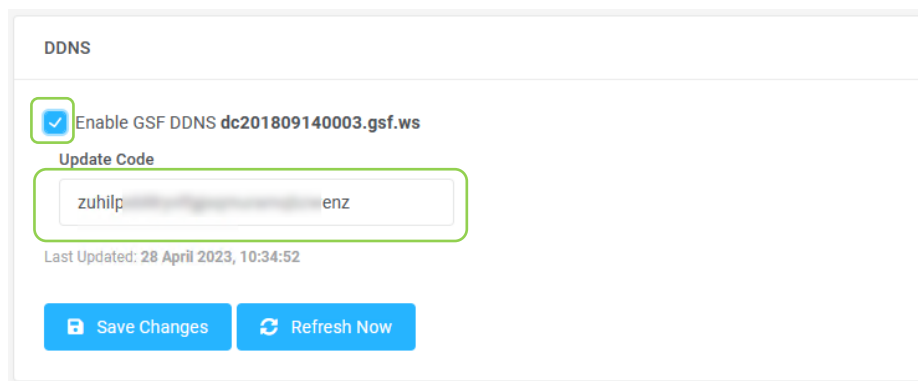


Figure 142: Enable DDNS

### 9.3.2 Enable Network Teaming

1. Click on the 'Enable' button to enable Network Teaming.

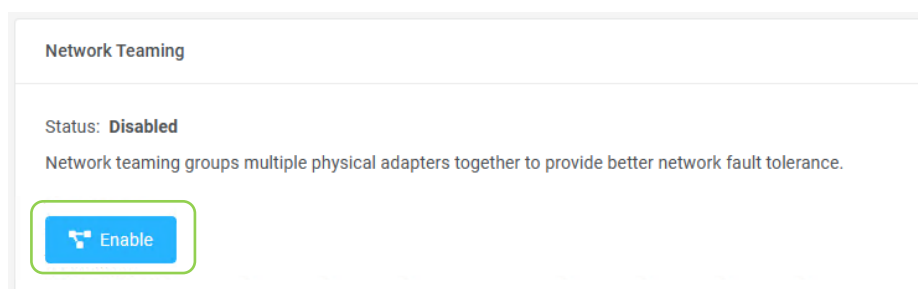
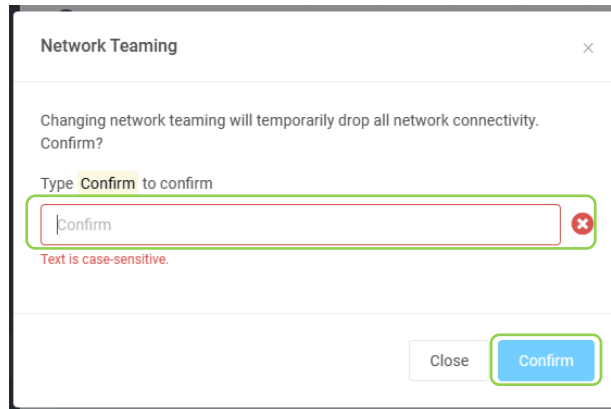


Figure 143: Enable Network Teaming

2. Type 'Confirm' and click on 'Confirm' button

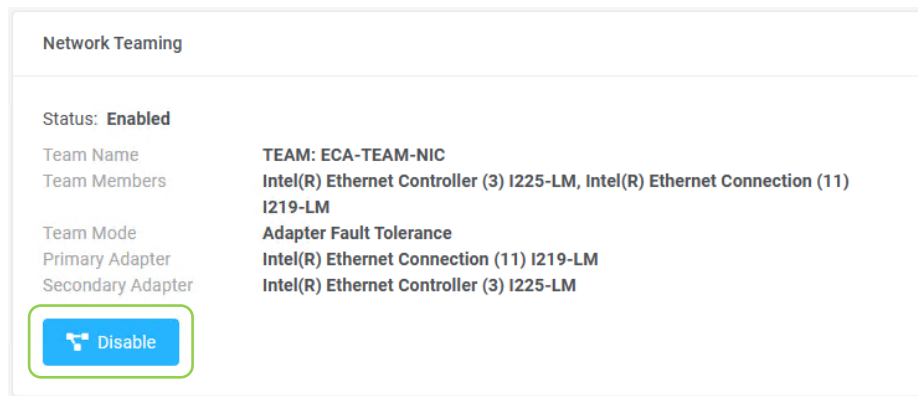


A dialog box titled "Network Teaming" with a close button (X) in the top right corner. The text inside reads: "Changing network teaming will temporarily drop all network connectivity. Confirm?". Below this, it says "Type **Confirm** to confirm". There is a text input field containing the word "confirm", which is highlighted with a green border. To the right of the input field is a red 'X' icon. Below the input field, a red error message states "Text is case-sensitive.". At the bottom right, there are two buttons: "Close" and "Confirm". The "Confirm" button is highlighted with a green border.

Figure 144: Confirm to enable network teaming

### 9.3.3 Disable Network Teaming

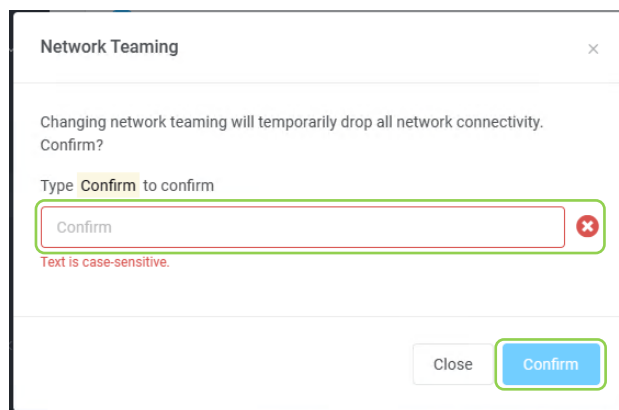
1. Click on the 'Disable' button to disable Network Teaming.



A panel titled "Network Teaming" showing the current status and configuration. The status is "Enabled". The team name is "TEAM: ECA-TEAM-NIC". The team members are "Intel(R) Ethernet Controller (3) I225-LM, Intel(R) Ethernet Connection (11) I219-LM". The team mode is "Adapter Fault Tolerance". The primary adapter is "Intel(R) Ethernet Connection (11) I219-LM" and the secondary adapter is "Intel(R) Ethernet Controller (3) I225-LM". At the bottom, there is a blue button with a red 'X' icon and the text "Disable", which is highlighted with a green border.

Figure 145: Disable Network Teaming

2. Type 'Confirm' and click on 'Confirm' button



A dialog box titled "Network Teaming" with a close button (X) in the top right corner. The text inside reads: "Changing network teaming will temporarily drop all network connectivity. Confirm?". Below this, it says "Type **Confirm** to confirm". There is a text input field containing the word "Confirm", which is highlighted with a green border. To the right of the input field is a red 'X' icon. Below the input field, a red error message states "Text is case-sensitive.". At the bottom right, there are two buttons: "Close" and "Confirm". The "Confirm" button is highlighted with a green border.

Figure 146: Confirm to disable network teaming

## 9.4 RSS (Redundant Storage System)

RSS can help protect your data from drive failures. It's a technology in ECA and is conceptually similar to redundant array of independent disks (RAID), implemented in software. You can use RSS to group three or more drives into a storage pool and then use capacity from that pool to create Storage Spaces. These drives typically store extra copies of your data, so if one of your drives fails, you still have an intact copy of your data.

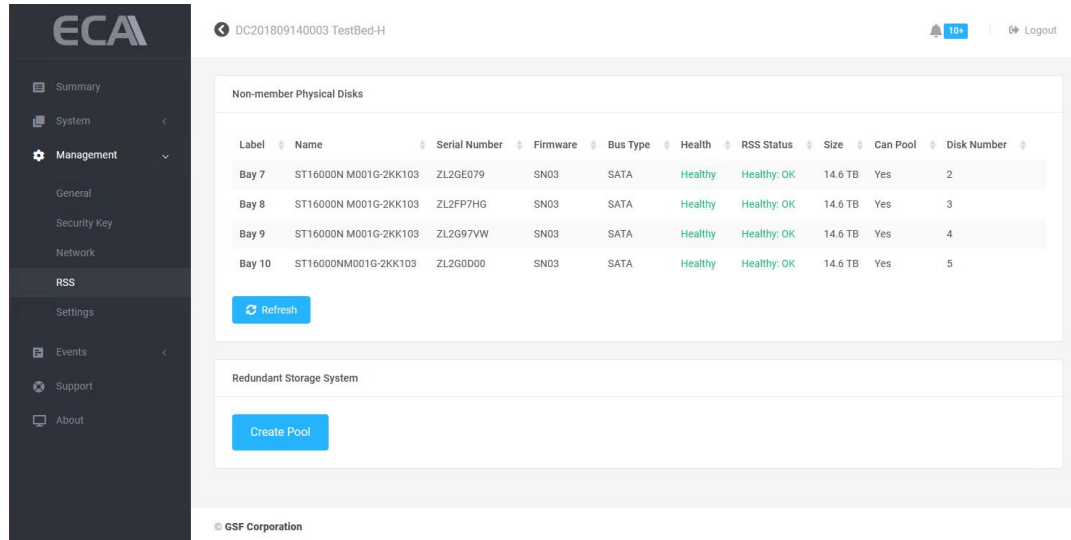


Figure 147: RSS – Redundant Storage System

### 9.4.1 Create Storage Pool

1. Click on the 'Create Pool' button to create pool.

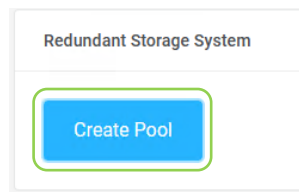


Figure 148: Create Pool

2. Name the storage pool and click on the 'Next' button.

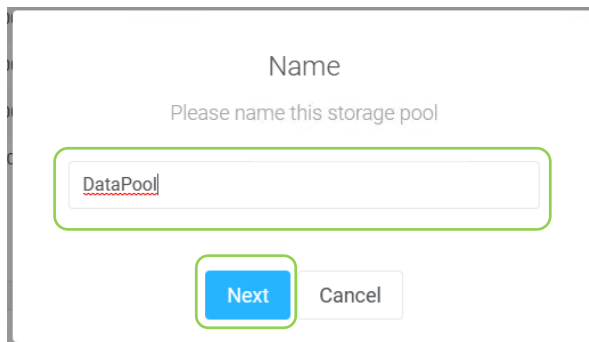


Figure 149: Name storage pool

3. Select the non-member physical disks and click on the 'Next' button to create pool.

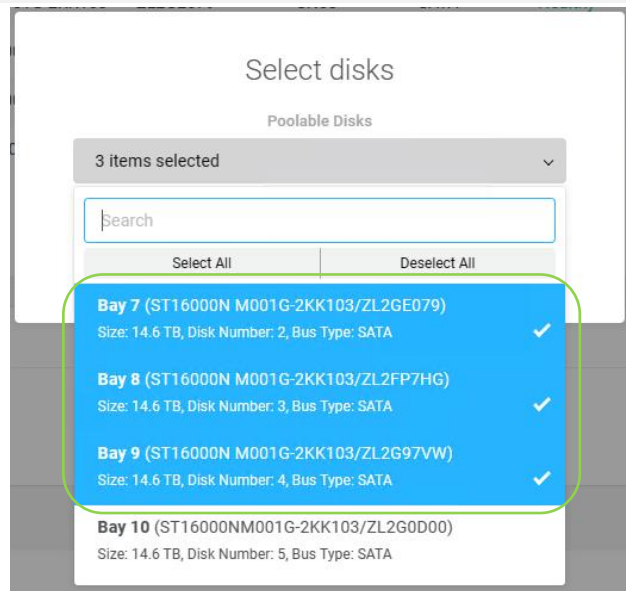


Figure 150: Select disks

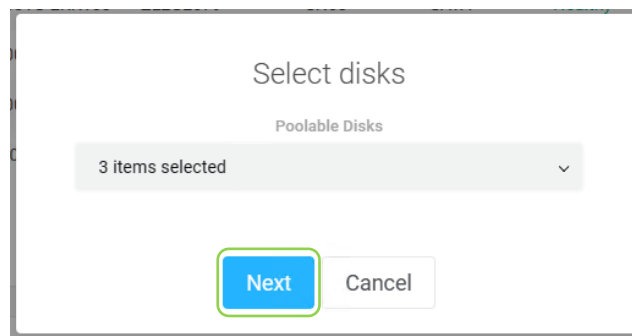
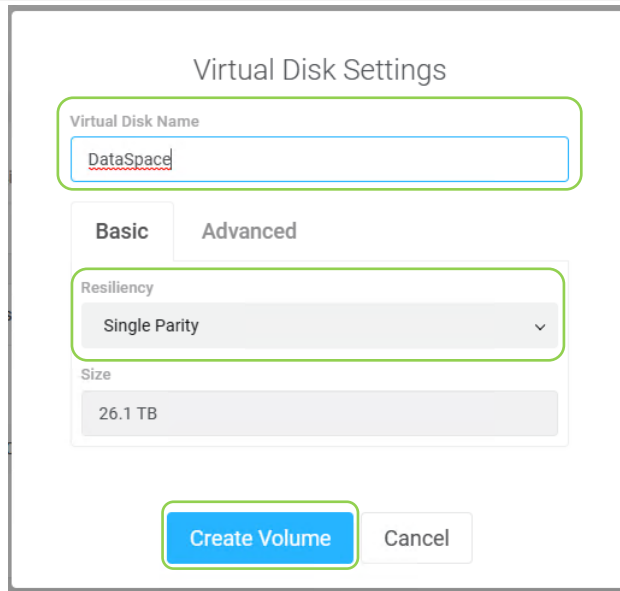


Figure 151: Select disks

- In Virtual Disk Settings, name the virtual disk and select the Resiliency type. Click on the 'Create Volume' to create volume.

| Resiliency type  | Fault-tolerance for each storage pool | Minimum number of disks                          | Disk space efficiency                 |
|------------------|---------------------------------------|--------------------------------------------------|---------------------------------------|
| Simple           | 0 Disk                                | 1                                                | 100%                                  |
| Two-way Mirror   | 1 Disk                                | 2                                                | 50%                                   |
| Three-way Mirror | 2 Disks                               | 5                                                | 33%                                   |
| Single Parity    | 1 Disk                                | 3 (recommended 5disk for optimized performance)  | $\frac{Disk\ Count - 1}{Disk\ Count}$ |
| Dual Parity      | 2 Disks                               | 5 (recommended 10disk for optimized performance) | $\frac{Disk\ Count - 2}{Disk\ Count}$ |

Figure 152: Resiliency type table



Virtual Disk Settings

Virtual Disk Name  
DataSpace

Basic Advanced

Resiliency  
Single Parity

Size  
26.1 TB

Create Volume Cancel

Figure 153: Create volume

## 5. Storage pool and virtual disk health status in RSS.

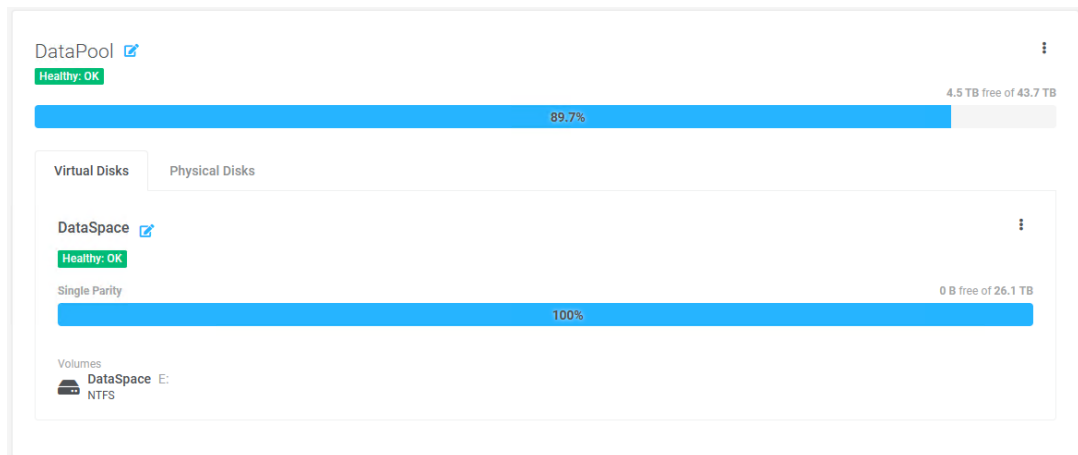


Figure 154: View storage pool, virtual disk health status

### 9.4.2 Delete Storage Pool

1. Click on the '⋮' and select 'Delete Pool' to delete the pool.

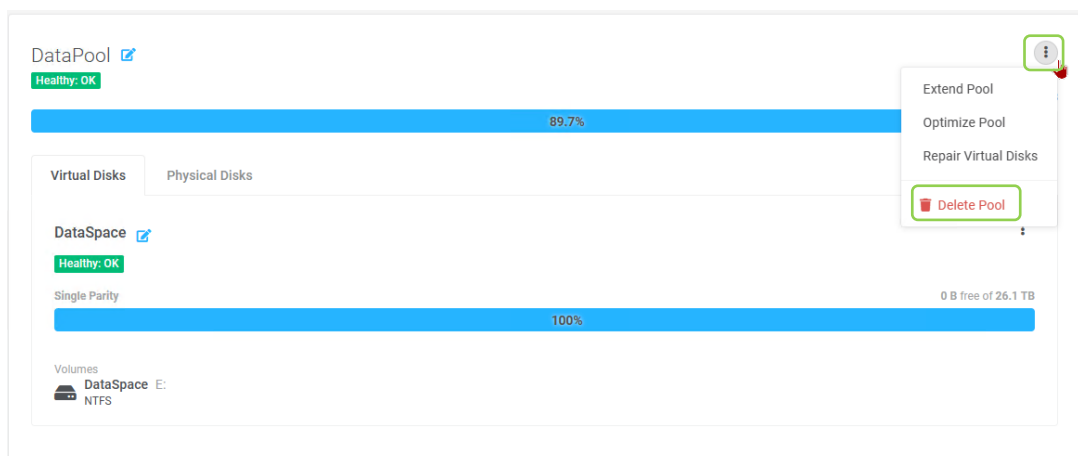


Figure 155: Delete pool

2. Enter storage pool name and click on the 'Delete Pool and Volumes' to delete the pool.

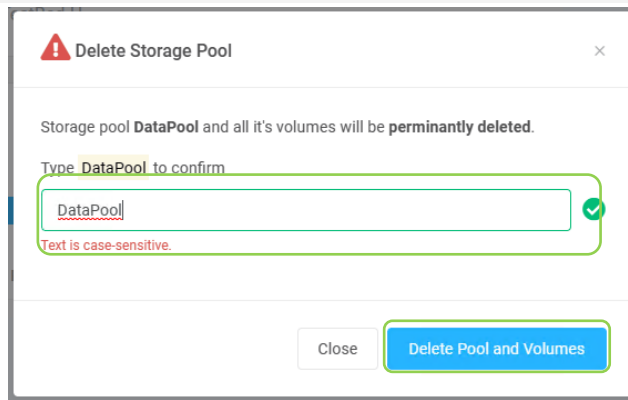


Figure 156: Confirm delete pool

### 9.4.3 Extend Storage Pool

Add a new non-member disk to extend the storage pool.

1. Insert a new clean disk into the ECA, it will appear under the Non-member Physical Disks list.

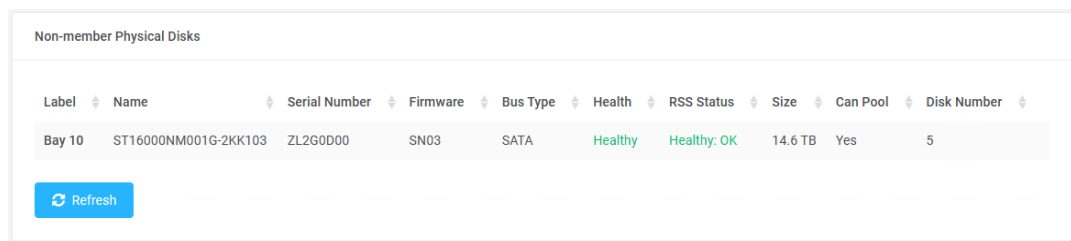


Figure 157: RSS non-member physical disks

2. Click on the 'i' and select 'Extend Pool' to extend the pool.

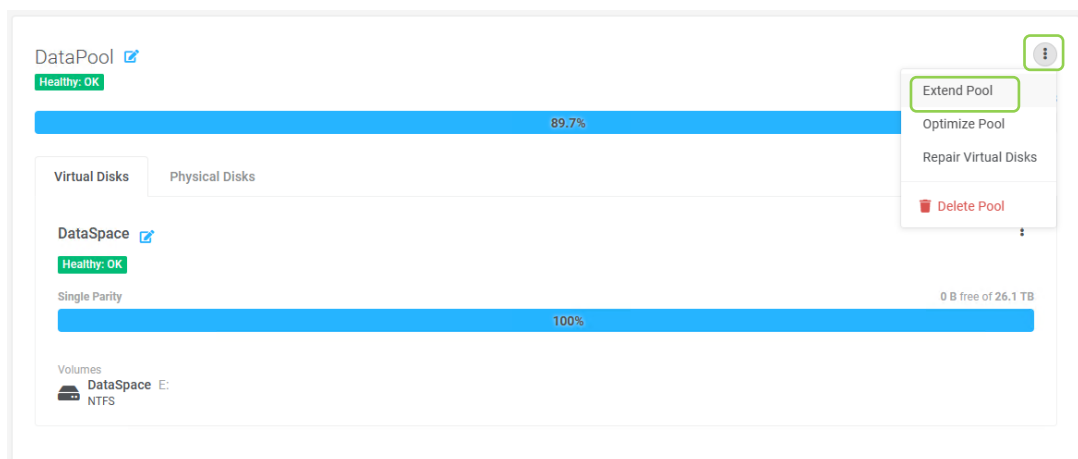


Figure 158: Extend storage pool

3. Enable Optimize storage pool and click on the 'Extend' button to extend the pool.

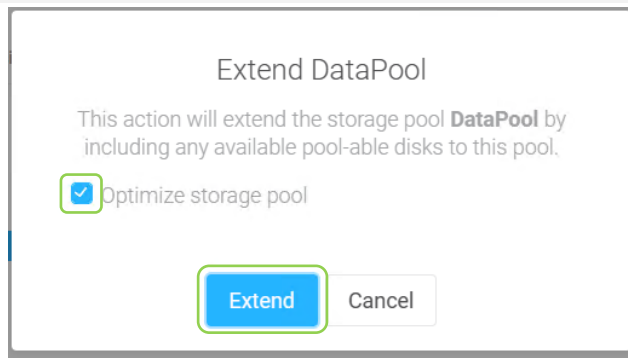


Figure 159: Optimize and extend storage pool

- Please wait for the ECA to complete the optimization process.

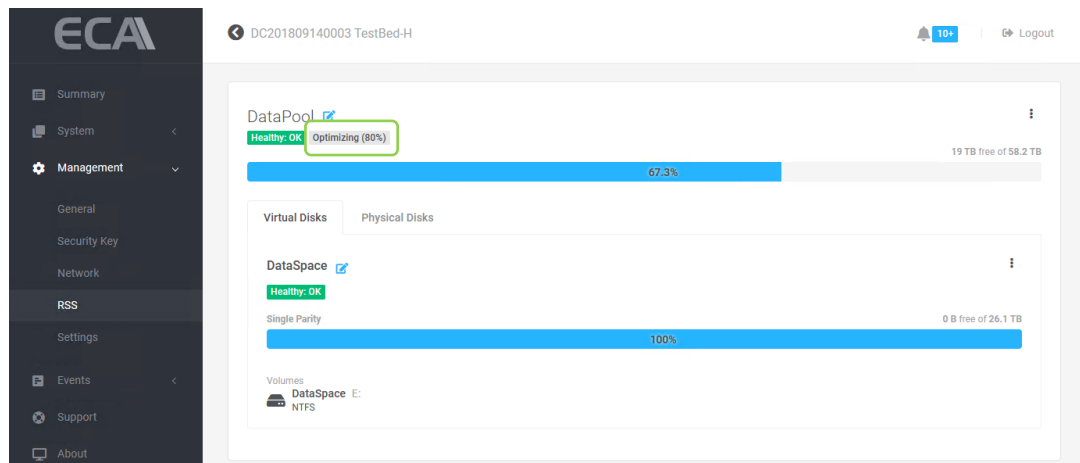


Figure 160: Optimizing storage pool

- After the RSS optimization process is complete, go to Windows Device Manager to expand the RSS volume.

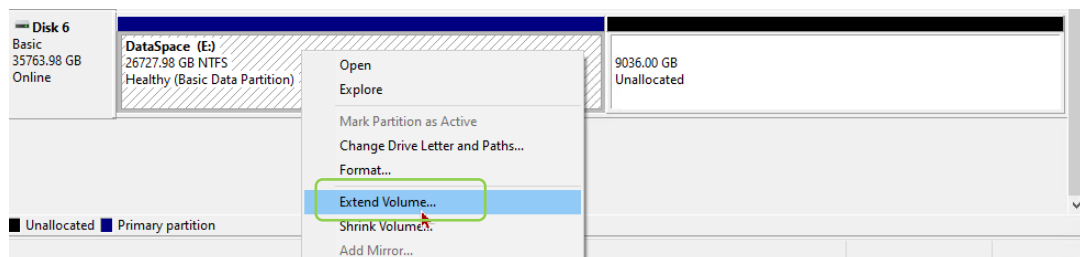


Figure 161: Extend volume in Disk Management (1 of 2)

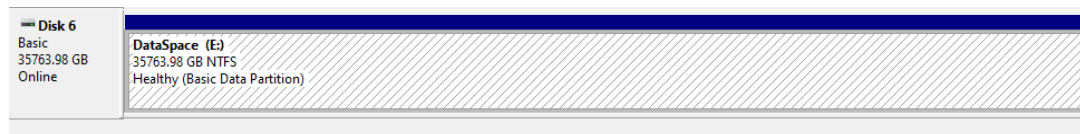


Figure 162: Extend volume in Disk Management (2 of 2)

#### 9.4.4 Repair Storage Pool

If any of the RSS member disks are missing or faulty, ecaOS will notify you via email or desktop notification. To repair the storage pool, replace the missing or faulty disk with a new non-member disk.

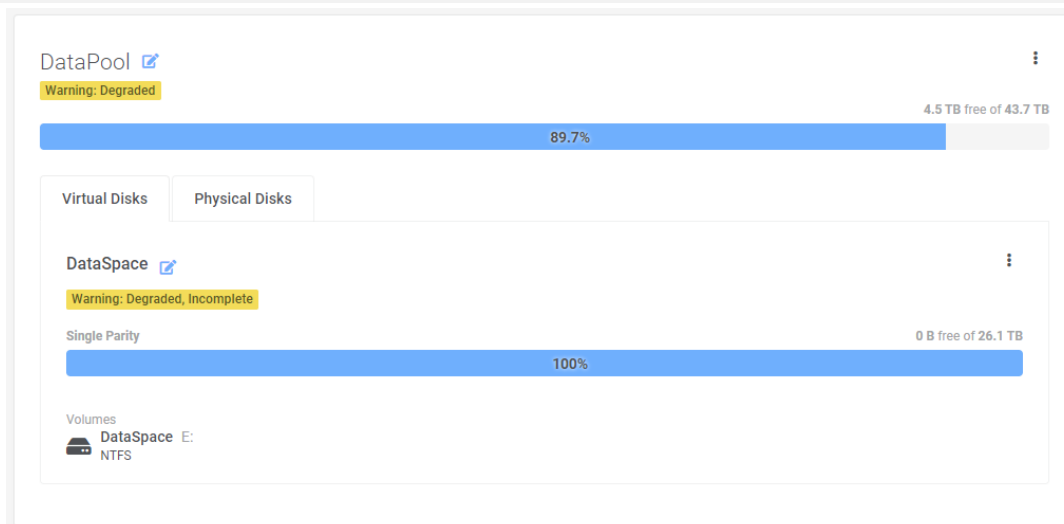


Figure 163: RSS Degraded

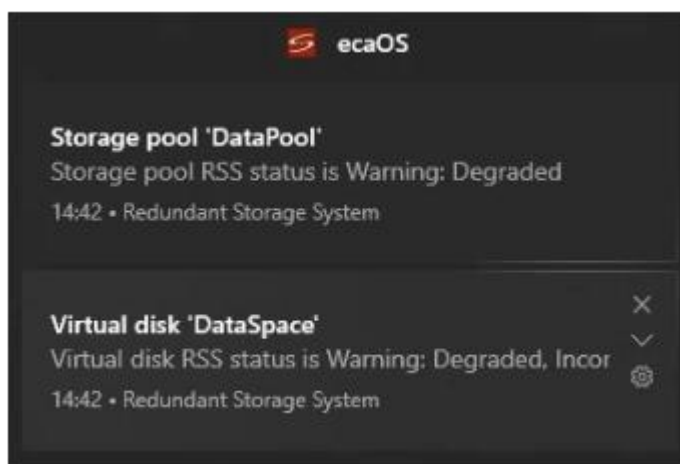


Figure 164: RSS Degraded Desktop notifications

1. To determine which member disks are 'Warning: lost communication,' go to the 'Physical Disks' tab. Then remove the faulty disk from the ECA.

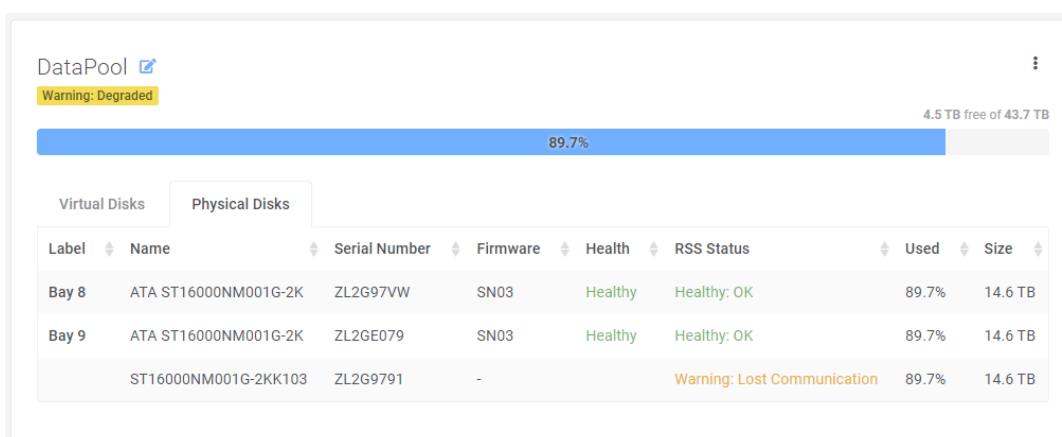


Figure 165: RSS member disk lost communication

2. Insert a new clean disk into the ECA, and then navigate to 'System > Disk Guard' to 'Acknowledge' the new replaced disk.

|        |                      |          |          |             |
|--------|----------------------|----------|----------|-------------|
| Bay 10 | ST16000NM001G-2KK103 | ZL2G0D00 | Replaced | Acknowledge |
|--------|----------------------|----------|----------|-------------|

Figure 166: Acknowledge the replacement disk

- Go to Management > RSS, the new replacement disk will be listed under Non-member Physical Disks.

| Label  | Name                 | Serial Number | Firmware | Bus Type | Health  | RSS Status  | Size    | Can Pool | Disk Number |
|--------|----------------------|---------------|----------|----------|---------|-------------|---------|----------|-------------|
| Bay 10 | ST16000NM001G-2KK103 | ZL2G0D00      | SN03     | SATA     | Healthy | Healthy: OK | 14.6 TB | Yes      | 5           |

[Refresh](#)

Figure 167: RSS non-member physical disks

- Click on the '⋮' and select 'Repair Virtual Disks' to repair the virtual disk.

DataPool [ⓘ](#)

**Warning: Degraded**

89.7%

Virtual Disks Physical Disks

DataSpace [ⓘ](#)

**Warning: Degraded, Incomplete**

Single Parity 0 B free of 26.1 TB

100%

Volumes

DataSpace E: NTFS

- Extend Pool
- Optimize Pool
- Repair Virtual Disks**
- Delete Pool

Figure 168: RSS non-member physical disks

- Enter storage pool name and click on the 'Repair' button to start repair.


**Repair Virtual Disks**

This will start the process of repairing the virtual disks belonging to storage pool **DataPool**. Unhealthy physical disks will be removed and new pool-able physical disks will be added to this pool.

Type **DataPool** to confirm

Text is case-sensitive.

[Close](#) [Repair](#)

Figure 169: Confirm delete pool

- After the RSS repair process is complete, the health of the storage pool and virtual disk will return to normal.

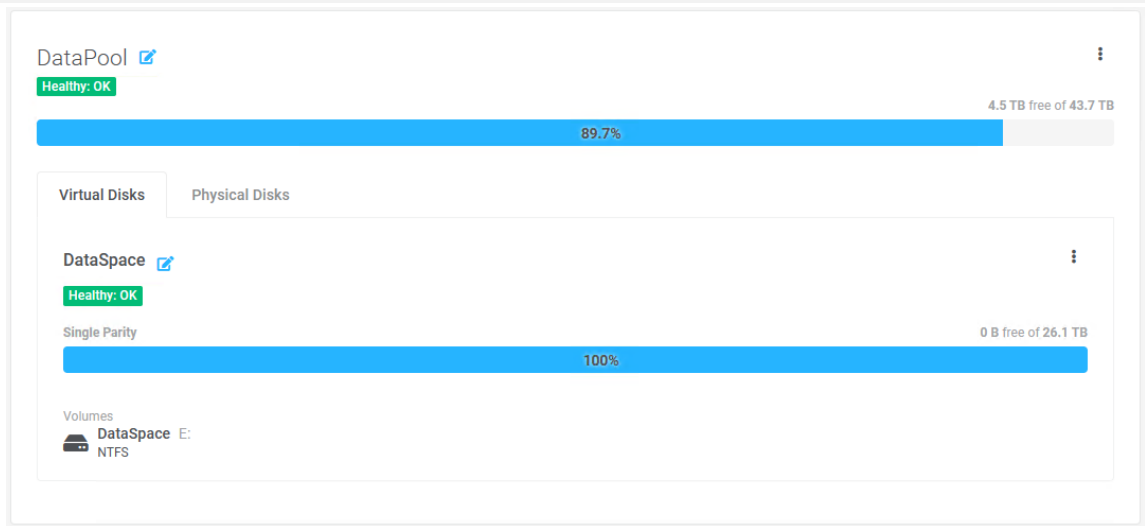


Figure 170: RSS healthy storage pool and virtual disk

## 9.5 Settings

Any event trigger can be set send email to respective personnel for any abnormal event.

### 9.5.1 Email Recipient Settings

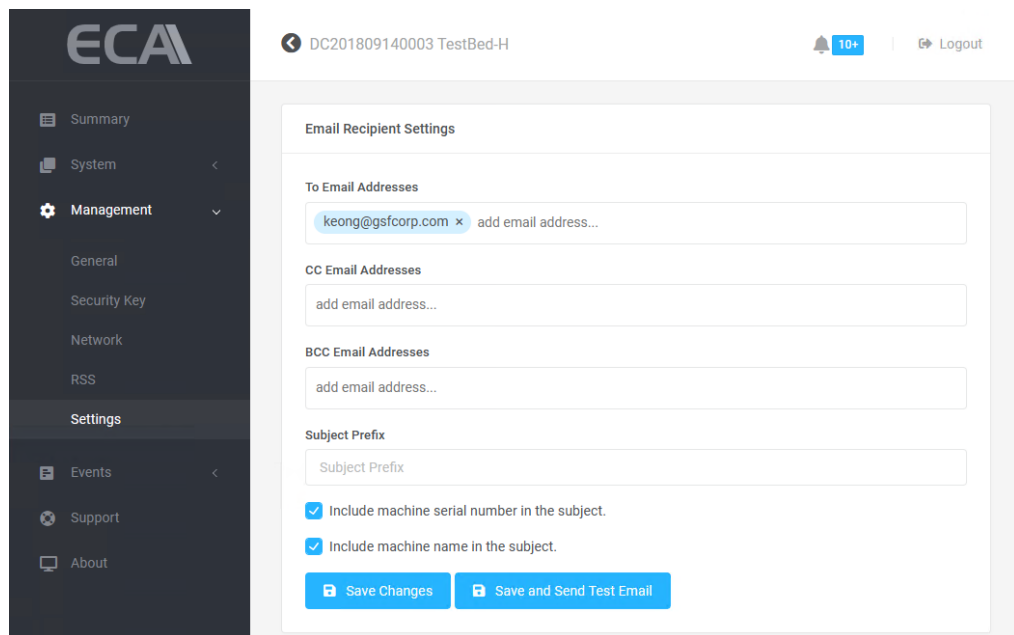


Figure 171: Email Setting (1 of 2)

### 9.5.2 Mail Servers

| Mail Servers                                          |             |      |                      |                        |            |                                |
|-------------------------------------------------------|-------------|------|----------------------|------------------------|------------|--------------------------------|
| Profile Name                                          | SMTP Server | Port | Sender Email         | Sender Name            | Encryption |                                |
| <input checked="" type="checkbox"/> ECA Notifications | -           | -    | noreply@gsf.ms       | ECA Notifications      | -          |                                |
| SmartLogic Mail Server                                | -           | -    | wilson-sl@gsf.com.my | SmartLogic Mail Server | -          | <a href="#">Set as Default</a> |
| <a href="#">+ Add Server</a>                          |             |      |                      |                        |            |                                |

Figure 172: Email Setting (2 of 2)

### 9.5.3 Events

All monitoring application under System able to set notify in the desktop, send the email or both.

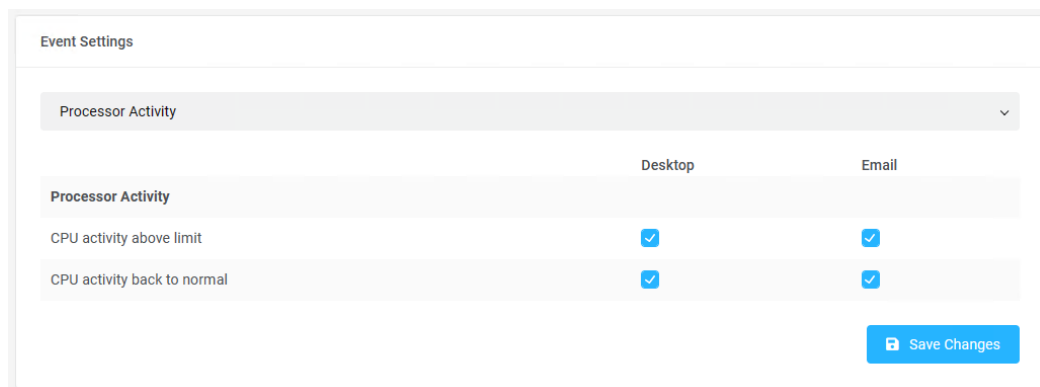


Figure 173: Events

1. Select event to be set by click drop down.

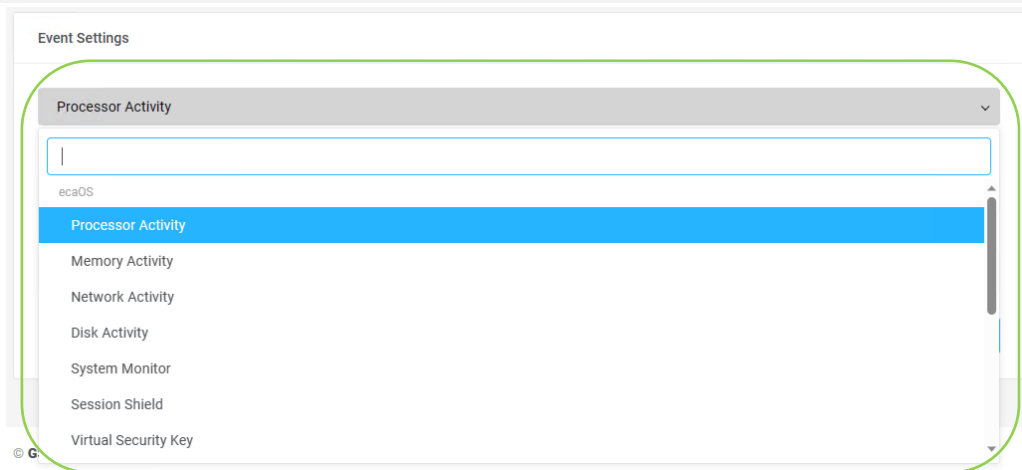


Figure 174: Select event (1 of 2)

2. Check the box to enable notification on the desktop or email and click 'Save Changes'
3. Setting below will notify user via Desktop notification and email if the memory usage above threshold limit. The user also will notify when the memory usage return to normal state

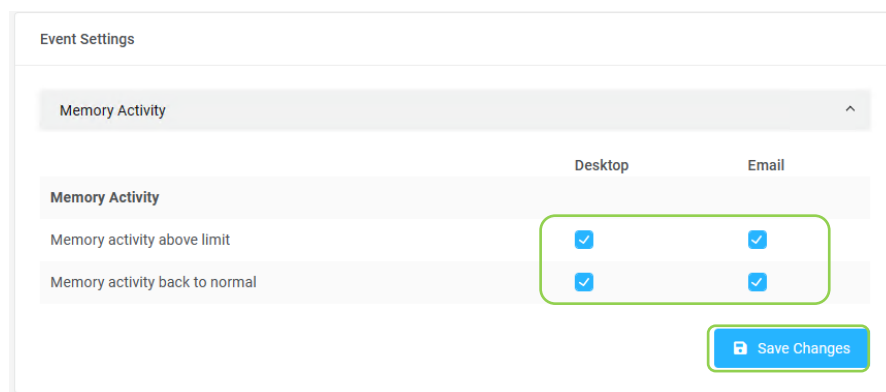


Figure 175: Select event (2 of 2)

### 9.5.3.1 Events List

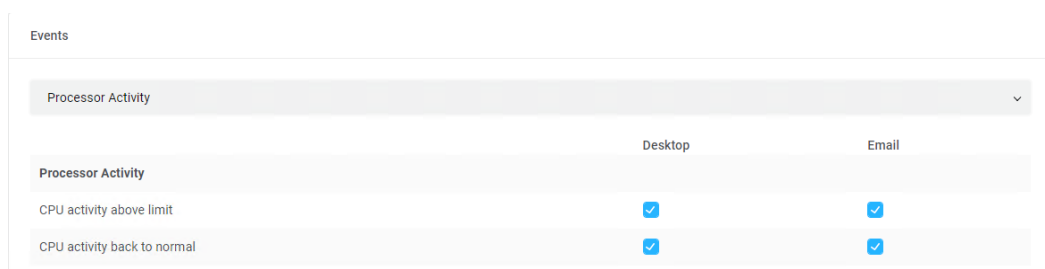


Figure 176: Processor Activity events notify setting

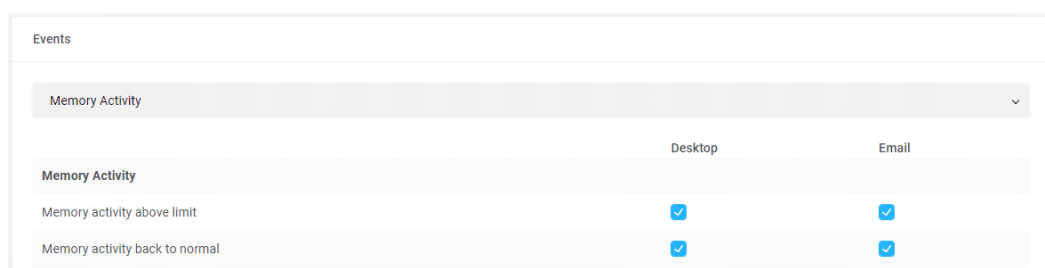


Figure 177: Memory Activity events notify setting

Event Settings

Network Activity

|                                         | Desktop                             | Email                               |
|-----------------------------------------|-------------------------------------|-------------------------------------|
| <b>Network Activity</b>                 |                                     |                                     |
| Network send activity above limit       | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Network send activity back to normal    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Network receive activity below limit    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Network receive activity back to normal | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Network cable plugged                   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Network cable unplugged                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Network available                       | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Network unavailable                     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Network Teaming Enabled                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Network Teaming Disabled                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

 Save Changes

Figure 178: Network Activity events notify setting

Events

Disk Activity

|                                    | Desktop                             | Email                               |
|------------------------------------|-------------------------------------|-------------------------------------|
| <b>Disk Activity</b>               |                                     |                                     |
| Disk read activity above limit     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disk read activity back to normal  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disk write activity below limit    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disk write activity back to normal | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 179: Disk Activity events notify setting

Event Settings

System Monitor

|                                   | Desktop                             | Email                               |
|-----------------------------------|-------------------------------------|-------------------------------------|
| <b>System Monitor</b>             |                                     |                                     |
| High CPU Temperature              | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| CPU temperature back to normal    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| High System Temperature           | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| System temperature back to normal | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| CPU fan speed below limit         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| CPU fan speed back to normal      | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| System fan speed below limit      | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| System fan speed back to normal   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3V3 System above limit            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3V3 System back to normal         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3V3 System below limit            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3V3 System back to normal         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12V System above limit            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12V System back to normal         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12V System below limit            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12V System back to normal         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Mainboard Battery Low             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Mainboard Battery back to normal  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Save Changes

Figure 180: System Monitor events notify setting

Events

Session Shield

|                                  | Desktop                             | Email                               |
|----------------------------------|-------------------------------------|-------------------------------------|
| <b>Session Shield</b>            |                                     |                                     |
| Session Shield at warning state  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Session Shield at critical state | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Session Shield back to normal    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Session Shield rebooting system  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 181: Session Shield events notify setting

Events

Virtual Security Key

|                              | Desktop                             | Email                               |
|------------------------------|-------------------------------------|-------------------------------------|
| <b>Virtual Security Key</b>  |                                     |                                     |
| Virtual security key added   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Virtual security key deleted | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 182: Virtual Security Key events notify setting

|                      |                                     |                                     |
|----------------------|-------------------------------------|-------------------------------------|
| Events               |                                     |                                     |
| Security Key         |                                     |                                     |
|                      | Desktop                             | Email                               |
| Security Key         |                                     |                                     |
| Security key added   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Security key deleted | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Security key renamed | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 183: Security Key events notify setting

|                                 |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|
| Events                          |                                     |                                     |
| Support                         |                                     |                                     |
|                                 | Desktop                             | Email                               |
| Support                         |                                     |                                     |
| Remote support enabled          | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Remote support disabled         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Remote support setup successful | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Remote support setup failed     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 184: Support events notify setting

Events

Disk Guard

|                           | Desktop                             | Email                               |
|---------------------------|-------------------------------------|-------------------------------------|
| <b>Disk Guard</b>         |                                     |                                     |
| Disk Removed              | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disk Remove Acknowledged  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disk Inserted             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| New Disk                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disk Replaced             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disk Replace Acknowledged | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disk Online               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disk Offline              | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disks Changed             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 185: Disk Guard events notify setting

Events

Disk Health

|                      | Desktop                             | Email                               |
|----------------------|-------------------------------------|-------------------------------------|
| <b>Disk Health</b>   |                                     |                                     |
| Disk health warning  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Disk health critical | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 186: Disk Health events notify setting

Event Settings

Redundant Storage System

|                                   | Desktop                             | Email                               |
|-----------------------------------|-------------------------------------|-------------------------------------|
| <b>Redundant Storage System</b>   |                                     |                                     |
| Storage pool status is healthy    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Storage pool status is warning    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Storage pool status is unhealthy  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Virtual disk status is healthy    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Virtual disk status is warning    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Virtual disk status is unhealthy  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Physical disk status is healthy   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Physical disk status is warning   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Physical disk status is unhealthy | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

 Save Changes

Figure 187: Redundant Storage System notify setting

Events

Firmware

|                         | Desktop                             | Email                               |
|-------------------------|-------------------------------------|-------------------------------------|
| <b>Firmware</b>         |                                     |                                     |
| Firmware update success | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Firmware update failed  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 188: Heartbeat firmware events notify setting

Events

ECA Layer

|                            | Desktop                             | Email                               |
|----------------------------|-------------------------------------|-------------------------------------|
| <b>ECA Layer</b>           |                                     |                                     |
| Saving layer successful    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Saving layer failed        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Restoring layer successful | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Restoring layer failed     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Figure 189: ECA Layer events notify setting

Event Settings

ECA Power Supply

|                             | Desktop                             | Email                               |
|-----------------------------|-------------------------------------|-------------------------------------|
| <b>ECA Power Supply</b>     |                                     |                                     |
| Power supply fault          | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Power supply back to normal | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Save Changes

Figure 190: ECA Power Supply events notify setting (ONLY applies to ECA45 with TBSP-ECAPSU-R600 power supply unit)

### 9.5.4 SNMP Settings

Users can monitor ECA with network management software by using SNMP (Management > Settings > SNMP Settings). The following protocols are currently supported: SNMPv1, SNMPv2c, and SNMPv3.

SNMP Settings

☐ Enable SNMP Agent

Trap Receivers

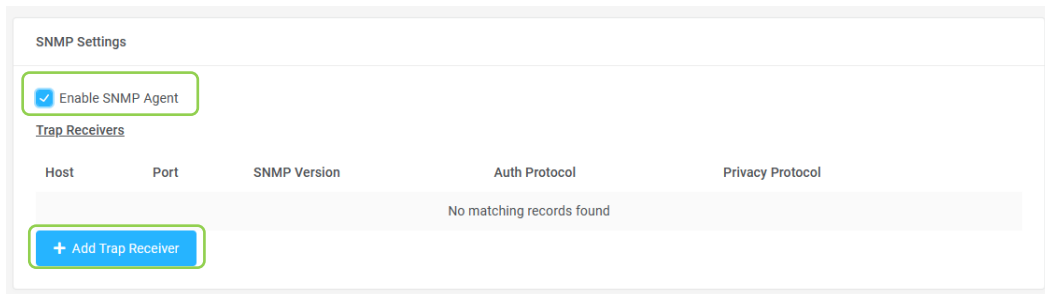
| Host                      | Port | SNMP Version | Auth Protocol | Privacy Protocol |
|---------------------------|------|--------------|---------------|------------------|
| No matching records found |      |              |               |                  |

+ Add Trap Receiver

Figure 191: SNMP Settings

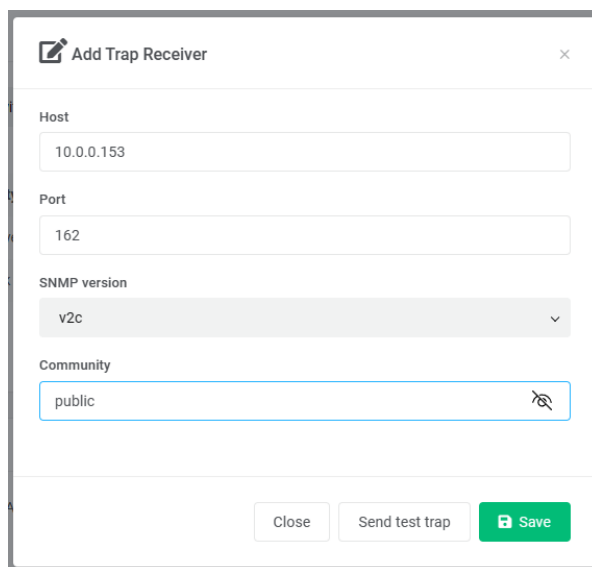
### 9.5.4.1 Enable SNMP

1. Tick Enable SNMP Agent, click the Add Trap Receiver button and follow the steps below.
  - a. Enter the host IP address.
  - b. Enter the port number of the host.
  - c. Select the SNMP version.
  - d. Enter a community name.
  - e. Click the Save button.



The image shows the 'SNMP Settings' window. At the top, there is a checkbox labeled 'Enable SNMP Agent' which is checked. Below this, there is a section titled 'Trap Receivers'. It contains a table with columns: Host, Port, SNMP Version, Auth Protocol, and Privacy Protocol. The table is currently empty, displaying 'No matching records found'. At the bottom of the 'Trap Receivers' section, there is a blue button labeled '+ Add Trap Receiver'.

Figure 192: Enable SNMP



The image shows the 'Add Trap Receiver' dialog box. It has a title bar with a pencil icon and the text 'Add Trap Receiver'. The dialog contains the following fields:
 

- Host:** A text input field containing '10.0.0.153'.
- Port:** A text input field containing '162'.
- SNMP version:** A dropdown menu with 'v2c' selected.
- Community:** A text input field containing 'public'.

 At the bottom right, there are three buttons: 'Close', 'Send test trap', and a green 'Save' button with a floppy disk icon.

Figure 193: Add SNMP Trap Receiver

### 9.5.4.2 Download ECA MIB Files

GSF provides management information base (MIB) of ECA, which allows users to monitor ECA using network management systems, such as system, disk, and network statuses.

Please obtain the ECA MIB files from

“C:\Program Files (x86)\GSF\ecaOS\Services\MqttSnmpAgent\MiB.zip”.

### 9.5.5 ecaCentral Registration

ecaCentral is a dedicated dashboard for monitoring the health and performance of multiple ECAs using a registered email address. If any registered ECAs have anomalies, you will be notified via the ecaCentral dashboard.

Before using ecaCentral, go to the ecaOS dashboard for the ECA you want to monitor: Management > Settings > ecaCentral Registration, and enter your registered account information.

To register your ECA for this service:

- Enter the central IP address or hostname.
- Enter your registered email address.
- Click the Next button.
- Enter the access code generated from your virtual security key to verify and complete the registration.

If you have successfully connected the ecaCentral, you will see the connection status as connected.

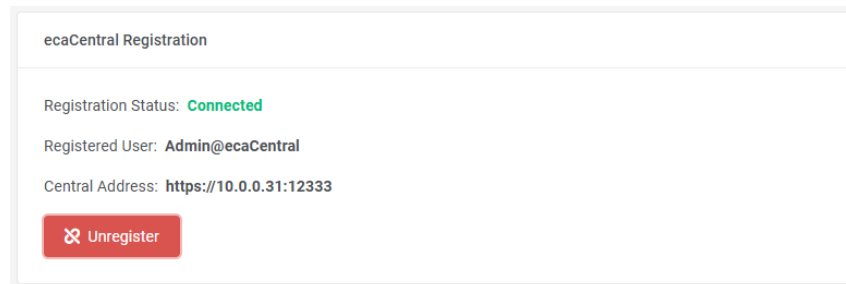
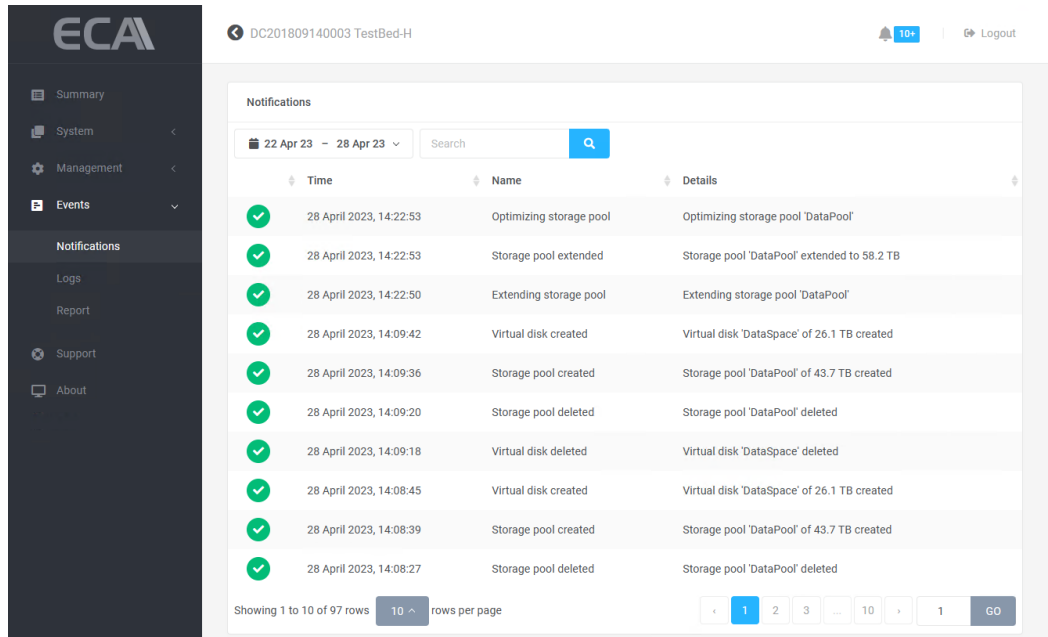


Figure 194: ecaOS Central Registration

## 10 Events

### 10.1 Notification



The screenshot displays the ECA (Enterprise Cloud Architecture) interface. On the left is a dark sidebar with the ECA logo and a menu containing: Summary, System, Management, Events (selected), Notifications (highlighted), Logs, Report, Support, and About. The main content area shows the 'Notifications' page for 'DC201809140003 TestBed-H'. At the top right of the main area, there is a notification bell icon with '10+' and a 'Logout' link. The 'Notifications' section includes a date range filter set to '22 Apr 23 - 28 Apr 23', a search bar, and a table of events. Each event row starts with a green checkmark icon. The table has three columns: Time, Name, and Details. Below the table, it indicates 'Showing 1 to 10 of 97 rows' and '10 rows per page'. At the bottom right, there is a pagination control showing '1' as the current page, with options for 2, 3, ..., 10, and a 'GO' button.

| Time                    | Name                    | Details                                     |
|-------------------------|-------------------------|---------------------------------------------|
| 28 April 2023, 14:22:53 | Optimizing storage pool | Optimizing storage pool 'DataPool'          |
| 28 April 2023, 14:22:53 | Storage pool extended   | Storage pool 'DataPool' extended to 58.2 TB |
| 28 April 2023, 14:22:50 | Extending storage pool  | Extending storage pool 'DataPool'           |
| 28 April 2023, 14:09:42 | Virtual disk created    | Virtual disk 'DataSpace' of 26.1 TB created |
| 28 April 2023, 14:09:36 | Storage pool created    | Storage pool 'DataPool' of 43.7 TB created  |
| 28 April 2023, 14:09:20 | Storage pool deleted    | Storage pool 'DataPool' deleted             |
| 28 April 2023, 14:09:18 | Virtual disk deleted    | Virtual disk 'DataSpace' deleted            |
| 28 April 2023, 14:08:45 | Virtual disk created    | Virtual disk 'DataSpace' of 26.1 TB created |
| 28 April 2023, 14:08:39 | Storage pool created    | Storage pool 'DataPool' of 43.7 TB created  |
| 28 April 2023, 14:08:27 | Storage pool deleted    | Storage pool 'DataPool' deleted             |

Figure 195: Notification

## 10.2 Logs

An event log is a file that contains information about usage, operations and activity of the ECA system. The log can be filtered by specifying data range and/or inserting keyword(s).

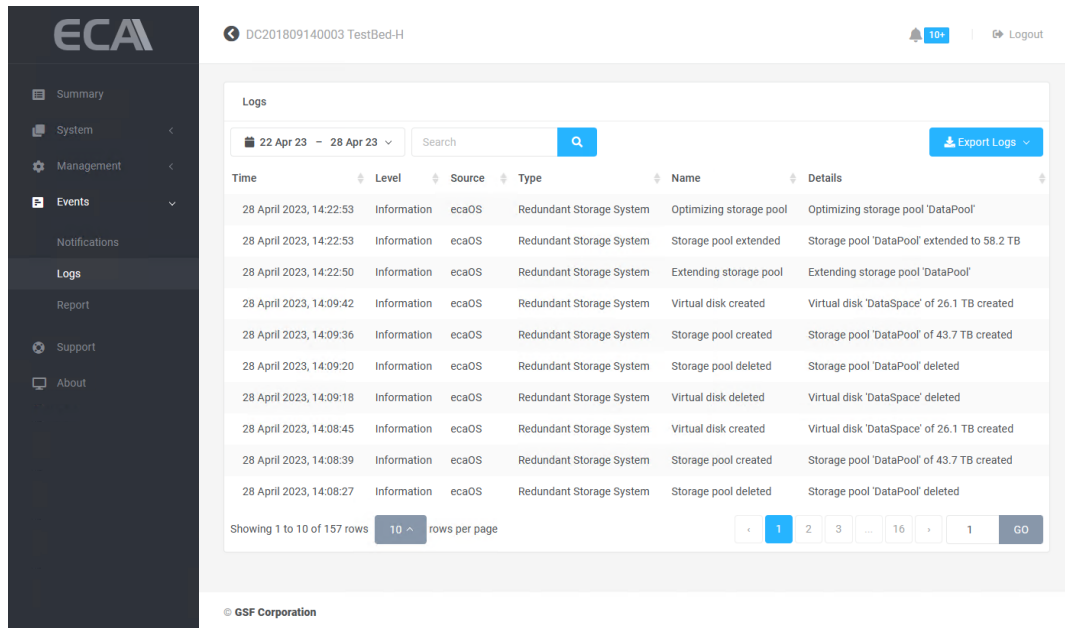


Figure 196: Log

### 10.2.1 Filtering Log

Filter by can choose by Today, Yesterday, Last 3 days, Last 7 Days, Last 30 Days or Custom data range.

Type any keyword and click on magnetify glass icon to start filtering. Click 'Apply' to filter the Logs.

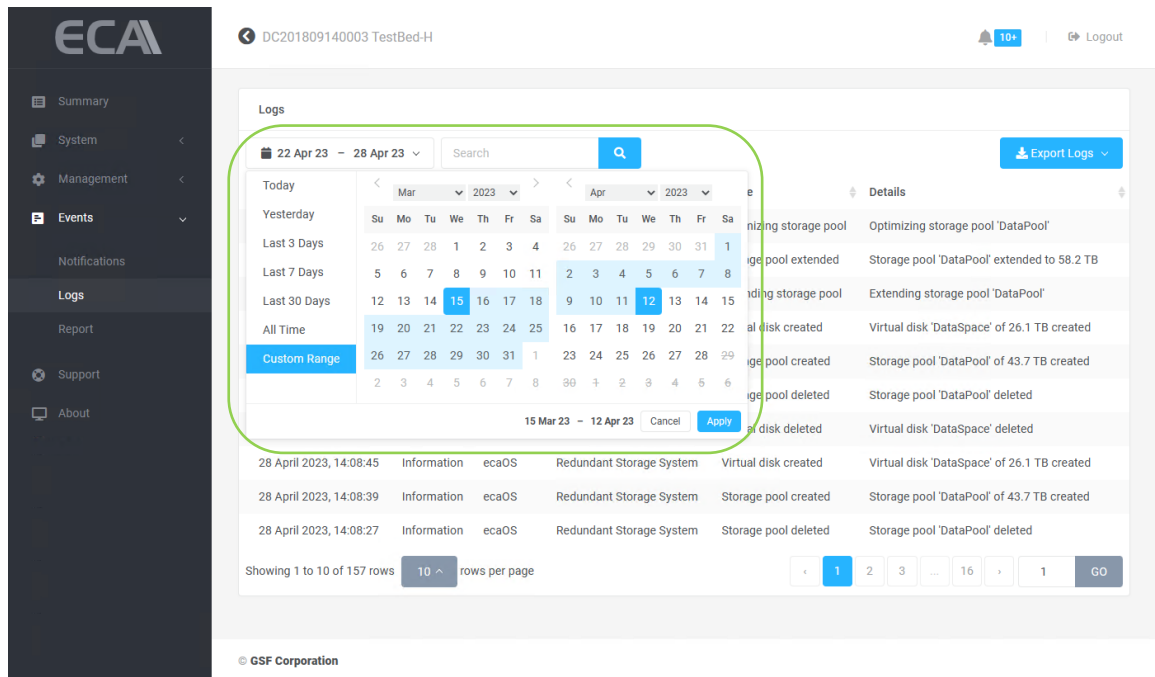


Figure 197: Filter log

### 10.2.2 Exporting Log

1. Click on the 'Export Logs' button

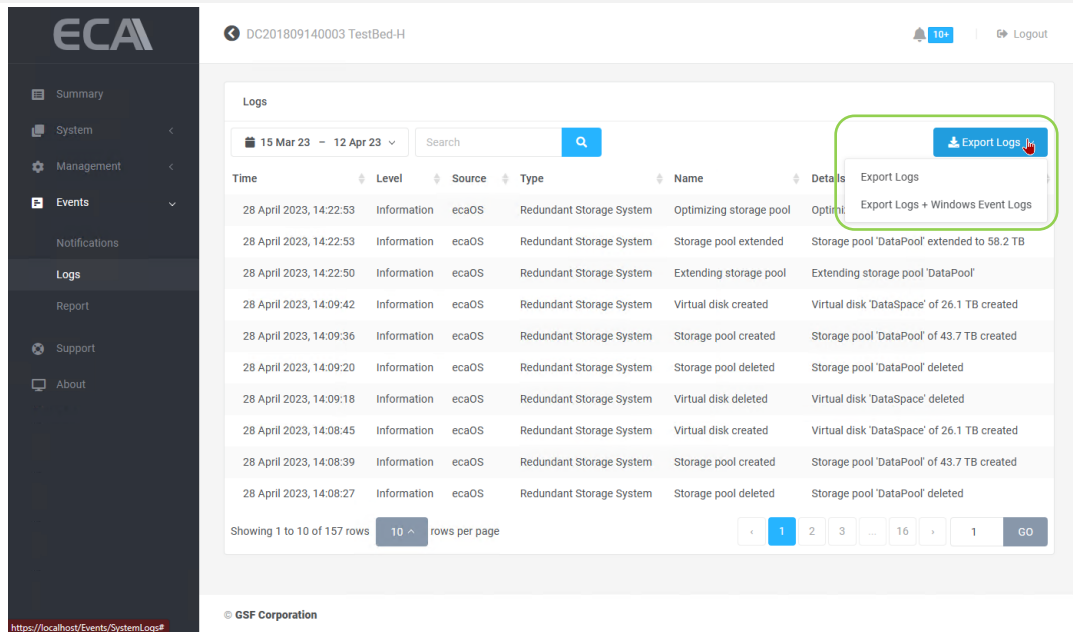


Figure 198: Export Log (1 of 8)

## 2. Click OK to start export the current log

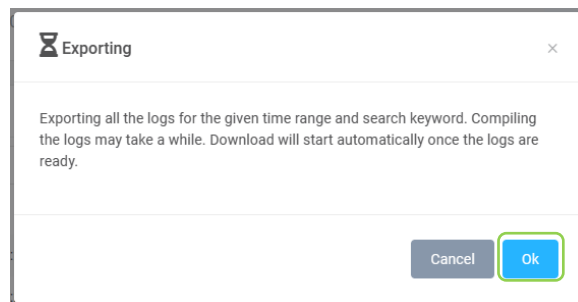


Figure 199: Export Log (2 of 8)

## 3. The log will export to Downloads folder in compress format

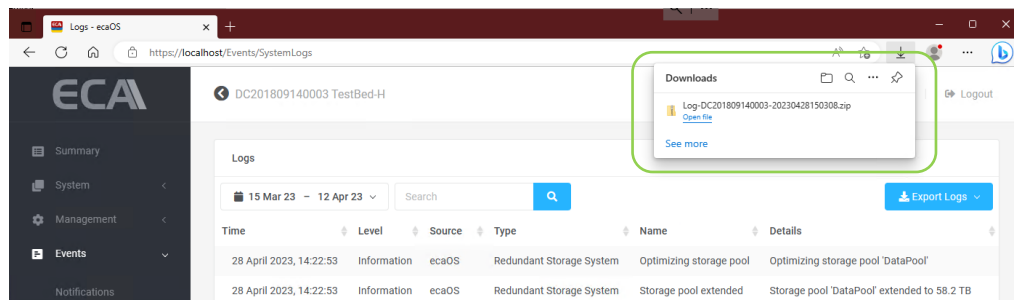


Figure 200: Export Log (3 of 8)

4. The log will be export to under Downloads. The exported log can be retrieved via Explorer.

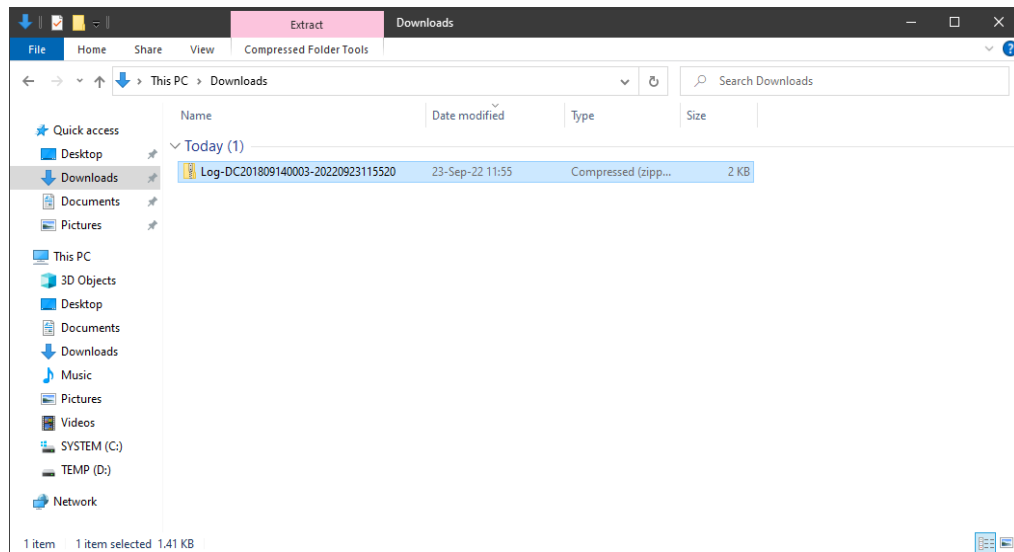


Figure 201: Exporting log (4 of 8)

5. Extract the file by right click on the file and select Extract All.

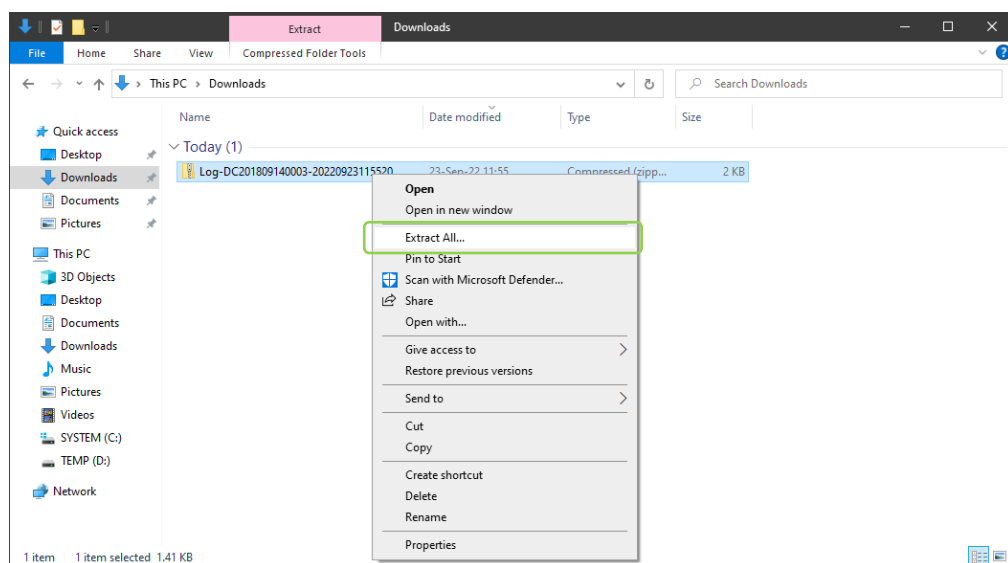


Figure 202: Exporting log (5 of 8)

6. Choose the location to extra the file and click Extract button.

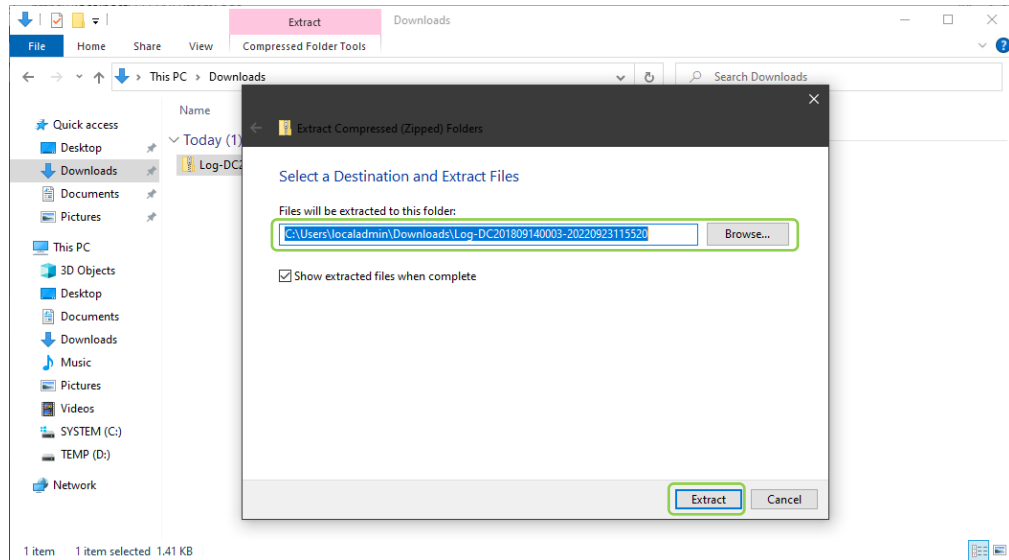


Figure 203: Exporting log (6 of 8)

7. The log file saved in comma-separated values (CSV) format.

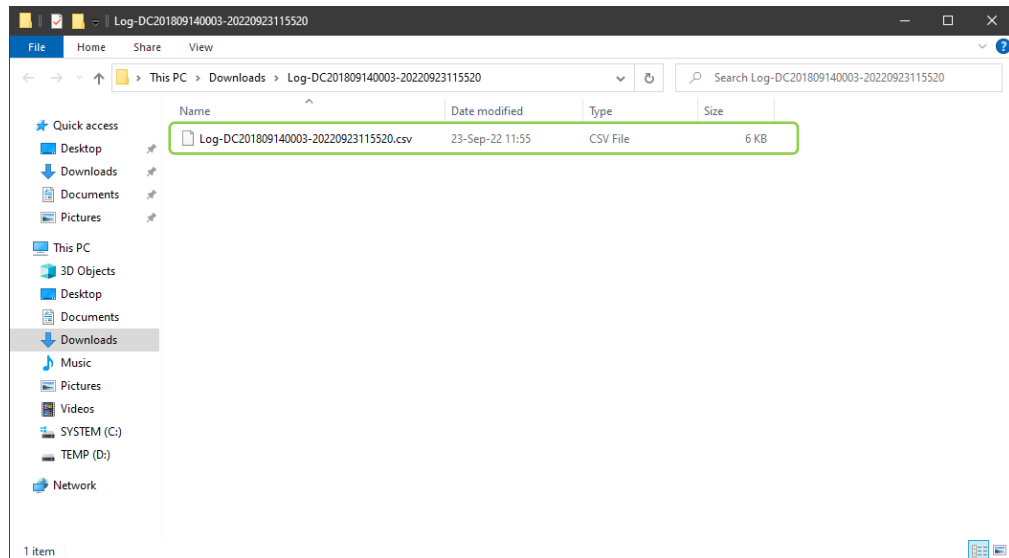
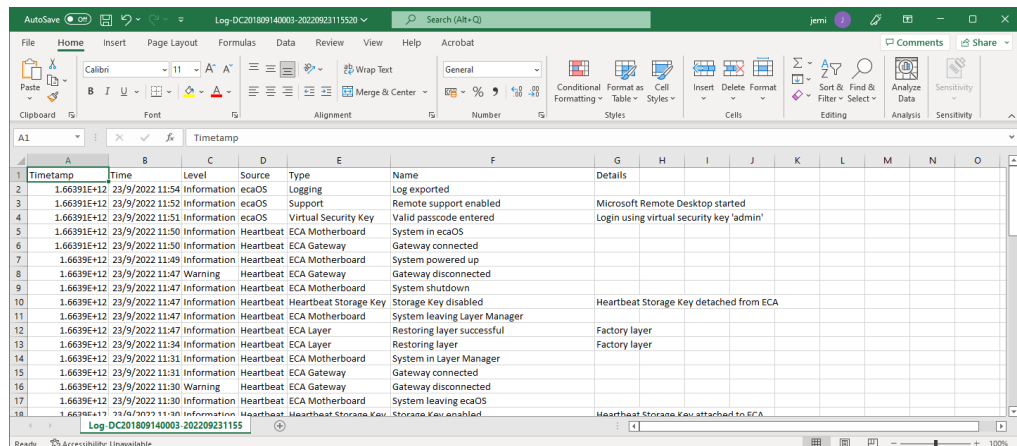


Figure 204: Exporting log (7 of 8)

8. Use Spreadsheet program to open the log file.



|    | A          | B               | C           | D         | E                     | F                            | G                                        | H | I | J | K | L | M | N | O |
|----|------------|-----------------|-------------|-----------|-----------------------|------------------------------|------------------------------------------|---|---|---|---|---|---|---|---|
|    | Timestamp  | Time            | Level       | Source    | Type                  | Name                         | Details                                  |   |   |   |   |   |   |   |   |
| 1  | 1.6639E+12 | 23/9/2022 11:54 | Information | ecaOS     | Logging               | Log exported                 |                                          |   |   |   |   |   |   |   |   |
| 2  | 1.6639E+12 | 23/9/2022 11:52 | Information | ecaOS     | Support               | Remote support enabled       | Microsoft Remote Desktop started         |   |   |   |   |   |   |   |   |
| 3  | 1.6639E+12 | 23/9/2022 11:51 | Information | ecaOS     | Virtual Security Key  | Valid passcode entered       | Login using virtual security key 'admin' |   |   |   |   |   |   |   |   |
| 4  | 1.6639E+12 | 23/9/2022 11:50 | Information | Heartbeat | ECA Motherboard       | System in ecaOS              |                                          |   |   |   |   |   |   |   |   |
| 5  | 1.6639E+12 | 23/9/2022 11:50 | Information | Heartbeat | ECA Gateway           | Gateway connected            |                                          |   |   |   |   |   |   |   |   |
| 6  | 1.6639E+12 | 23/9/2022 11:49 | Information | Heartbeat | ECA Motherboard       | System powered up            |                                          |   |   |   |   |   |   |   |   |
| 7  | 1.6639E+12 | 23/9/2022 11:47 | Warning     | Heartbeat | ECA Gateway           | Gateway disconnected         |                                          |   |   |   |   |   |   |   |   |
| 8  | 1.6639E+12 | 23/9/2022 11:47 | Information | Heartbeat | ECA Motherboard       | System shutdown              |                                          |   |   |   |   |   |   |   |   |
| 9  | 1.6639E+12 | 23/9/2022 11:47 | Information | Heartbeat | Heartbeat Storage Key | Storage Key disabled         | Heartbeat Storage Key detached from ECA  |   |   |   |   |   |   |   |   |
| 10 | 1.6639E+12 | 23/9/2022 11:47 | Information | Heartbeat | ECA Motherboard       | System leaving Layer Manager |                                          |   |   |   |   |   |   |   |   |
| 11 | 1.6639E+12 | 23/9/2022 11:47 | Information | Heartbeat | ECA Layer             | Restoring layer successful   | Factory layer                            |   |   |   |   |   |   |   |   |
| 12 | 1.6639E+12 | 23/9/2022 11:34 | Information | Heartbeat | ECA Layer             | Restoring layer              | Factory layer                            |   |   |   |   |   |   |   |   |
| 13 | 1.6639E+12 | 23/9/2022 11:31 | Information | Heartbeat | ECA Motherboard       | System in Layer Manager      |                                          |   |   |   |   |   |   |   |   |
| 14 | 1.6639E+12 | 23/9/2022 11:31 | Information | Heartbeat | ECA Gateway           | Gateway connected            |                                          |   |   |   |   |   |   |   |   |
| 15 | 1.6639E+12 | 23/9/2022 11:30 | Warning     | Heartbeat | ECA Gateway           | Gateway disconnected         |                                          |   |   |   |   |   |   |   |   |
| 16 | 1.6639E+12 | 23/9/2022 11:30 | Information | Heartbeat | ECA Motherboard       | System leaving ecaOS         |                                          |   |   |   |   |   |   |   |   |
| 17 | 1.6639E+12 | 23/9/2022 11:30 | Information | Heartbeat | Heartbeat Storage Key | Storage Key disabled         | Heartbeat Storage Key detached from ECA  |   |   |   |   |   |   |   |   |
| 18 | 1.6639E+12 | 23/9/2022 11:30 | Information | Heartbeat | Heartbeat Storage Key | Storage Key disabled         | Heartbeat Storage Key detached from ECA  |   |   |   |   |   |   |   |   |

Figure 205: Exporting log (8 of 8)

## 10.3 Report

Report will be auto generated and sent to all recipients daily at: 23:55 or manually download by click on the 'Download System Report' button.

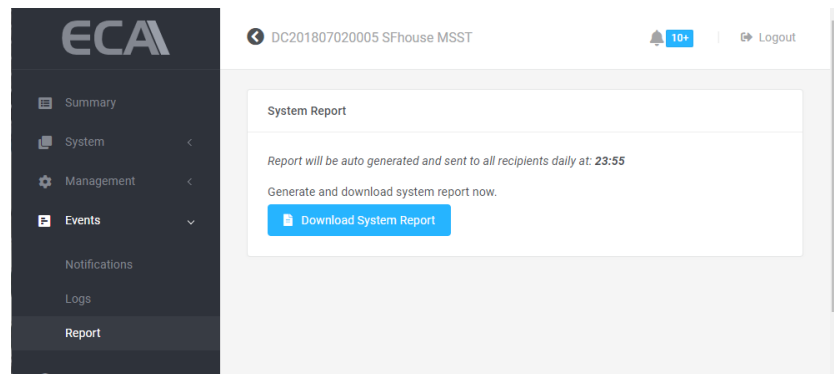


Figure 206: Manual Report Download at Events > Report section

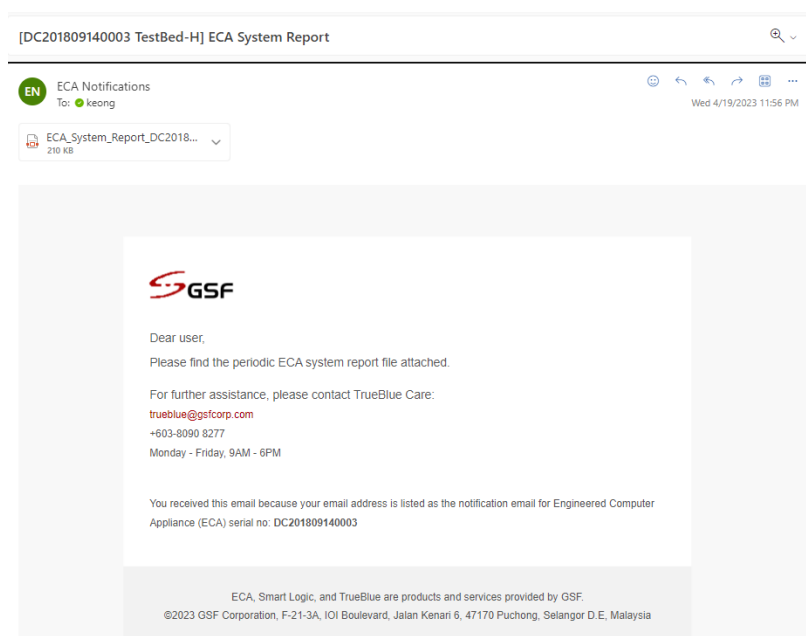


Figure160A: ECA email an ECA report

ECA System Report: DC201809140003 | TestBed-H | 18 Apr 2023, 23:55 (+08:00)

### Disks

|             | Model                  | Serial #         | Health Status             | Temperature | Disk Guard          |
|-------------|------------------------|------------------|---------------------------|-------------|---------------------|
| System Disk | KINGSTON SUV400S37120G | 50026B777C01AC30 | 94% <span>HEALTHY</span>  | 32 °C       | <span>ONLINE</span> |
| Bay 1       | ST4000VX000-1F4168     | Z30286PJ         | 100% <span>HEALTHY</span> | 30 °C       | <span>ONLINE</span> |
| Bay 2       | ST16000NM001G-2KK103   | ZL2G64K3         | 100% <span>HEALTHY</span> | 32 °C       | <span>ONLINE</span> |
| Bay 3       | ST16000NM001G-2KK103   | ZL2E4XRK         | 100% <span>HEALTHY</span> | 31 °C       | <span>ONLINE</span> |
| Bay 4       | ST16000NM001G-2KK103   | ZL2E4XGM         | 100% <span>HEALTHY</span> | 30 °C       | <span>ONLINE</span> |
| Bay 5       | ST16000NM001G-2KK103   | ZL2GDQ7V         | 100% <span>HEALTHY</span> | 31 °C       | <span>ONLINE</span> |
| Bay 6       | ST4000VX000-1F4168     | Z302AVWB         | 100% <span>HEALTHY</span> | 30 °C       | <span>ONLINE</span> |
| Bay 7       |                        |                  | -                         | -           | NO DISK             |
| Bay 8       |                        |                  | -                         | -           | NO DISK             |
| Bay 9       |                        |                  | -                         | -           | NO DISK             |
| Bay 10      |                        |                  | -                         | -           | NO DISK             |
| Bay 11      |                        |                  | -                         | -           | NO DISK             |
| Bay 12      |                        |                  | -                         | -           | NO DISK             |
| Bay 13      |                        |                  | -                         | -           | NO DISK             |
| Bay 14      | ST31000S28ASQ          | 5VP4QVVK         | 30% <span>CRITICAL</span> | 31 °C       | <span>ONLINE</span> |
| Bay 15      |                        |                  | -                         | -           | NO DISK             |

Figure 207B: Example ECA report in PDF format

## 11 Support

### 11.1 Microsoft Remote Desktop

Microsoft Remote Desktop app to connect to a remote PC or virtual apps and desktops made available by your admin.

Click on 'Start' button under Microsoft Remote Desktop

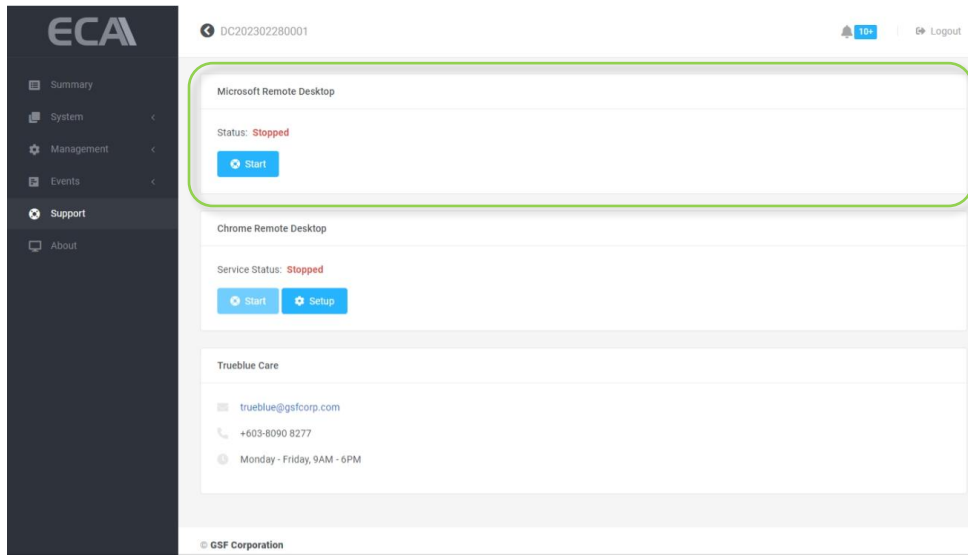


Figure 208: Microsoft Remote Support

From local PC. Enter computer name or IP address of the remote ECA.

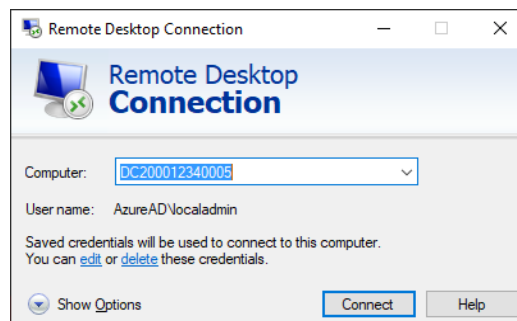


Figure 209: Trueblue Remote Support (1 of 2)

NOTE: You will require to port forward in your router to allowed Remote Desktop to be accessible via internet. Default port is 3389

## 11.2 Chrome Remote Desktop

This option allows you to access your ECA remotely from your PC/Laptop using your own Google account without require any port forwarding setting in the router. Before begin, Chrome Remote Desktop work in both Google Chrome or Microsoft Edge Browser, at the address bar type: <https://remotedesktop.google.com/access> then follow the directions to enabled Chrome Remote Desktop in your browser.

### 11.2.1 Setup ECA into your Chrome Remote Desktop

In your PC/Laptop, run Chrome/Edge and enter <https://remotedesktop.google.com/headless>

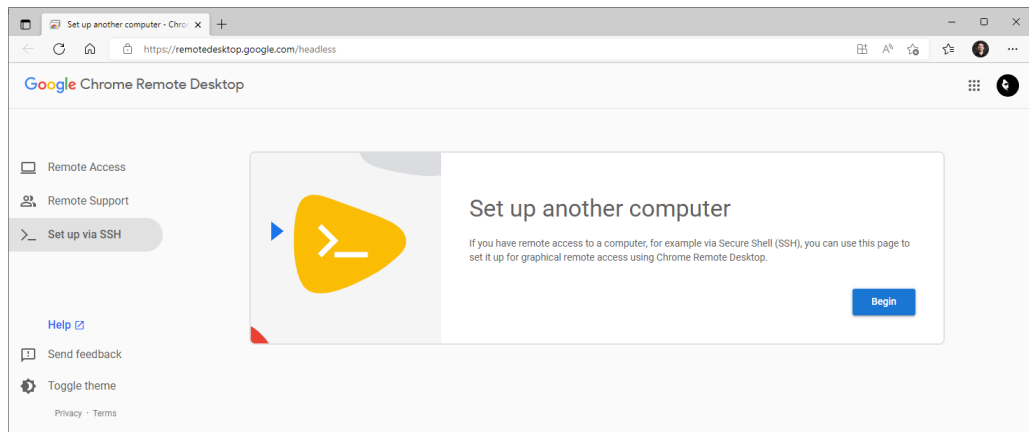


Figure 210: Chrome Remote Desktop (1 of 6)

#### 1. Click 'Begin'

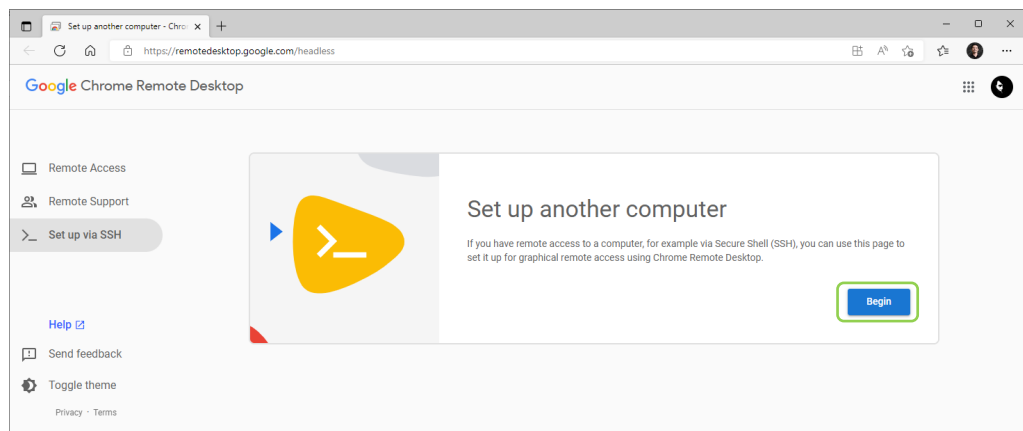


Figure 211: Chrome Remote Desktop (2 of 6)

## 2. Click 'Next'

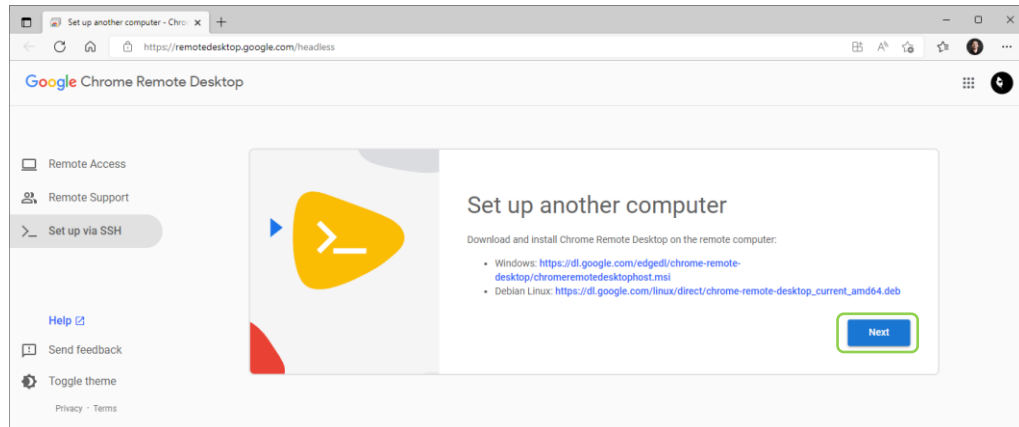


Figure 212: Chrome Remote Desktop (3 of 6)

## 3. Click 'Authorize'

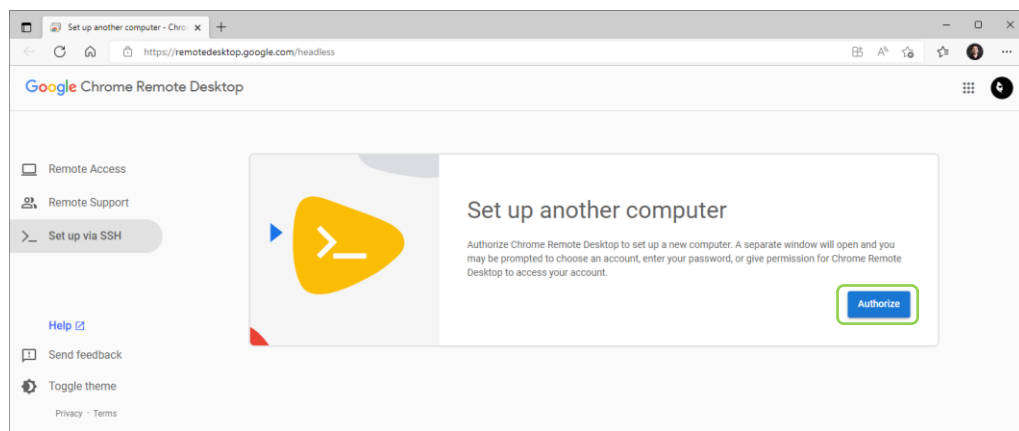


Figure 213: Chrome Remote Desktop (3 of 6)

## 4. Copy command for Windows (Cmd)

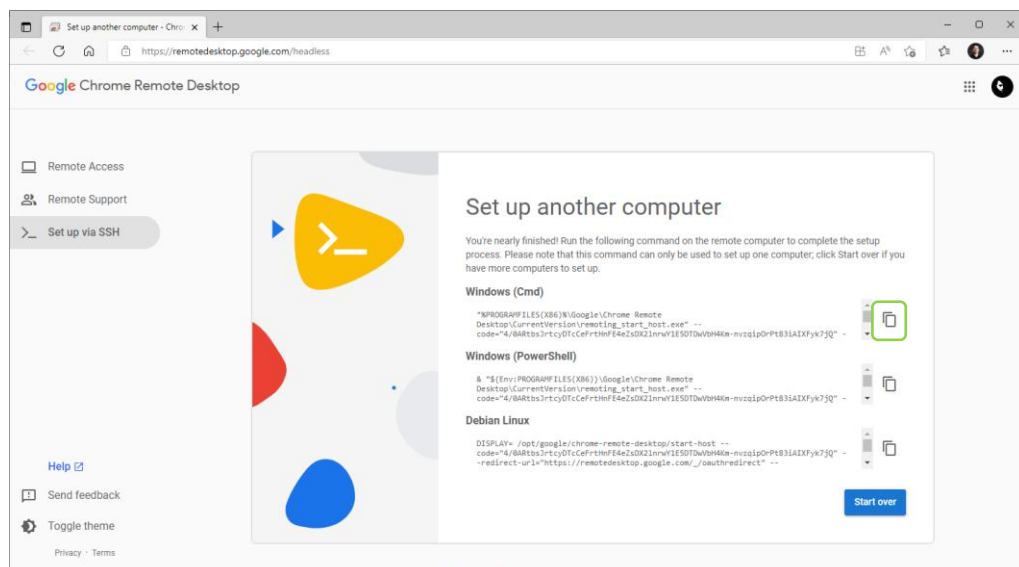


Figure 214: Chrome Remote Desktop (4 of 6)

## 5. From the ECA machine, go to Support. Under 'Chrome Remote Desktop', click setup

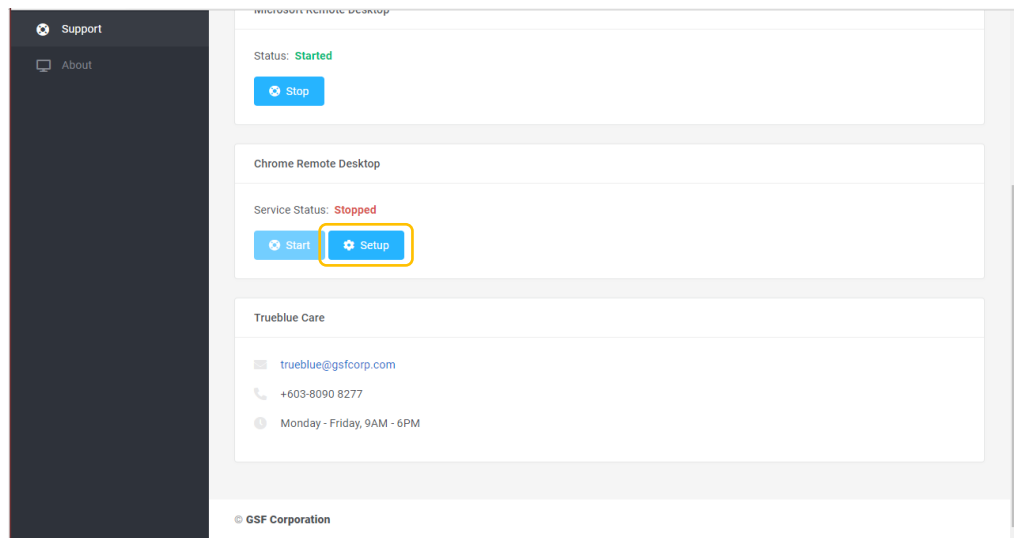


Figure 215: Chrome Remote Desktop (5 of 6)

6. Paste the command and enter 6-digit PIN number as a password.

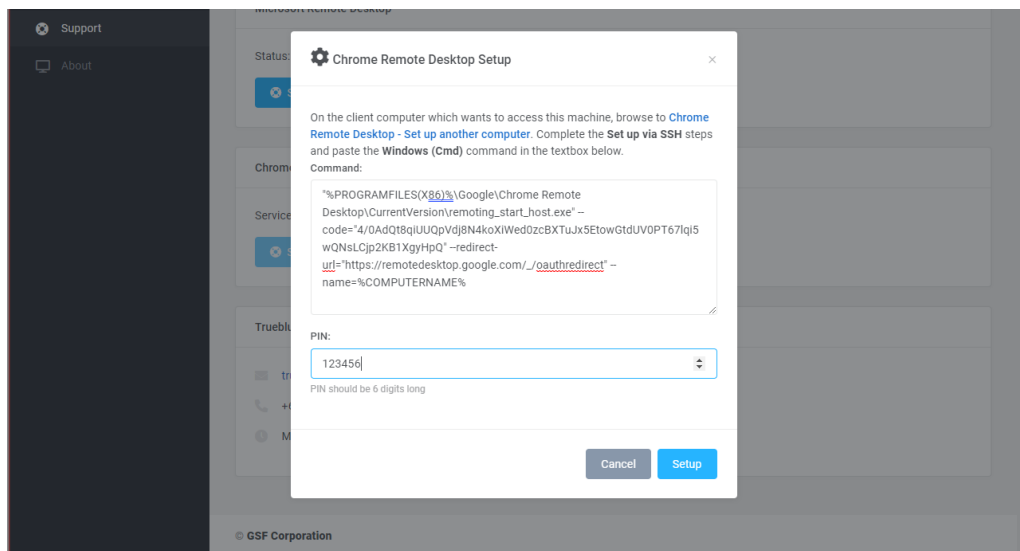


Figure 216: Chrome Remote Desktop (6 of 6)

## 11.2.2 Accessing ECA via Chrome Remote Desktop?

1. From the ECA will be remote. Make sure the service status Started

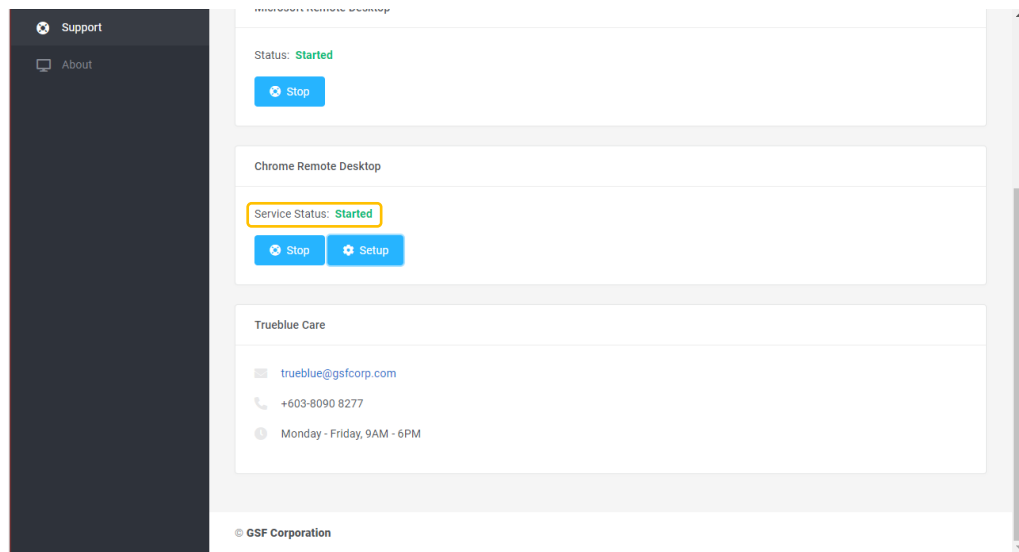


Figure 217: Accessing ECA via Chrome Remote Desktop (1 of 4)

2. From remote machine. Run web browser enter <https://remotedesktop.google.com/access/>. Click on remote devices.

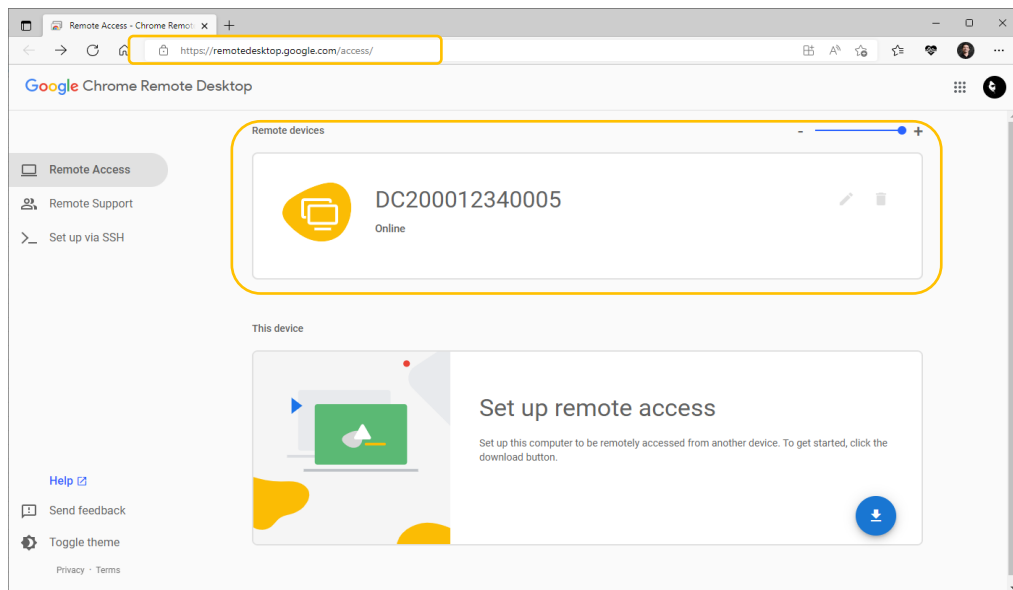


Figure 218: Accessing ECA via Chrome Remote Desktop (2 of 4)

3. Enter 6-digit PIN previously set during setup to start login

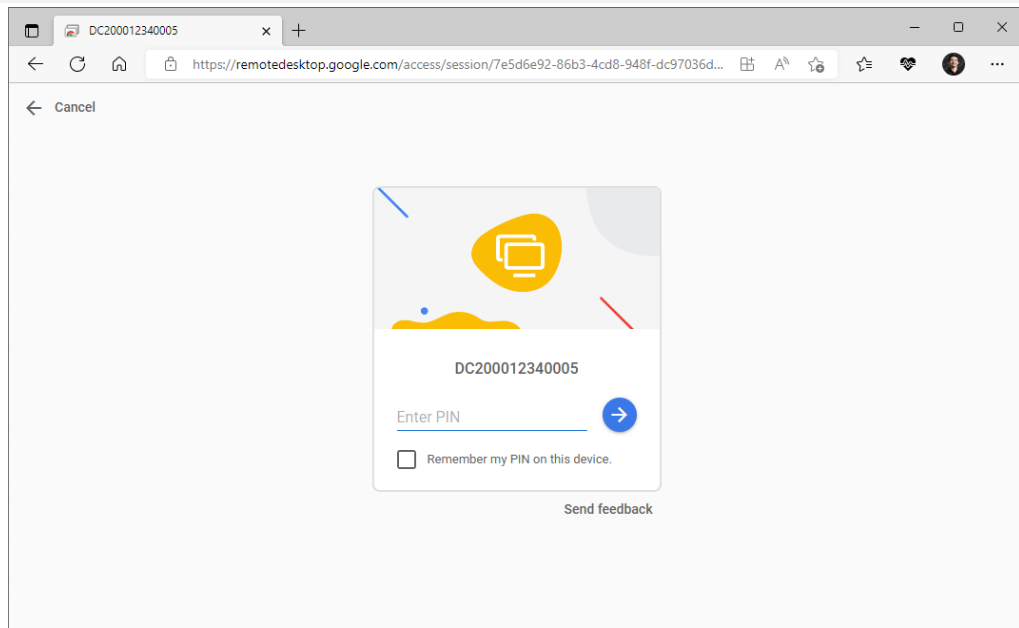


Figure 219: Accessing ECA via Chrome Remote Desktop (3 of 4)

#### 4. Access the ECA

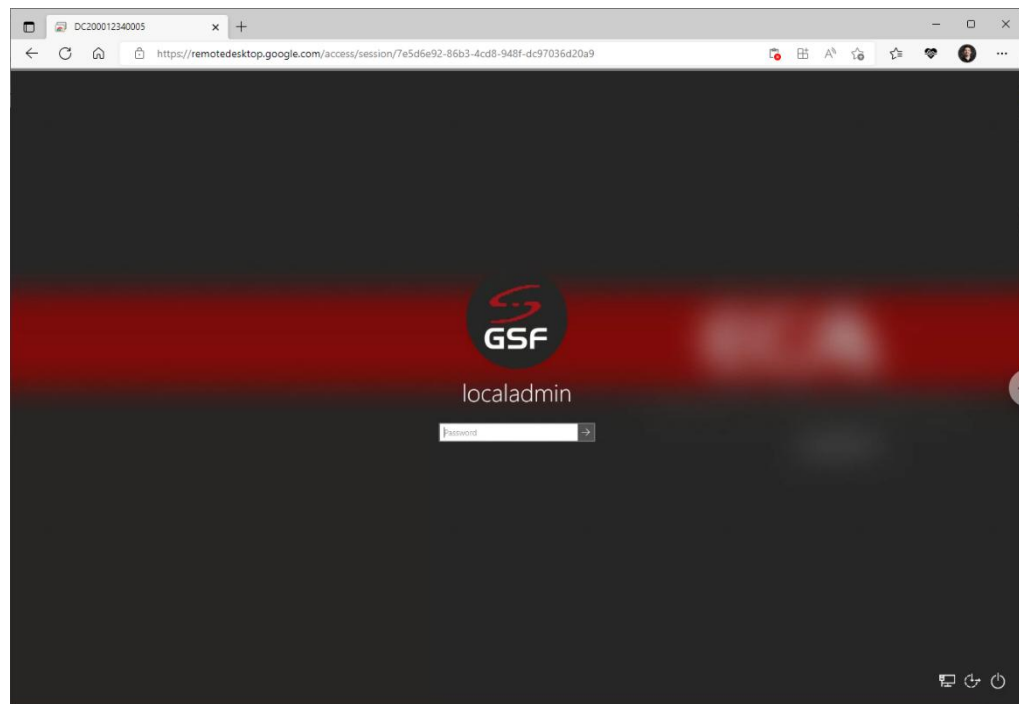


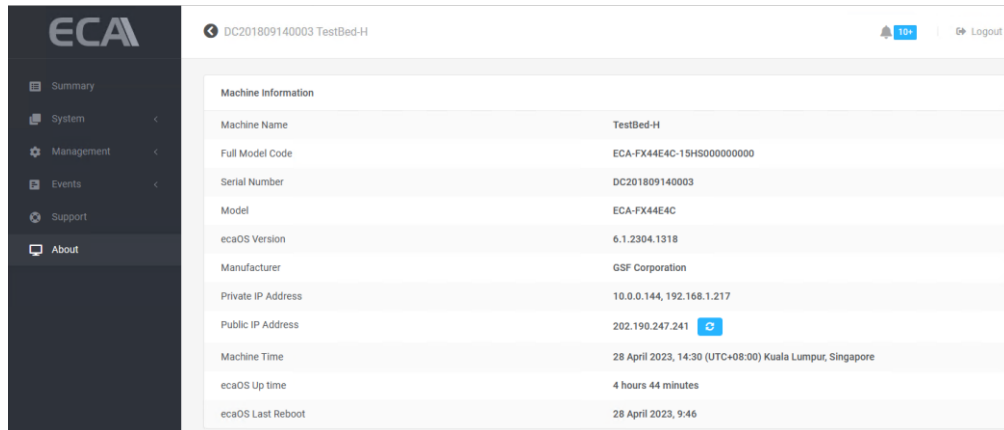
Figure 220: Accessing ECA via Chrome Remote Desktop (4 of 4)

## 12 About

### 12.1 Machine Information

The ECA information display here such as Model, Serial Number, ecaOS version, Up time, when last reboot.

The IP address will be display if the ECA connected to local LAN.



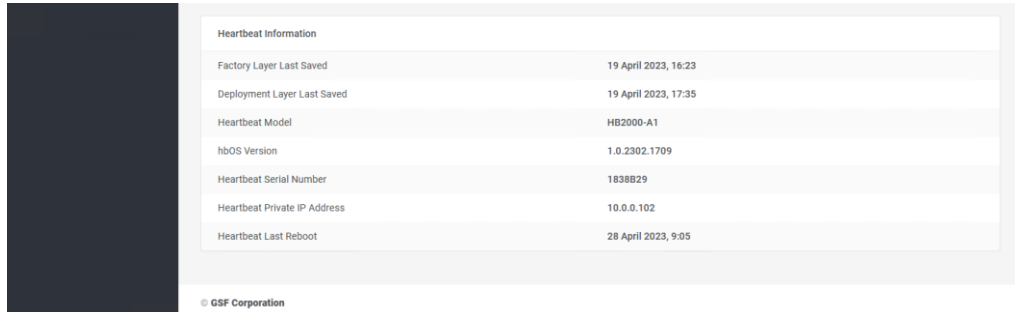
| Machine Information |                                                                                                     |
|---------------------|-----------------------------------------------------------------------------------------------------|
| Machine Name        | TestBed-H                                                                                           |
| Full Model Code     | ECA-FX44E4C-15HS000000000                                                                           |
| Serial Number       | DC201809140003                                                                                      |
| Model               | ECA-FX44E4C                                                                                         |
| ecaOS Version       | 6.1.2304.1318                                                                                       |
| Manufacturer        | GSF Corporation                                                                                     |
| Private IP Address  | 10.0.0.144, 192.168.1.217                                                                           |
| Public IP Address   | 202.190.247.241  |
| Machine Time        | 28 April 2023, 14:30 (UTC+08:00) Kuala Lumpur, Singapore                                            |
| ecaOS Up time       | 4 hours 44 minutes                                                                                  |
| ecaOS Last Reboot   | 28 April 2023, 9:46                                                                                 |

Figure 221: Machine Information

## 12.2 Heartbeat Information

The Heartbeat is around the clock hardware safeguard. Its micro controller overlooks the whole hardware platform to ensure continuous operation even in the event of critical breakdown.

'Factory Layer Last Saved' (Hard Reset) & Deployment Layer Last Saved' (Soft Reset) it shows the date of the layer saved.



| Heartbeat Information        |                      |
|------------------------------|----------------------|
| Factory Layer Last Saved     | 19 April 2023, 16:23 |
| Deployment Layer Last Saved  | 19 April 2023, 17:35 |
| Heartbeat Model              | HB2000-A1            |
| hbOS Version                 | 1.0.2302.1709        |
| Heartbeat Serial Number      | 1838B29              |
| Heartbeat Private IP Address | 10.0.0.102           |
| Heartbeat Last Reboot        | 28 April 2023, 9:05  |

© GSF Corporation

Figure 222: Heartbeat Information

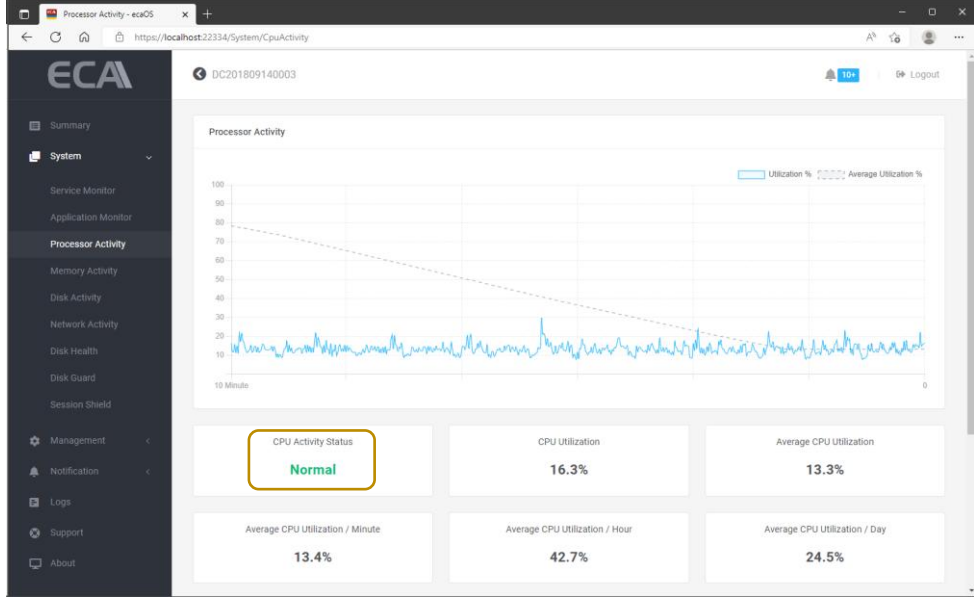
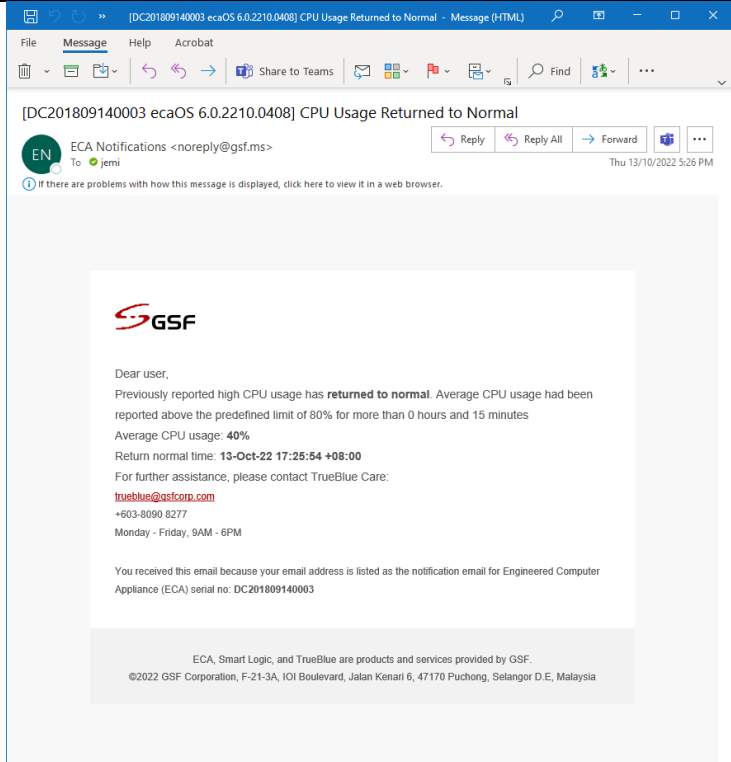
## 13 APPENDIX

### 13.1 Processor Activity

#### 13.1.1 CPU activity above limit

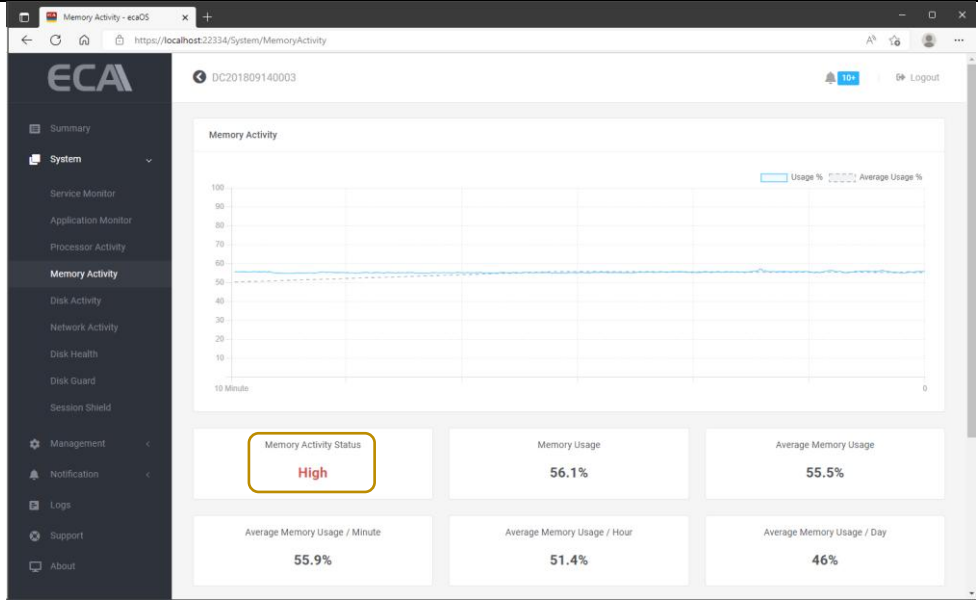
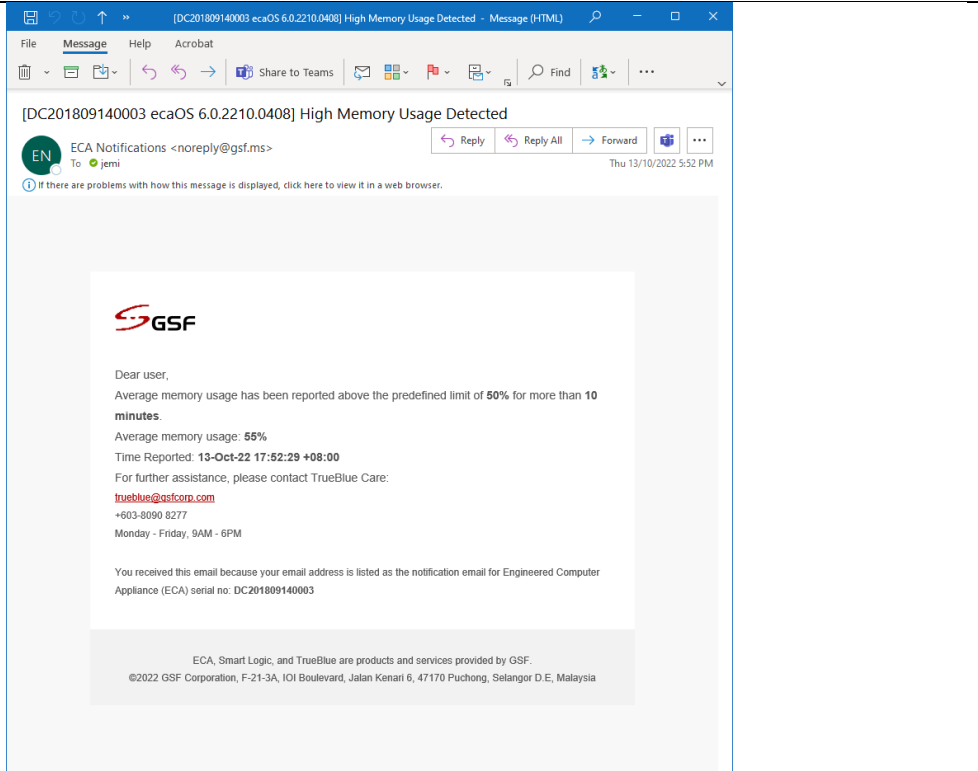
| Dashboard             | <div><div><div>Processor Activity - ecaOS</div><div>https://localhost:22334/System/CpuActivity</div><div><div>10+</div><div>Logout</div></div></div><div><div><div>Summary</div><div>System</div><div>Service Monitor</div><div>Application Monitor</div><div>Processor Activity</div><div>Memory Activity</div><div>Disk Activity</div><div>Network Activity</div><div>Disk Health</div><div>Disk Guard</div><div>Session Shield</div><div>Management</div><div>Notification</div><div>Logs</div><div>Support</div><div>About</div></div><div><div>DC201809140003</div><div>Processor Activity</div><div><div>Utilization %</div><div>Average Utilization %</div></div><div><div>CPU Activity Status</div><div>High</div></div><div><div>CPU Utilization</div><div>97.5%</div></div><div><div>Average CPU Utilization</div><div>94.7%</div></div><div><div>Average CPU Utilization / Minute</div><div>94.3%</div></div><div><div>Average CPU Utilization / Hour</div><div>39.8%</div></div><div><div>Average CPU Utilization / Day</div><div>24.8%</div></div></div></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| Notification          | <div><div>CPU activity above limit</div><div>CPU activity has been above the set limit 80% for more than 10 minutes. Average CPU activity is 93%</div><div>17:10 • Processor Activity</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |                    |                          |                                                                                                     |      |         |                       |         |       |                    |                          |                                                                                                     |
| Log                   | <table><tr><th>Time</th><th>Level</th><th>Source</th><th>Type</th><th>Name</th><th>Details</th></tr><tr><td>13 Oct 2022, 17:10:14</td><td>Warning</td><td>ecaOS</td><td>Processor Activity</td><td>CPU activity above limit</td><td>CPU activity has been above the set limit 80% for more than 10 minutes. Average CPU activity is 93%</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Time   | Level              | Source                   | Type                                                                                                | Name | Details | 13 Oct 2022, 17:10:14 | Warning | ecaOS | Processor Activity | CPU activity above limit | CPU activity has been above the set limit 80% for more than 10 minutes. Average CPU activity is 93% |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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|
| 13 Oct 2022, 17:10:14 | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ecaOS  | Processor Activity | CPU activity above limit | CPU activity has been above the set limit 80% for more than 10 minutes. Average CPU activity is 93% |      |         |                       |         |       |                    |                          |                                                                                                     |
| Email                 | <div><div><div>[DC201809140003] High CPU Usage Detected - Message (HTML)</div><div>FileMessageHelpAcrobat</div><div><div>Share to Teams</div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div><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|        |                    |                          |                                                                                                     |      |         |                       |         |       |                    |                          |                                                                                                     |

### 13.1.2 CPU activity back to normal

| <b>Dashboard</b>      |                                                                                                                                                                                                                                                                                                                          |        |                    |                             |                                                                                             |      |         |                       |             |       |                    |                             |                                                                                             |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------|-----------------------------|---------------------------------------------------------------------------------------------|------|---------|-----------------------|-------------|-------|--------------------|-----------------------------|---------------------------------------------------------------------------------------------|
| <b>Notification</b>   | <p><b>CPU activity back to normal</b><br/>CPU activity has returned to normal (after 0 hours 15 minutes). Average CPU activity is 40%<br/>17:25 • Processor Activity</p>                                                                                                                                                                                                                                   |        |                    |                             |                                                                                             |      |         |                       |             |       |                    |                             |                                                                                             |
| <b>Log</b>            | <table border="1"> <thead> <tr> <th>Time</th><th>Level</th><th>Source</th><th>Type</th><th>Name</th><th>Details</th></tr> </thead> <tbody> <tr> <td>13 Oct 2022, 17:25:54</td><td>Information</td><td>ecaOS</td><td>Processor Activity</td><td>CPU activity back to normal</td><td>CPU activity has returned to normal (after 0 hours 15 minutes). Average CPU activity is 40%</td></tr> </tbody> </table> | Time   | Level              | Source                      | Type                                                                                        | Name | Details | 13 Oct 2022, 17:25:54 | Information | ecaOS | Processor Activity | CPU activity back to normal | CPU activity has returned to normal (after 0 hours 15 minutes). Average CPU activity is 40% |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                                                      | Source | Type               | Name                        | Details                                                                                     |      |         |                       |             |       |                    |                             |                                                                                             |
| 13 Oct 2022, 17:25:54 | Information                                                                                                                                                                                                                                                                                                                                                                                                | ecaOS  | Processor Activity | CPU activity back to normal | CPU activity has returned to normal (after 0 hours 15 minutes). Average CPU activity is 40% |      |         |                       |             |       |                    |                             |                                                                                             |
| <b>Email</b>          |                                                                                                                                                                                                                                                                                                                        |        |                    |                             |                                                                                             |      |         |                       |             |       |                    |                             |                                                                                             |

## 13.2 Memory Activity

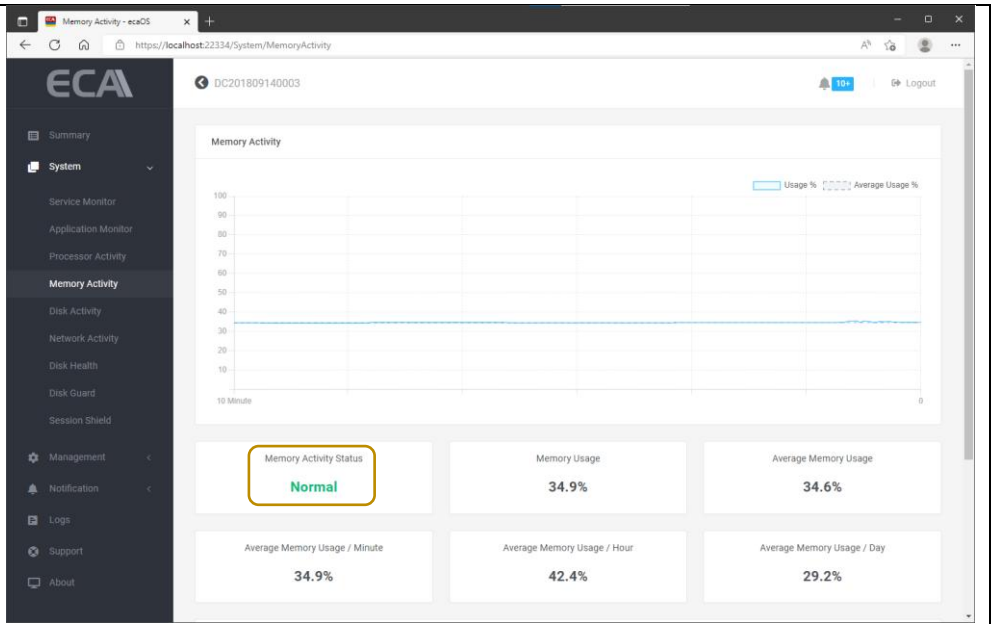
### 13.2.1 Memory usage above limit

| <b>Dashboard</b>      |                                                                                                                                                                                                                                                                                                                                             |        |                 |                             |                                                                                                           |      |         |                       |         |       |                 |                             |                                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------|-----------------------------|-----------------------------------------------------------------------------------------------------------|------|---------|-----------------------|---------|-------|-----------------|-----------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Notification</b>   | <p><b>Memory usage above limit</b><br/>Memory usage has been above the set limit 50% for more than 10 minutes. Average memory usage is 55%<br/>17:52 • Memory Activity</p>                                                                                                                                                                                                                                                    |        |                 |                             |                                                                                                           |      |         |                       |         |       |                 |                             |                                                                                                           |
| <b>Log</b>            | <table border="1"> <thead> <tr> <th>Time</th> <th>Level</th> <th>Source</th> <th>Type</th> <th>Name</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td>13 Oct 2022, 17:52:29</td> <td>Warning</td> <td>ecaOS</td> <td>Memory Activity</td> <td>Memory activity above limit</td> <td>Memory activity has been above the set limit 50% for more than 10 minutes. Average Memory activity is 55%</td> </tr> </tbody> </table> | Time   | Level           | Source                      | Type                                                                                                      | Name | Details | 13 Oct 2022, 17:52:29 | Warning | ecaOS | Memory Activity | Memory activity above limit | Memory activity has been above the set limit 50% for more than 10 minutes. Average Memory activity is 55% |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                                                                         | Source | Type            | Name                        | Details                                                                                                   |      |         |                       |         |       |                 |                             |                                                                                                           |
| 13 Oct 2022, 17:52:29 | Warning                                                                                                                                                                                                                                                                                                                                                                                                                       | ecaOS  | Memory Activity | Memory activity above limit | Memory activity has been above the set limit 50% for more than 10 minutes. Average Memory activity is 55% |      |         |                       |         |       |                 |                             |                                                                                                           |
| <b>Email</b>          |                                                                                                                                                                                                                                                                                                                                           |        |                 |                             |                                                                                                           |      |         |                       |         |       |                 |                             |                                                                                                           |

## 13.2.2

## Memory activity back to normal

Dashboard



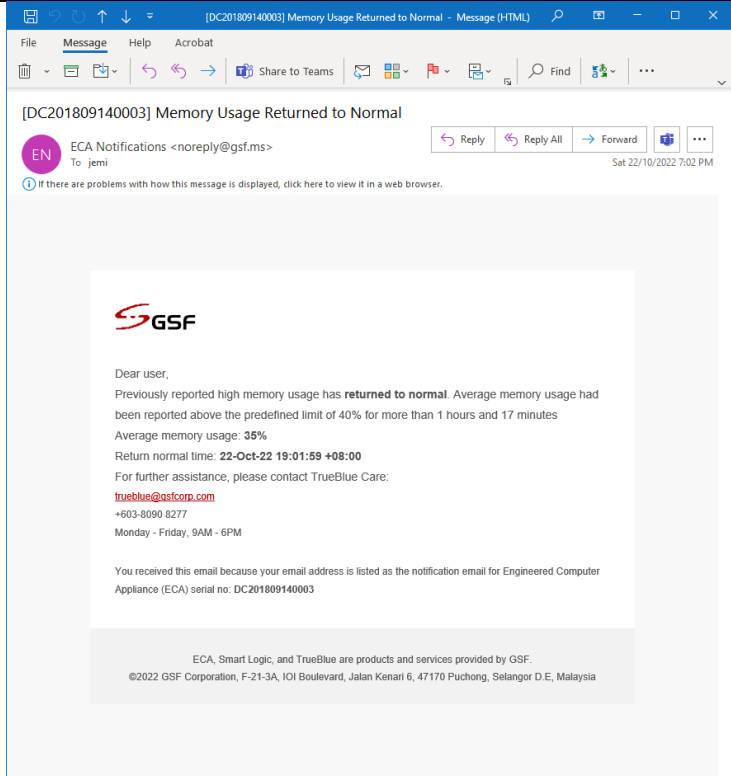
Notification

**Memory usage back to normal**  
Memory usage has returned to normal (after 1 hours 17 minutes). Average memory usage is 35%  
19:01 • Memory Activity

Log

| Time                  | Level       | Source | Type            | Name                           | Details                                                                                           |
|-----------------------|-------------|--------|-----------------|--------------------------------|---------------------------------------------------------------------------------------------------|
| 22 Oct 2022, 19:01:59 | Information | ecaOS  | Memory Activity | Memory activity back to normal | Memory activity has returned to normal (after 1 hours 17 minutes). Average Memory activity is 35% |

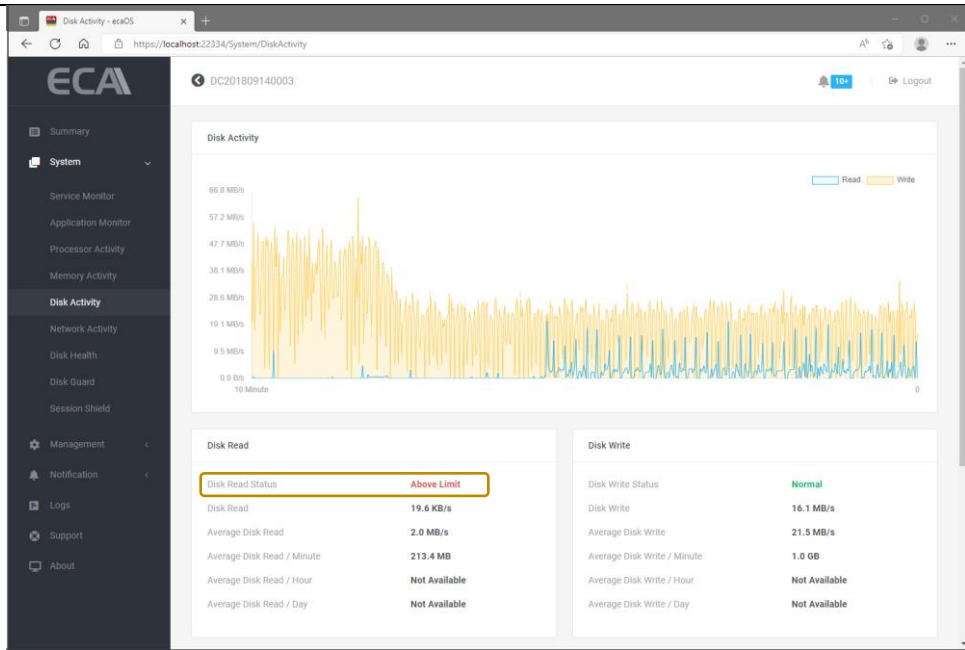
Email



## 13.3 Disk Activity

### 13.3.1 Disk read activity above limit

#### Dashboard



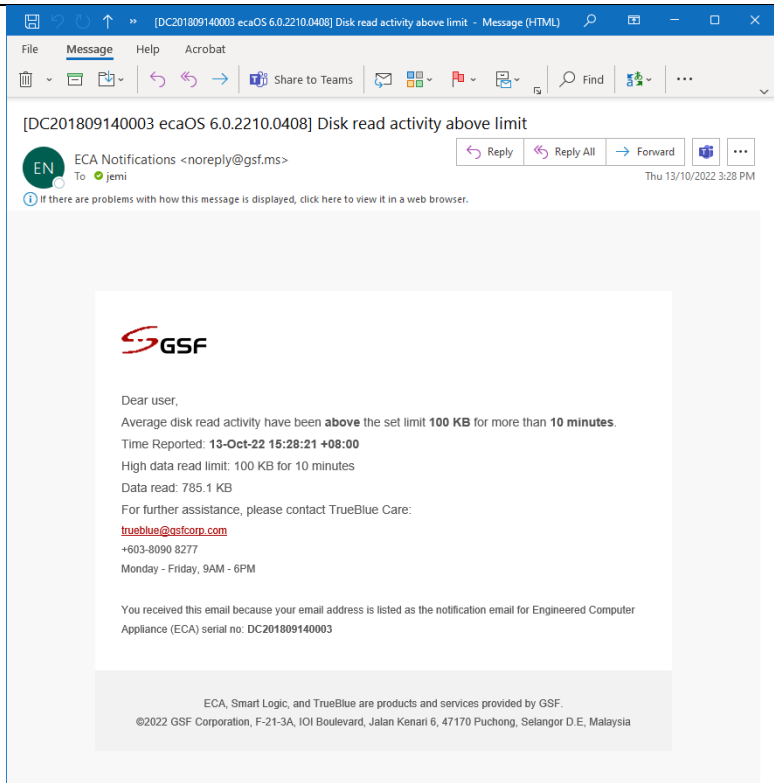
#### Notification

**Disk read activity above limit**  
Average disk read activity has been above the set limit 100 KB for more than 10 minutes.  
Current average disk read activity is 785.1 KB  
15:28 • Disk Activity

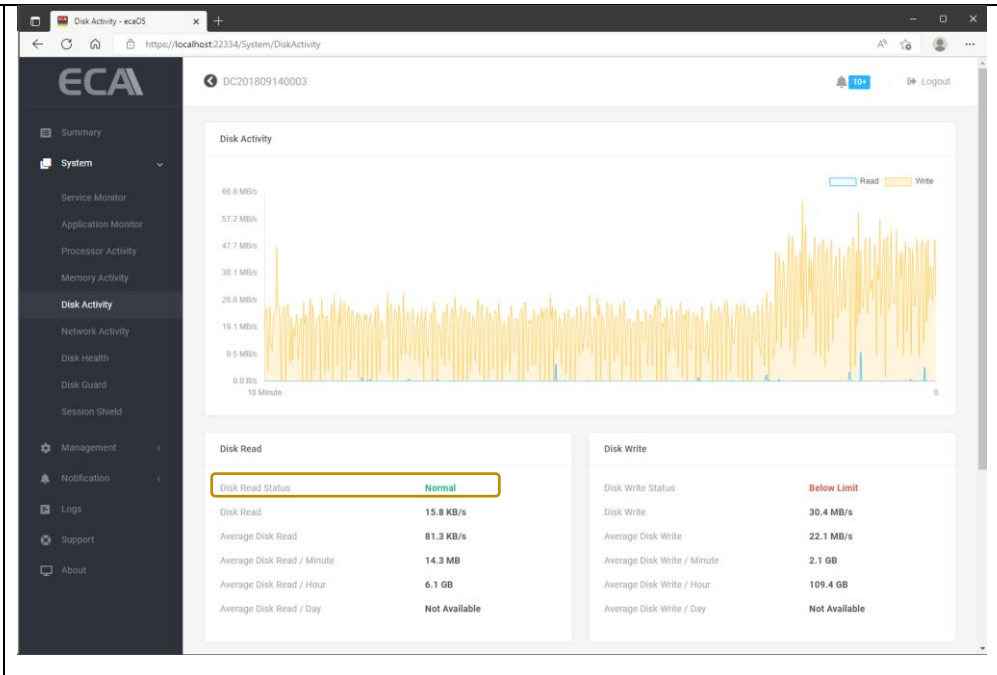
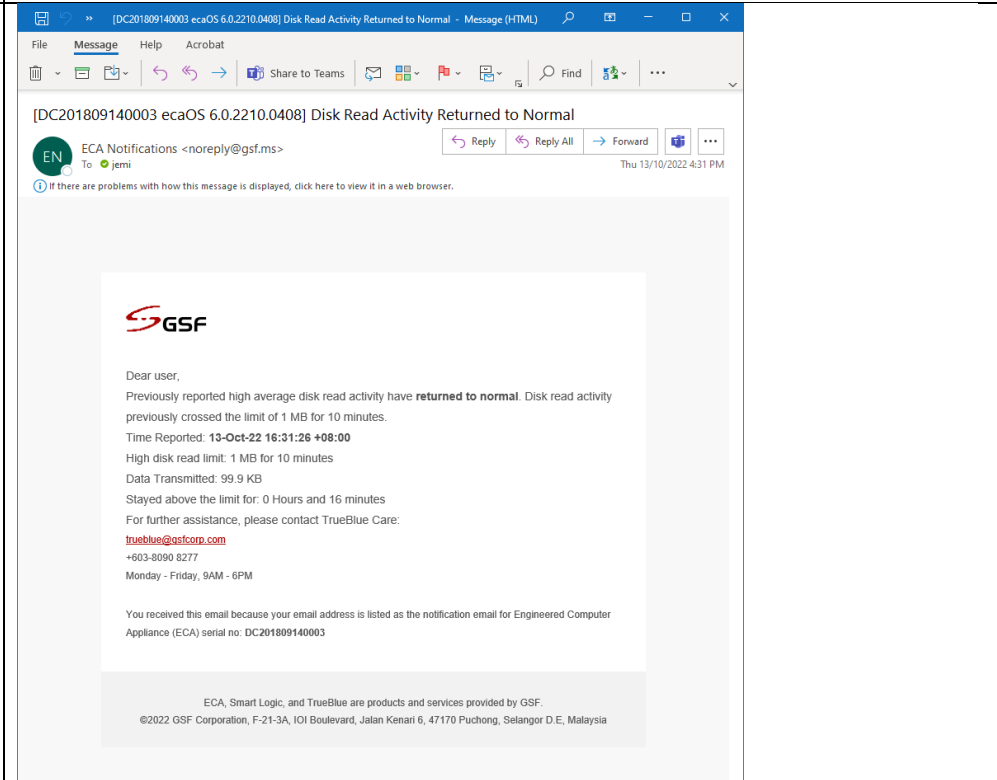
#### Log

| Time                  | Level   | Source | Type          | Name                           | Details                                                                                                                                 |
|-----------------------|---------|--------|---------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 13 Oct 2022, 15:28:21 | Warning | ecaOS  | Disk Activity | Disk read activity above limit | Average disk read activity has been above the set limit 100 KB for more than 10 minutes. Current average disk read activity is 785.1 KB |

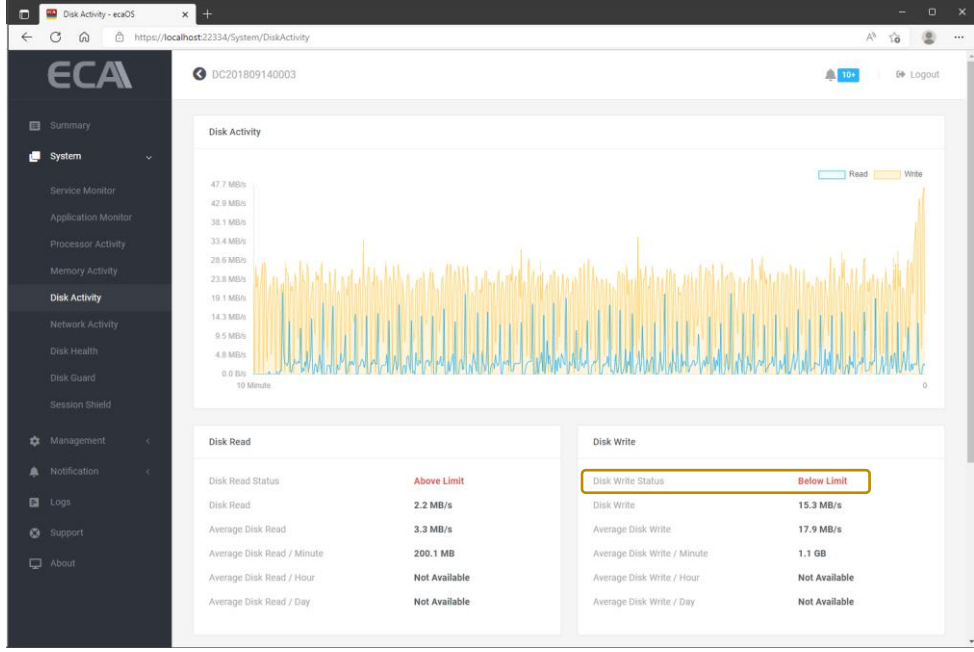
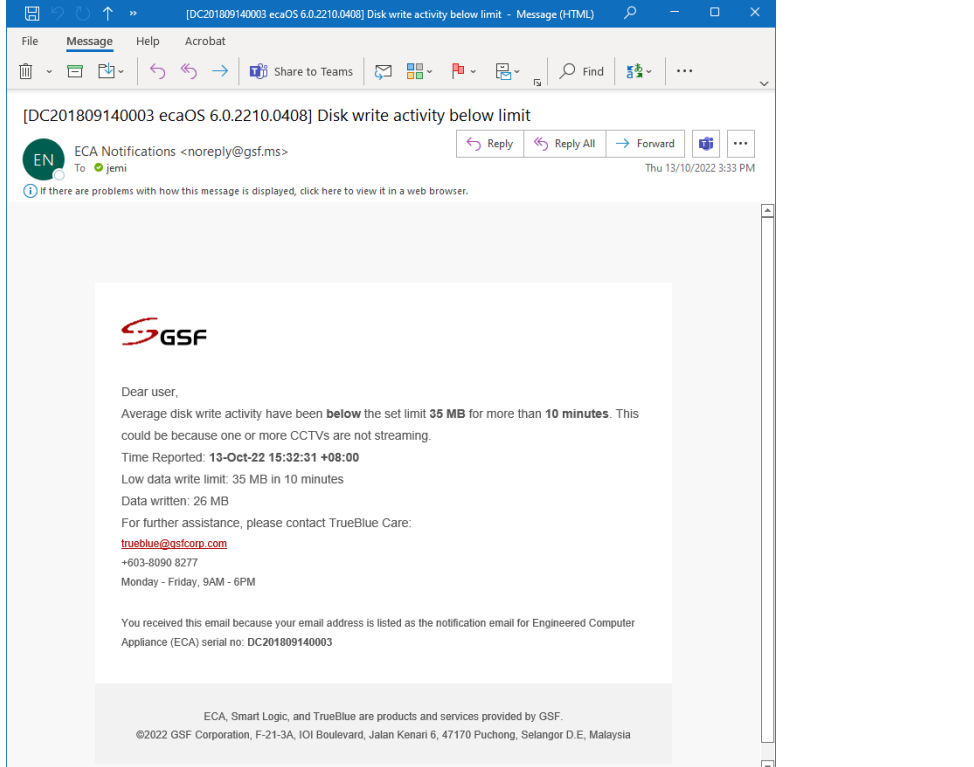
#### Email



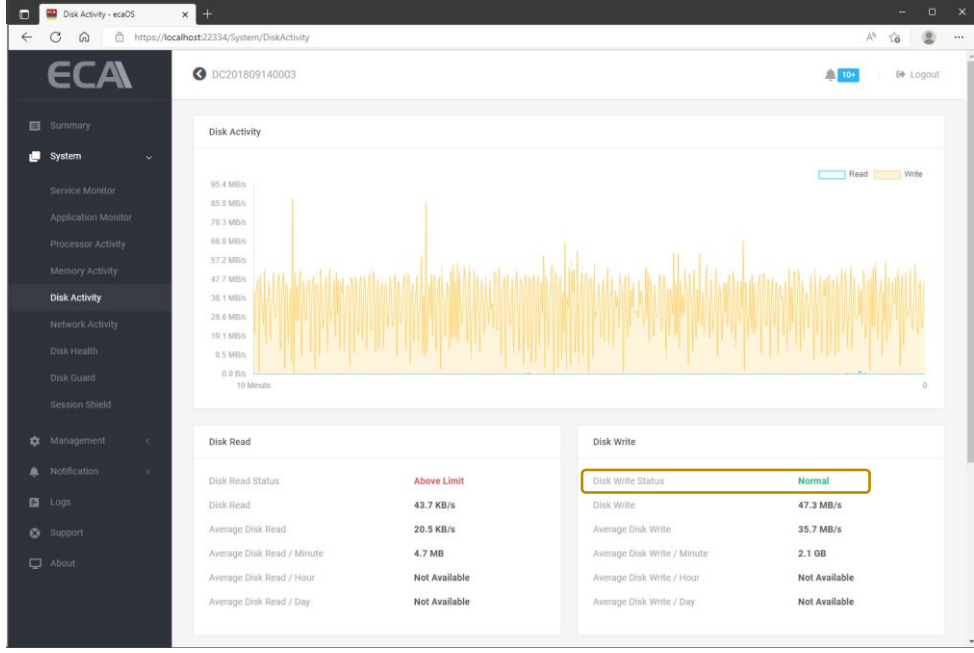
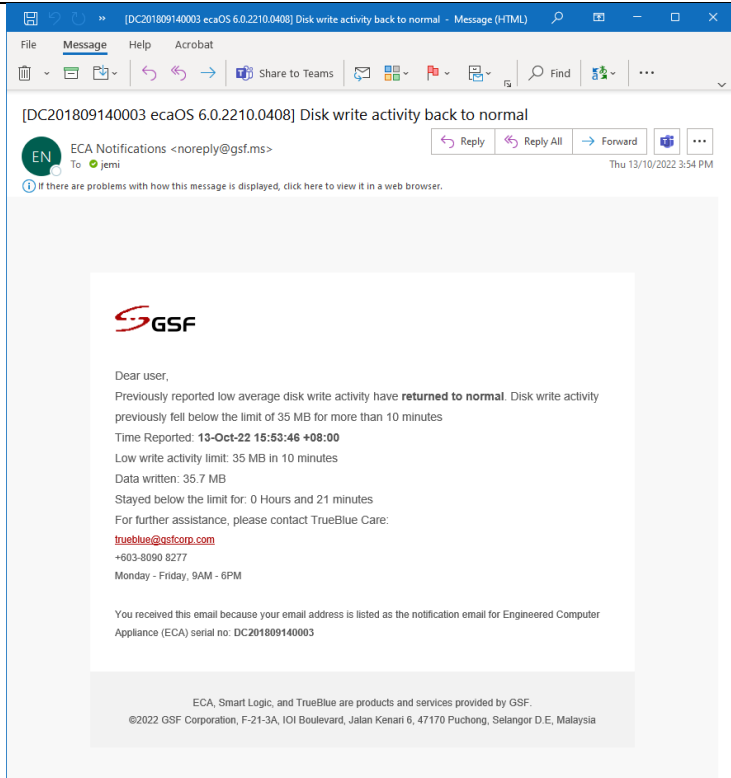
### 13.3.2 Disk read activity back to normal

| <b>Dashboard</b>      |                                                                                                                                                                                                                                                                                                                                                           |        |               |                                   |                                                                                                                             |      |         |                       |             |       |               |                                   |                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------|---------|-----------------------|-------------|-------|---------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Notification</b>   | <p><b>Disk read activity back to normal</b><br/>Average disk read activity has returned to normal (after 0 hours 16 minutes). Current average disk read activity is 99.9 KB<br/>16:31 - Disk Activity</p>                                                                                                                                                                                                                                   |        |               |                                   |                                                                                                                             |      |         |                       |             |       |               |                                   |                                                                                                                             |
| <b>Log</b>            | <table border="1"> <thead> <tr> <th>Time</th><th>Level</th><th>Source</th><th>Type</th><th>Name</th><th>Details</th></tr> </thead> <tbody> <tr> <td>13 Oct 2022, 16:31:26</td><td>Information</td><td>ecaOS</td><td>Disk Activity</td><td>Disk read activity back to normal</td><td>Average disk read activity has returned to normal (after 0 hours 16 minutes). Current average disk read activity is 99.9 KB</td></tr> </tbody> </table> | Time   | Level         | Source                            | Type                                                                                                                        | Name | Details | 13 Oct 2022, 16:31:26 | Information | ecaOS | Disk Activity | Disk read activity back to normal | Average disk read activity has returned to normal (after 0 hours 16 minutes). Current average disk read activity is 99.9 KB |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                                                                                       | Source | Type          | Name                              | Details                                                                                                                     |      |         |                       |             |       |               |                                   |                                                                                                                             |
| 13 Oct 2022, 16:31:26 | Information                                                                                                                                                                                                                                                                                                                                                                                                                                 | ecaOS  | Disk Activity | Disk read activity back to normal | Average disk read activity has returned to normal (after 0 hours 16 minutes). Current average disk read activity is 99.9 KB |      |         |                       |             |       |               |                                   |                                                                                                                             |
| <b>Email</b>          |                                                                                                                                                                                                                                                                                                                                                         |        |               |                                   |                                                                                                                             |      |         |                       |             |       |               |                                   |                                                                                                                             |

### 13.3.3 Disk write activity below limit

| <b>Dashboard</b>      |                                                                                                                                                                                                                                                                                                                                                                           |        |               |                                 |                                                                                                                                       |      |         |                       |         |       |               |                                 |                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------|---------|-----------------------|---------|-------|---------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Notification</b>   | <p><b>Disk write activity below limit</b><br/>Average disk write activity has been above the set limit 35 MB for more than 10 minutes.<br/>Current average disk write activity is 26 MB<br/>15:32 • Disk Activity</p>                                                                                                                                                                                                                                       |        |               |                                 |                                                                                                                                       |      |         |                       |         |       |               |                                 |                                                                                                                                       |
| <b>Log</b>            | <table border="1"> <thead> <tr> <th>Time</th> <th>Level</th> <th>Source</th> <th>Type</th> <th>Name</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td>13 Oct 2022, 15:32:31</td> <td>Warning</td> <td>ecaOS</td> <td>Disk Activity</td> <td>Disk write activity below limit</td> <td>Average disk write activity has been below the set limit 35 MB for more than 10 minutes. Current average disk write activity is 26 MB</td> </tr> </tbody> </table> | Time   | Level         | Source                          | Type                                                                                                                                  | Name | Details | 13 Oct 2022, 15:32:31 | Warning | ecaOS | Disk Activity | Disk write activity below limit | Average disk write activity has been below the set limit 35 MB for more than 10 minutes. Current average disk write activity is 26 MB |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Source | Type          | Name                            | Details                                                                                                                               |      |         |                       |         |       |               |                                 |                                                                                                                                       |
| 13 Oct 2022, 15:32:31 | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ecaOS  | Disk Activity | Disk write activity below limit | Average disk write activity has been below the set limit 35 MB for more than 10 minutes. Current average disk write activity is 26 MB |      |         |                       |         |       |               |                                 |                                                                                                                                       |
| <b>Email</b>          |                                                                                                                                                                                                                                                                                                                                                                         |        |               |                                 |                                                                                                                                       |      |         |                       |         |       |               |                                 |                                                                                                                                       |

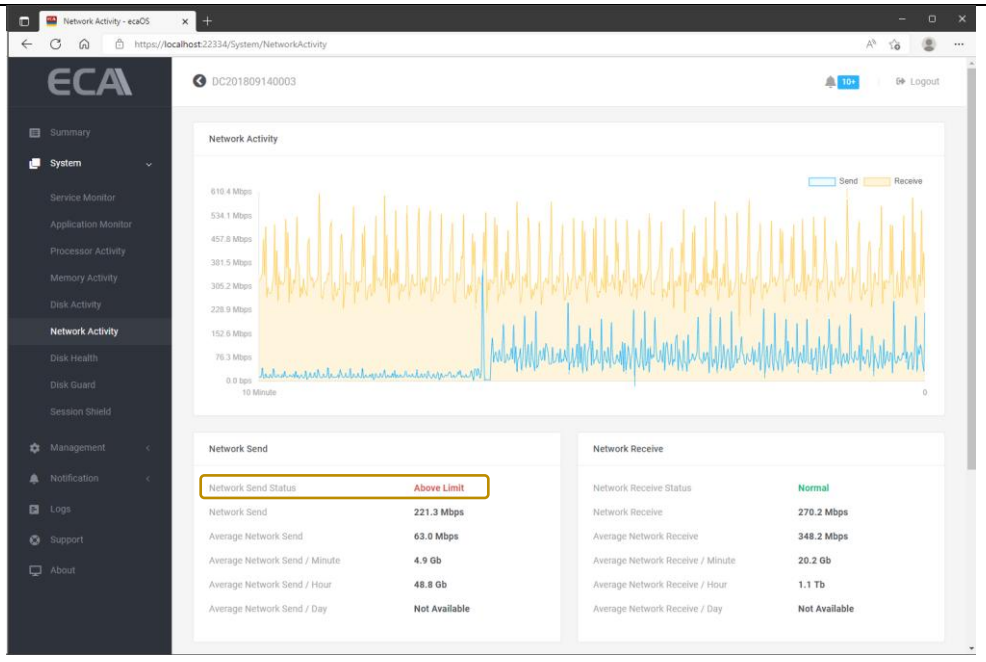
### 13.3.4 Disk write activity back to normal

| <b>Dashboard</b>      |  <p>The screenshot shows the ECA Dashboard with a sidebar menu. The 'Disk Activity' section is selected, displaying a line graph of disk activity over 10 minutes. Below the graph, two summary boxes are shown: 'Disk Read' with a status of 'Above Limit' and 'Disk Write' with a status of 'Normal' (highlighted with an orange box). The 'Disk Write' box lists metrics: Disk Write (47.3 MB/s), Average Disk Write (35.7 MB/s), Average Disk Write / Minute (2.1 GB), Average Disk Write / Hour (Not Available), and Average Disk Write / Day (Not Available).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |               |                                    |                                                                                                                               |      |         |                       |             |       |               |                                    |                                                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------|---------|-----------------------|-------------|-------|---------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Notification</b>   | <p><b>Disk write activity back to normal</b><br/>Average disk write activity has returned to normal (after 0 hours 21 minutes). Current average disk write activity is 35.7 MB<br/>15:53 - Disk Activity</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |               |                                    |                                                                                                                               |      |         |                       |             |       |               |                                    |                                                                                                                               |
| <b>Log</b>            | <table border="1"> <thead> <tr> <th>Time</th> <th>Level</th> <th>Source</th> <th>Type</th> <th>Name</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td>13 Oct 2022, 15:53:46</td> <td>Information</td> <td>ecaOS</td> <td>Disk Activity</td> <td>Disk write activity back to normal</td> <td>Average disk write activity has returned to normal (after 0 hours 21 minutes). Current average disk write activity is 35.7 MB</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Time   | Level         | Source                             | Type                                                                                                                          | Name | Details | 13 Oct 2022, 15:53:46 | Information | ecaOS | Disk Activity | Disk write activity back to normal | Average disk write activity has returned to normal (after 0 hours 21 minutes). Current average disk write activity is 35.7 MB |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Source | Type          | Name                               | Details                                                                                                                       |      |         |                       |             |       |               |                                    |                                                                                                                               |
| 13 Oct 2022, 15:53:46 | Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ecaOS  | Disk Activity | Disk write activity back to normal | Average disk write activity has returned to normal (after 0 hours 21 minutes). Current average disk write activity is 35.7 MB |      |         |                       |             |       |               |                                    |                                                                                                                               |
| <b>Email</b>          |  <p>The screenshot shows an email notification from 'ECA Notifications &lt;noreply@gsf.ms&gt;' to 'jemi'. The subject is '[DC201809140003 ecaOS 6.0.2210.0408] Disk write activity back to normal'. The email body contains the following text:</p> <p><b>GSF</b></p> <p>Dear user,</p> <p>Previously reported low average disk write activity have <b>returned to normal</b>. Disk write activity previously fell below the limit of 35 MB for more than 10 minutes</p> <p>Time Reported: <b>13-Oct-22 15:53:46 +08:00</b></p> <p>Low write activity limit: 35 MB in 10 minutes</p> <p>Data written: 35.7 MB</p> <p>Stayed below the limit for: 0 Hours and 21 minutes</p> <p>For further assistance, please contact TrueBlue Care:<br/> <a href="mailto:trueblue@gsfcorp.com">trueblue@gsfcorp.com</a><br/> +603-8090 8277<br/> Monday - Friday, 9AM - 6PM</p> <p>You received this email because your email address is listed as the notification email for Engineered Computer Appliance (ECA) serial no: DC201809140003</p> <p>ECA, Smart Logic, and TrueBlue are products and services provided by GSF.<br/> ©2022 GSF Corporation, F-21-3A, IOI Boulevard, Jalan Kenari 6, 47170 Puchong, Selangor D.E, Malaysia</p> |        |               |                                    |                                                                                                                               |      |         |                       |             |       |               |                                    |                                                                                                                               |

## 13.4 Network Activity

### 13.4.1 Network send activity above limit

#### Dashboard



#### Notification

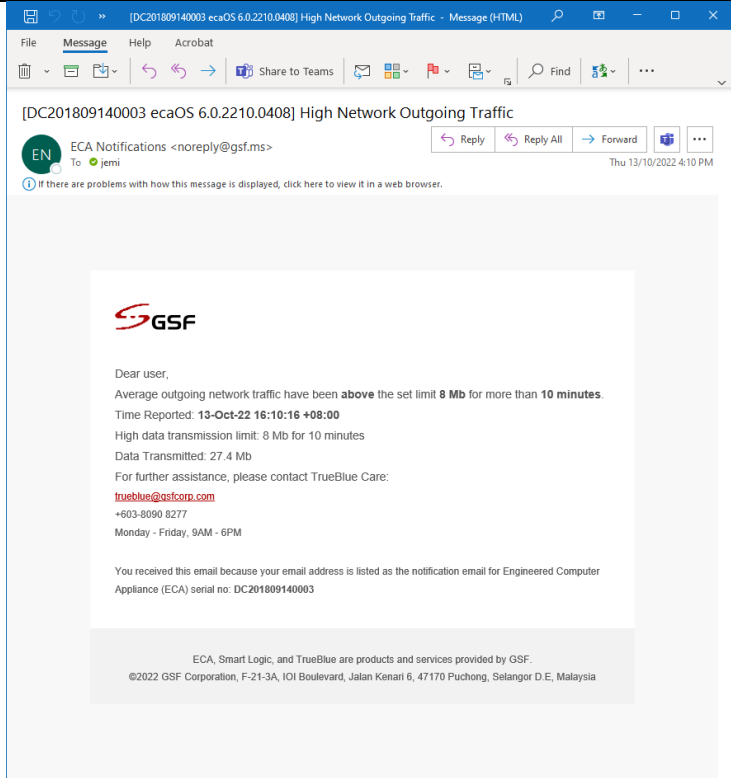
**Network send activity above limit**  
Average network send activity has been above the set limit 8 Mb for more than 10 minutes. Current average network send activity is 27.4 Mb

16:10 • Network Activity

#### Log

| Time                  | Level   | Source | Type             | Name                              | Details                                                                                                                                    |
|-----------------------|---------|--------|------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 13 Oct 2022, 16:10:16 | Warning | ecaOS  | Network Activity | Network send activity above limit | Average network send activity has been above the set limit 8 Mb for more than 10 minutes. Current average network send activity is 27.4 Mb |

#### Email



## 13.4.2

## Network send activity back to normal

Dashboard

Network Activity - ecaOS

https://localhost:22334/System/NetworkActivity

Summary

System

Service Monitor

Application Monitor

Processor Activity

Memory Activity

Disk Activity

Network Activity

Disk Health

Disk Guard

Session Shield

Management

Notification

Logs

Support

About

DC201809140003

10+ Logout

Network Activity

688.6 Mbps

610.4 Mbps

534.1 Mbps

457.8 Mbps

381.5 Mbps

305.2 Mbps

228.9 Mbps

152.6 Mbps

76.3 Mbps

0.0 tps

0

10 Minute

Send

Receive

Network Send

Network Send StatusNormal

Network Send4.8 Mbps

Average Network Send3.9 Mbps

Average Network Send / Minute321.9 Mb

Average Network Send / Hour66.6 Gb

Average Network Send / DayNot Available

Network Receive

Network Receive StatusBelow Limit

Network Receive337.5 Mbps

Average Network Receive250.8 Mbps

Average Network Receive / Minute20.1 Gb

Average Network Receive / Hour1.0 Tb

Average Network Receive / DayNot Available

Notification

Network send activity back to normal

Average network send activity has returned to normal (after 0 hours 21 minutes). Current average network send activity is 3 Mb

16:31 • Network Activity

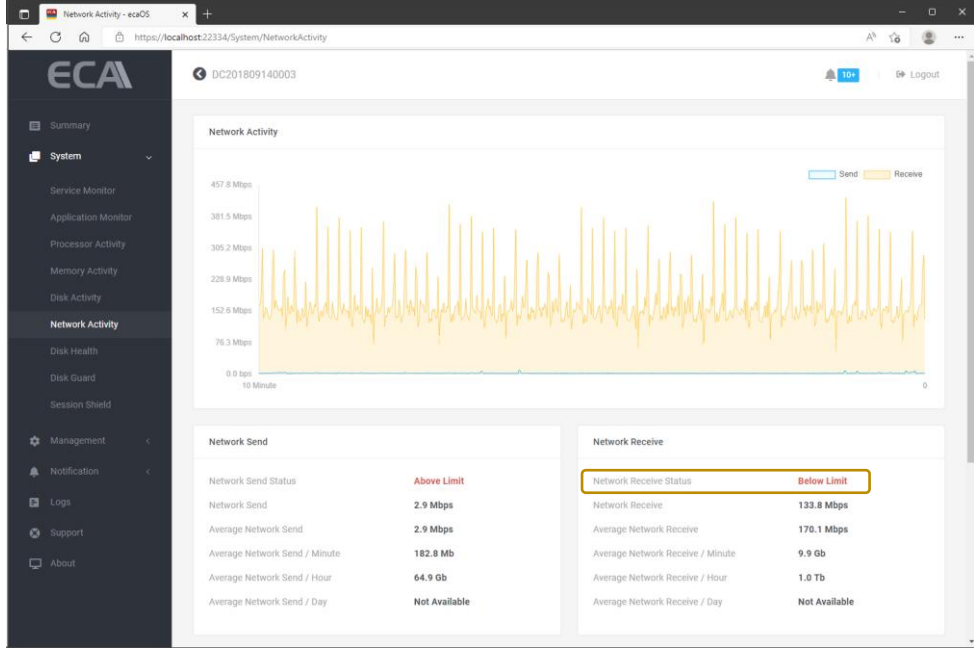
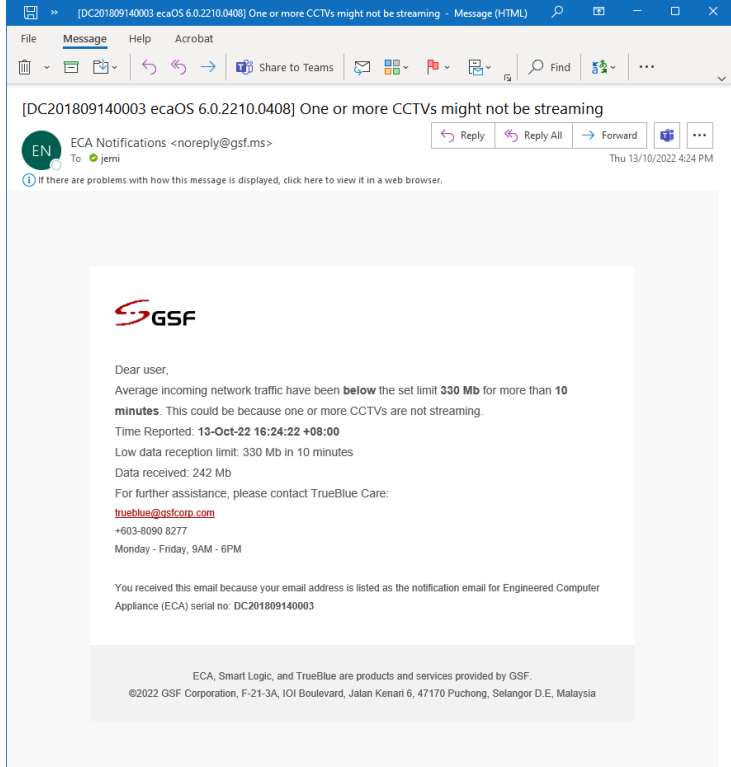
Log

| Time                  | Level       | Source | Type             | Name                                 | Details                                                                                                                         |
|-----------------------|-------------|--------|------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 13 Oct 2022, 16:31:52 | Information | ecaOS  | Network Activity | Network send activity back to normal | Average network send activity have returned to normal (after 0 hours 21 minutes). Current average network send activity is 3 Mb |

Email

## 13.4.3

## Network receive activity below limit

| <b>Dashboard</b>                 |  <p><b>Network Send Summary:</b></p> <table border="1"> <thead> <tr> <th>Network Send Status</th> <th>Above Limit</th> </tr> </thead> <tbody> <tr> <td>Network Send</td> <td>2.9 Mbps</td> </tr> <tr> <td>Average Network Send</td> <td>2.9 Mbps</td> </tr> <tr> <td>Average Network Send / Minute</td> <td>182.8 Mb</td> </tr> <tr> <td>Average Network Send / Hour</td> <td>64.9 Gb</td> </tr> <tr> <td>Average Network Send / Day</td> <td>Not Available</td> </tr> </tbody> </table> <p><b>Network Receive Summary:</b></p> <table border="1"> <thead> <tr> <th>Network Receive Status</th> <th>Below Limit</th> </tr> </thead> <tbody> <tr> <td>Network Receive</td> <td>133.8 Mbps</td> </tr> <tr> <td>Average Network Receive</td> <td>170.1 Mbps</td> </tr> <tr> <td>Average Network Receive / Minute</td> <td>9.9 Gb</td> </tr> <tr> <td>Average Network Receive / Hour</td> <td>1.0 Tb</td> </tr> <tr> <td>Average Network Receive / Day</td> <td>Not Available</td> </tr> </tbody> </table> | Network Send Status | Above Limit      | Network Send                         | 2.9 Mbps                                                                                                                                          | Average Network Send | 2.9 Mbps | Average Network Send / Minute | 182.8 Mb | Average Network Send / Hour | 64.9 Gb          | Average Network Send / Day           | Not Available                                                                                                                                     | Network Receive Status | Below Limit | Network Receive | 133.8 Mbps | Average Network Receive | 170.1 Mbps | Average Network Receive / Minute | 9.9 Gb | Average Network Receive / Hour | 1.0 Tb | Average Network Receive / Day | Not Available |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------|-------------------------------|----------|-----------------------------|------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------|-----------------|------------|-------------------------|------------|----------------------------------|--------|--------------------------------|--------|-------------------------------|---------------|
| Network Send Status              | Above Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Network Send                     | 2.9 Mbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Average Network Send             | 2.9 Mbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Average Network Send / Minute    | 182.8 Mb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Average Network Send / Hour      | 64.9 Gb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Average Network Send / Day       | Not Available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Network Receive Status           | Below Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Network Receive                  | 133.8 Mbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Average Network Receive          | 170.1 Mbps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Average Network Receive / Minute | 9.9 Gb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Average Network Receive / Hour   | 1.0 Tb                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Average Network Receive / Day    | Not Available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| <b>Notification</b>              | <p><b>Network received activity below limit</b><br/>         Average network receive activity has been below the set limit 330 Mb for more than 10 minutes. Current average network receive activity is 242 Mb<br/>         16:24 • Network Activity</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| <b>Log</b>                       | <table border="1"> <thead> <tr> <th>Time</th> <th>Level</th> <th>Source</th> <th>Type</th> <th>Name</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td>13 Oct 2022, 16:24:22</td> <td>Warning</td> <td>ecaOS</td> <td>Network Activity</td> <td>Network receive activity below limit</td> <td>Average network receive activity has been below the set limit 330 Mb for more than 10 minutes. Current average network receive activity is 242 Mb</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Time                | Level            | Source                               | Type                                                                                                                                              | Name                 | Details  | 13 Oct 2022, 16:24:22         | Warning  | ecaOS                       | Network Activity | Network receive activity below limit | Average network receive activity has been below the set limit 330 Mb for more than 10 minutes. Current average network receive activity is 242 Mb |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| Time                             | Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Source              | Type             | Name                                 | Details                                                                                                                                           |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| 13 Oct 2022, 16:24:22            | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ecaOS               | Network Activity | Network receive activity below limit | Average network receive activity has been below the set limit 330 Mb for more than 10 minutes. Current average network receive activity is 242 Mb |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |
| <b>Email</b>                     |  <p><b>Email Content:</b></p> <p>Dear user,<br/>         Average incoming network traffic have been <b>below</b> the set limit <b>330 Mb</b> for more than <b>10 minutes</b>. This could be because one or more CCTVs are not streaming.<br/>         Time Reported: <b>13-Oct-22 16:24:22 +08:00</b><br/>         Low data reception limit: 330 Mb in 10 minutes<br/>         Data received: 242 Mb<br/>         For further assistance, please contact TrueBlue Care:<br/> <a href="mailto:trueblue@gscorp.com">trueblue@gscorp.com</a><br/>         +603-8090 8277<br/>         Monday - Friday, 9AM - 6PM</p> <p>You received this email because your email address is listed as the notification email for Engineered Computer Appliance (ECA) serial no. DC201809140003</p> <p>ECA, Smart Logic, and TrueBlue are products and services provided by GSF.<br/>         ©2022 GSF Corporation, F-21-3A, IOI Boulevard, Jalan Kenari 6, 47170 Puchong, Selangor D.E., Malaysia</p>                |                     |                  |                                      |                                                                                                                                                   |                      |          |                               |          |                             |                  |                                      |                                                                                                                                                   |                        |             |                 |            |                         |            |                                  |        |                                |        |                               |               |

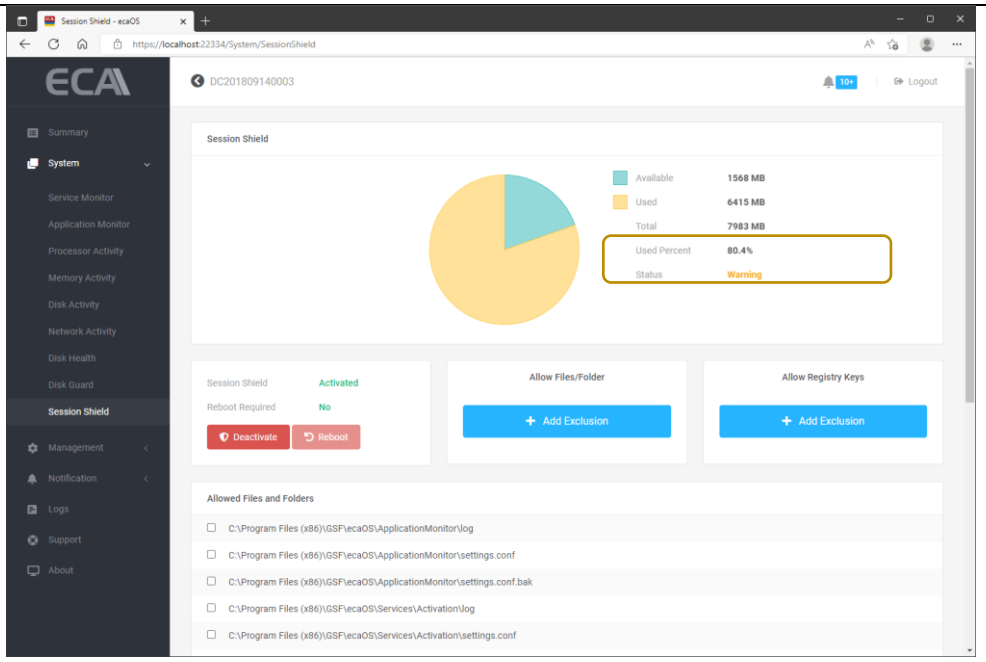
### 13.4.4 Network receive activity back to normal

| Dashboard             | <div><div><div>Network Activity - ecaOS</div><div>https://localhost:22334/System/NetworkActivity</div></div><div><div><div>Summary</div><div>System</div><div>Service Monitor</div><div>Application Monitor</div><div>Processor Activity</div><div>Memory Activity</div><div>Disk Activity</div><div>Network Activity</div><div>Disk Health</div><div>Disk Guard</div><div>Session Shield</div><div>Management</div><div>Notification</div><div>Logs</div><div>Support</div><div>About</div></div><div><div>DC201809140003</div><div>10! Logout</div></div><div><div>Network Activity</div><div><div>610.4 Mbps</div><div>534.1 Mbps</div><div>457.5 Mbps</div><div>381.5 Mbps</div><div>305.2 Mbps</div><div>229.9 Mbps</div><div>152.6 Mbps</div><div>76.3 Mbps</div><div>0.0 kbps</div><div>10 Minute</div></div><div><div>Network Send</div><div>Network Send Status</div><div>Network Send</div><div>Average Network Send</div><div>Average Network Send / Minute</div><div>Average Network Send / Hour</div><div>Average Network Send / Day</div><div>Normal</div><div>5.2 Mbps</div><div>5.3 Mbps</div><div>319.7 Mb</div><div>64.7 Gb</div><div>Not Available</div></div><div><div>Network Receive</div><div>Network Receive Status</div><div>Network Receive</div><div>Average Network Receive</div><div>Average Network Receive / Minute</div><div>Average Network Receive / Hour</div><div>Average Network Receive / Day</div><div>Normal</div><div>506.8 Mbps</div><div>347.4 Mbps</div><div>20.2 Gb</div><div>1.0 Tb</div><div>Not Available</div></div></div></div></div> |        |                  |                                         |                                                                                                                                          |        |      |      |         |                       |             |       |                  |                                         |                                                                                                                                          |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------|------|------|---------|-----------------------|-------------|-------|------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Notification          | <div><div>Network received activity back to normal</div><div>Average network receive activity has returned to normal (after 0 hours 24 minutes). Current average network receive activity is 346.6 Mb</div><div>16:48 • Network Activity</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |                  |                                         |                                                                                                                                          |        |      |      |         |                       |             |       |                  |                                         |                                                                                                                                          |
| Log                   | <table><thead><tr><th>Time</th><th>Level</th><th>Source</th><th>Type</th><th>Name</th><th>Details</th></tr></thead><tbody><tr><td>13 Oct 2022, 16:48:31</td><td>Information</td><td>ecaOS</td><td>Network Activity</td><td>Network receive activity back to normal</td><td>Average network receive activity has returned to normal (after 0 hours 24 minutes). Current average network receive activity is 346.6 Mb</td></tr></tbody></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                  | Time                                    | Level                                                                                                                                    | Source | Type | Name | Details | 13 Oct 2022, 16:48:31 | Information | ecaOS | Network Activity | Network receive activity back to normal | Average network receive activity has returned to normal (after 0 hours 24 minutes). Current average network receive activity is 346.6 Mb |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Source | Type             | Name                                    | Details                                                                                                                                  |        |      |      |         |                       |             |       |                  |                                         |                                                                                                                                          |
| 13 Oct 2022, 16:48:31 | Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ecaOS  | Network Activity | Network receive activity back to normal | Average network receive activity has returned to normal (after 0 hours 24 minutes). Current average network receive activity is 346.6 Mb |        |      |      |         |                       |             |       |                  |                                         |                                                                                                                                          |
| Email                 | <div><div>[DC201809140003] Incoming Network Traffic Returned to Normal - Message (HTML)</div><div><div>File</div><div>Message</div><div>Help</div><div>Acrobat</div><div><div>Share to Teams</div><div>Find</div><div>...</div></div></div><div><div>[DC201809140003] Incoming Network Traffic Returned to Normal</div><div><div>EN</div><div>ECA Notifications &lt;noreply@gsf.ms&gt;</div><div>To: jemi</div><div>Thu 13/10/2022 4:49 PM</div></div><div><div>Reply</div><div>Reply All</div><div>Forward</div><div>...</div></div><div><div>GSF</div><div>Dear user,</div><div>Previously reported low average incoming network traffic have returned to normal. Incoming network traffic previously fell below the limit of 330 Mb for more than 10 minutes</div><div>Time Reported: 13-Oct-22 16:48:31 +08:00</div><div>Low data reception limit: 330 Mb in 10 minutes</div><div>Data received: 346.6 Mb</div><div>Stayed below the limit for: 0 Hours and 24 minutes</div><div>For further assistance, please contact TrueBlue Care:</div><div>trueblue@gsfcorp.com</div><div>+603-8090 8277</div><div>Monday - Friday, 9AM - 6PM</div><div>You received this email because your email address is listed as the notification email for Engineered Computer Appliance (ECA) serial no: DC201809140003</div><div>ECA, Smart Logic, and TrueBlue are products and services provided by GSF.</div><div>©2022 GSF Corporation, F-21-3A, IOI Boulevard, Jalan Kenari 6, 47170 Puchong, Selangor D.E, Malaysia</div></div></div></div>                                                   |        |                  |                                         |                                                                                                                                          |        |      |      |         |                       |             |       |                  |                                         |                                                                                                                                          |

## 13.5 Session Shield

### 13.5.1 Warning Status

Dashboard



The dashboard shows the Session Shield status for device DC201809140003. It features a pie chart indicating storage usage: Available (1568 MB), Used (6415 MB), and Total (7983 MB). The Used Percent is 80.4%, and the status is 'Warning'. Below the chart, there are buttons for 'Deactivate', 'Reboot', 'Add Exclusion' for files/folders, and 'Add Exclusion' for registry keys. A list of allowed files and folders is also displayed.

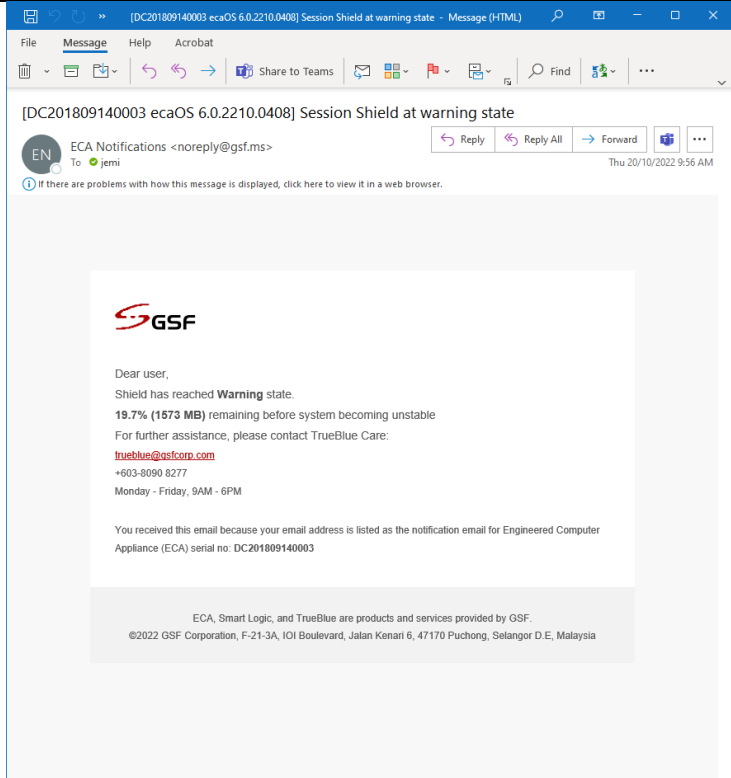
Notification

**Session Shield at warning state**  
Shield has reached Warning state. 19.7% (1573 MB) remaining before system becoming unstable  
09:56 • Session Shield

Log

| Time                 | Level   | Source | Type           | Name                            | Details                                                                                     |
|----------------------|---------|--------|----------------|---------------------------------|---------------------------------------------------------------------------------------------|
| 20 Oct 2022, 9:56:07 | Warning | ecaOS  | Session Shield | Session Shield at warning state | Shield has reached Warning state. 19.7% (1573 MB) remaining before system becoming unstable |

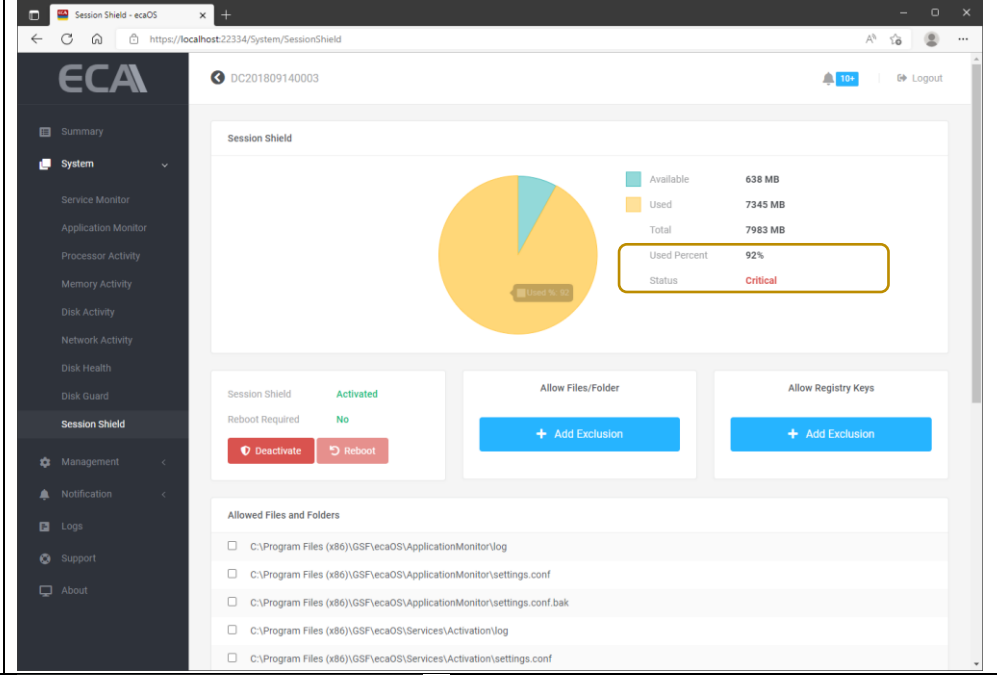
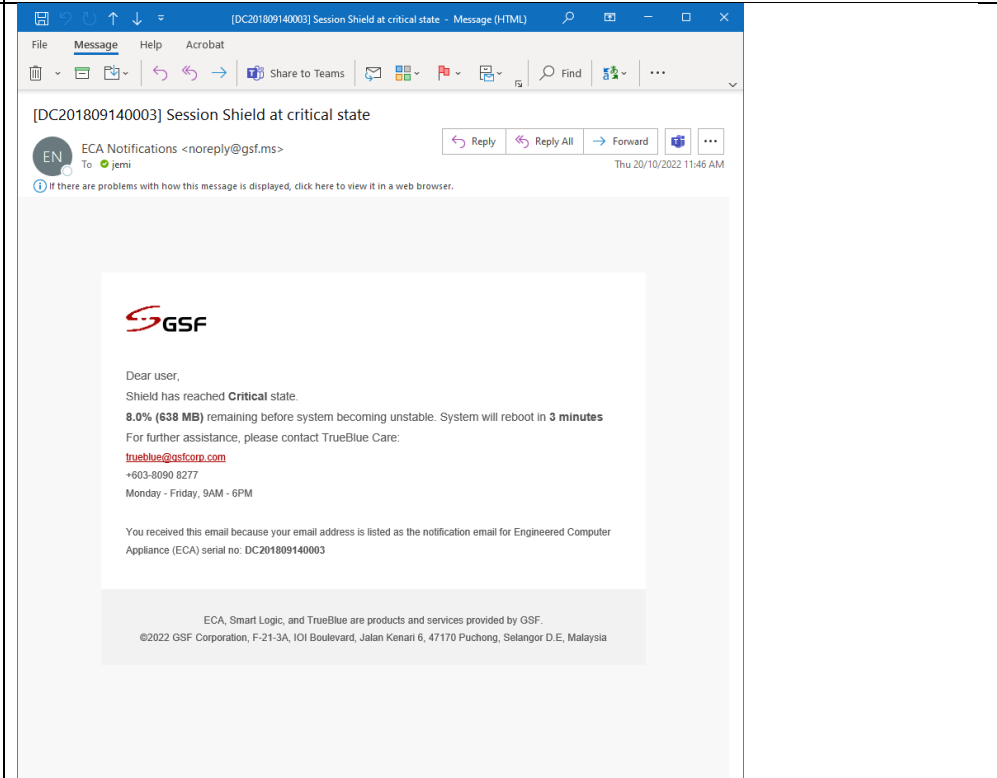
Email



The email screenshot shows a notification from ECA Notifications <noreply@gsf.ms> to jemi on Thu 20/10/2022 9:56 AM. The subject is '[DC201809140003 ecaOS 6.0.2210.0408] Session Shield at warning state'. The body contains the GSF logo and a message: 'Dear user, Shield has reached Warning state. 19.7% (1573 MB) remaining before system becoming unstable. For further assistance, please contact TrueBlue Care: trueblue@gsfcorp.com, +603-8090 8277, Monday - Friday, 9AM - 6PM'. It also states that the email was sent because the user's address is listed as the notification email for Engineered Computer Appliance (ECA) serial no: DC201809140003. The footer mentions GSF products and services provided by GSF, with contact information for GSF Corporation in Malaysia.

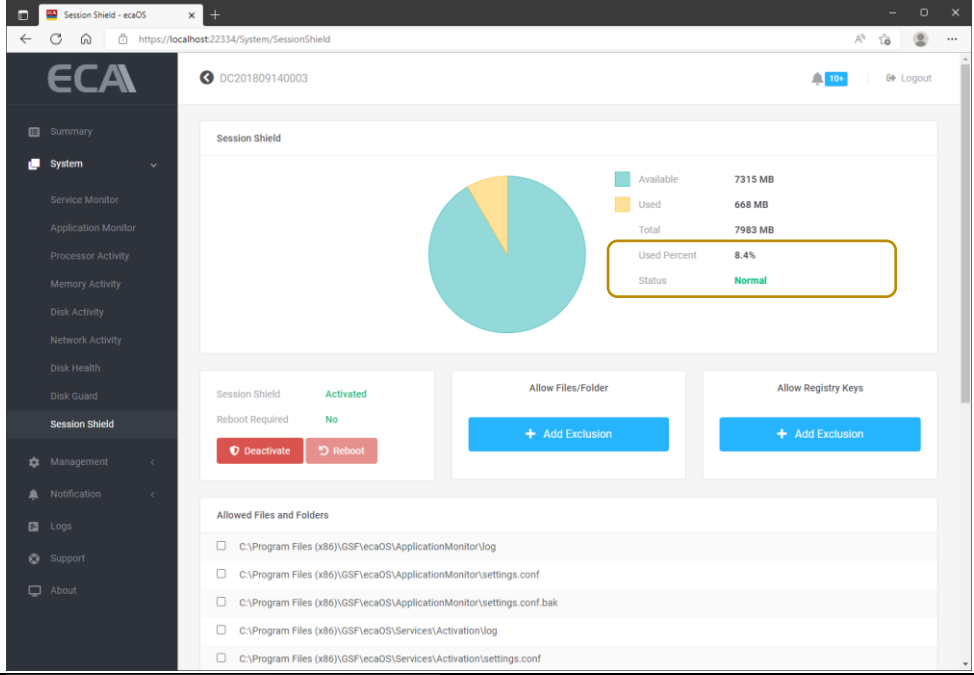
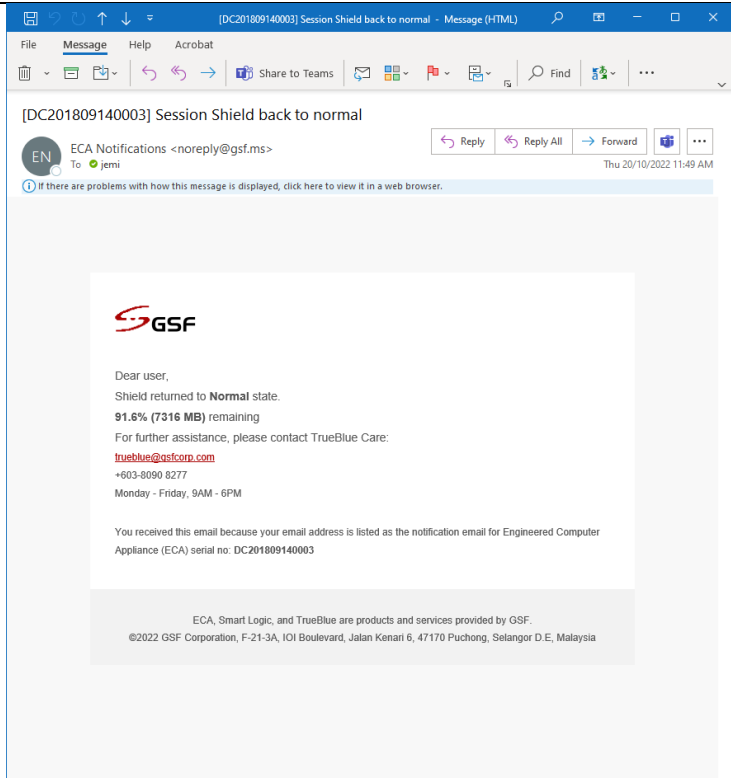
## 13.5.2

## Critical Status

| Dashboard             |                                                                                                                                                                                                                                                                                                                                                      |        |                |                                  |                                                                                                                           |      |         |                       |          |       |                |                                  |                                                                                                                           |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------|------|---------|-----------------------|----------|-------|----------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Notification          | <p><b>Session Shield at critical state</b><br/>         Shield has reached Critical state. 8.0% (638 MB) remaining before system becoming unstable. System will reboot in 3 minutes<br/>         11:45 • Session Shield</p>                                                                                                                                                                                                            |        |                |                                  |                                                                                                                           |      |         |                       |          |       |                |                                  |                                                                                                                           |
| Log                   | <table border="1"> <thead> <tr> <th>Time</th><th>Level</th><th>Source</th><th>Type</th><th>Name</th><th>Details</th></tr> </thead> <tbody> <tr> <td>20 Oct 2022, 11:45:30</td><td>Critical</td><td>ecaOS</td><td>Session Shield</td><td>Session Shield at critical state</td><td>Shield has reached Critical state. 8% (638 MB) remaining before system becoming unstable. System will reboot in 3 minutes</td></tr> </tbody> </table> | Time   | Level          | Source                           | Type                                                                                                                      | Name | Details | 20 Oct 2022, 11:45:30 | Critical | ecaOS | Session Shield | Session Shield at critical state | Shield has reached Critical state. 8% (638 MB) remaining before system becoming unstable. System will reboot in 3 minutes |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                                                                                  | Source | Type           | Name                             | Details                                                                                                                   |      |         |                       |          |       |                |                                  |                                                                                                                           |
| 20 Oct 2022, 11:45:30 | Critical                                                                                                                                                                                                                                                                                                                                                                                                                               | ecaOS  | Session Shield | Session Shield at critical state | Shield has reached Critical state. 8% (638 MB) remaining before system becoming unstable. System will reboot in 3 minutes |      |         |                       |          |       |                |                                  |                                                                                                                           |
| Email                 |                                                                                                                                                                                                                                                                                                                                                    |        |                |                                  |                                                                                                                           |      |         |                       |          |       |                |                                  |                                                                                                                           |

## 13.5.3

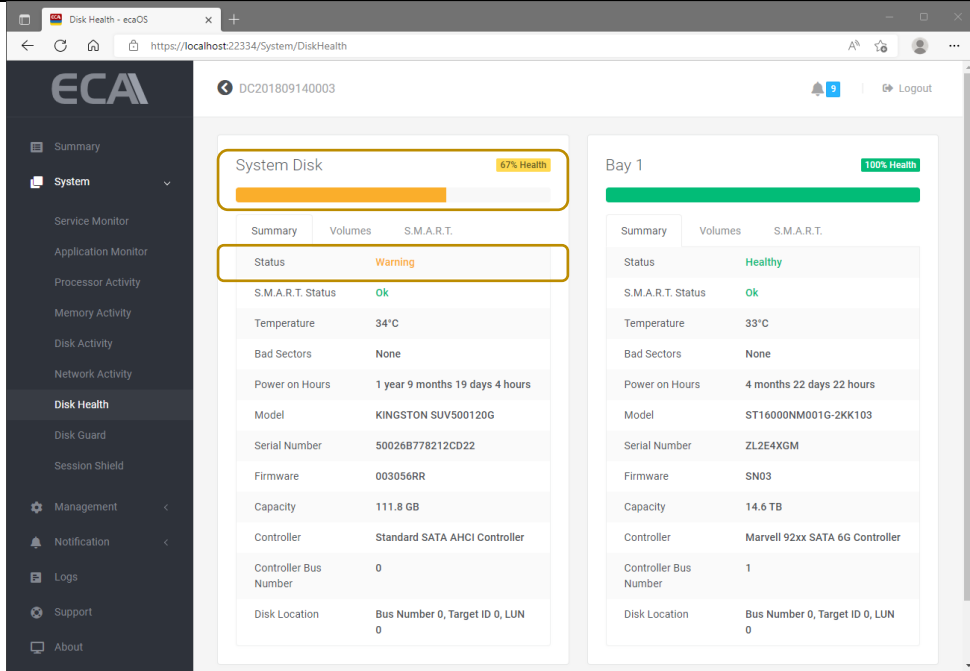
## Status back to normal

| Dashboard             |                                                                                                                                                                                                                                                                                       |        |                |                               |                                                            |      |         |                       |             |       |                |                               |                                                            |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------|-------------------------------|------------------------------------------------------------|------|---------|-----------------------|-------------|-------|----------------|-------------------------------|------------------------------------------------------------|
| Notification          | <p><b>Session Shield back to normal</b><br/>         Shield returned to Normal state. 91.6% (7316 MB) remaining<br/>         11:48 • Session Shield</p>                                                                                                                                                                                                                 |        |                |                               |                                                            |      |         |                       |             |       |                |                               |                                                            |
| Log                   | <table border="1"> <thead> <tr> <th>Time</th><th>Level</th><th>Source</th><th>Type</th><th>Name</th><th>Details</th></tr> </thead> <tbody> <tr> <td>20 Oct 2022, 11:48:52</td><td>Information</td><td>ecaOS</td><td>Session Shield</td><td>Session Shield back to normal</td><td>Shield returned to Normal state. 91.6% (7316 MB) remaining</td></tr> </tbody> </table> | Time   | Level          | Source                        | Type                                                       | Name | Details | 20 Oct 2022, 11:48:52 | Information | ecaOS | Session Shield | Session Shield back to normal | Shield returned to Normal state. 91.6% (7316 MB) remaining |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                   | Source | Type           | Name                          | Details                                                    |      |         |                       |             |       |                |                               |                                                            |
| 20 Oct 2022, 11:48:52 | Information                                                                                                                                                                                                                                                                                                                                                             | ecaOS  | Session Shield | Session Shield back to normal | Shield returned to Normal state. 91.6% (7316 MB) remaining |      |         |                       |             |       |                |                               |                                                            |
| Email                 |                                                                                                                                                                                                                                                                                     |        |                |                               |                                                            |      |         |                       |             |       |                |                               |                                                            |

## 13.6 Disk Health

### 13.6.1 Warning Status Disk

#### Dashboard



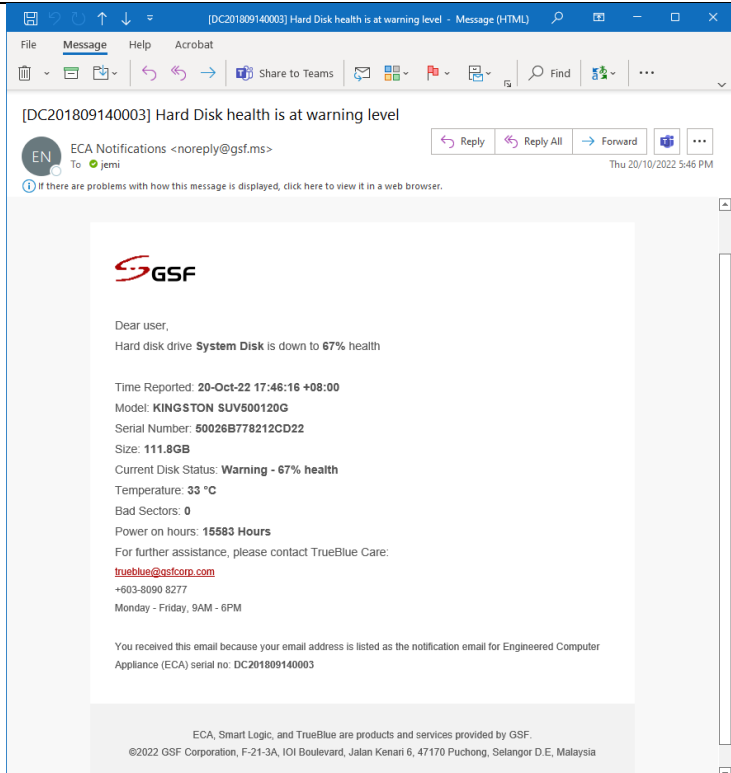
#### Notification

**Disk health warning**  
Disk System Disk is down to 67% health  
17:46 • Disk Health

#### Log

| Time                  | Level   | Source | Type        | Name                | Details                                |
|-----------------------|---------|--------|-------------|---------------------|----------------------------------------|
| 20 Oct 2022, 17:46:16 | Warning | ecaOS  | Disk Health | Disk health warning | Disk System Disk is down to 67% health |

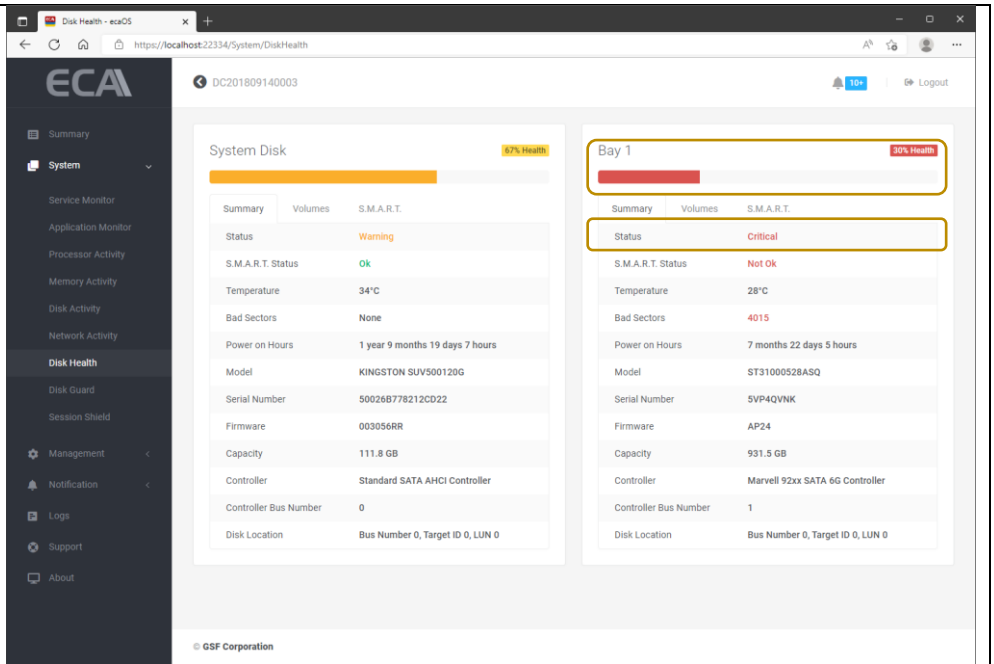
#### Email



## 13.6.2

## Critical Status Disk

### Dashboard



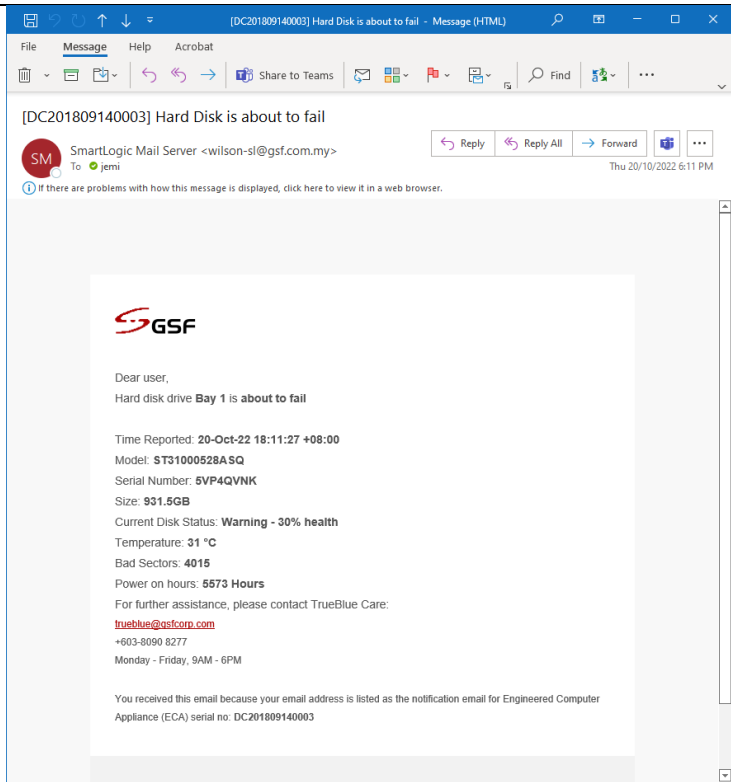
### Notification

**Disk health critical**  
Disk Bay 1 is down to 30% health  
17:55 • Disk Health

### Log

| Time                  | Level   | Source | Type        | Name                 | Details                          |
|-----------------------|---------|--------|-------------|----------------------|----------------------------------|
| 20 Oct 2022, 17:55:57 | Warning | ecaOS  | Disk Health | Disk health critical | Disk Bay 1 is down to 30% health |

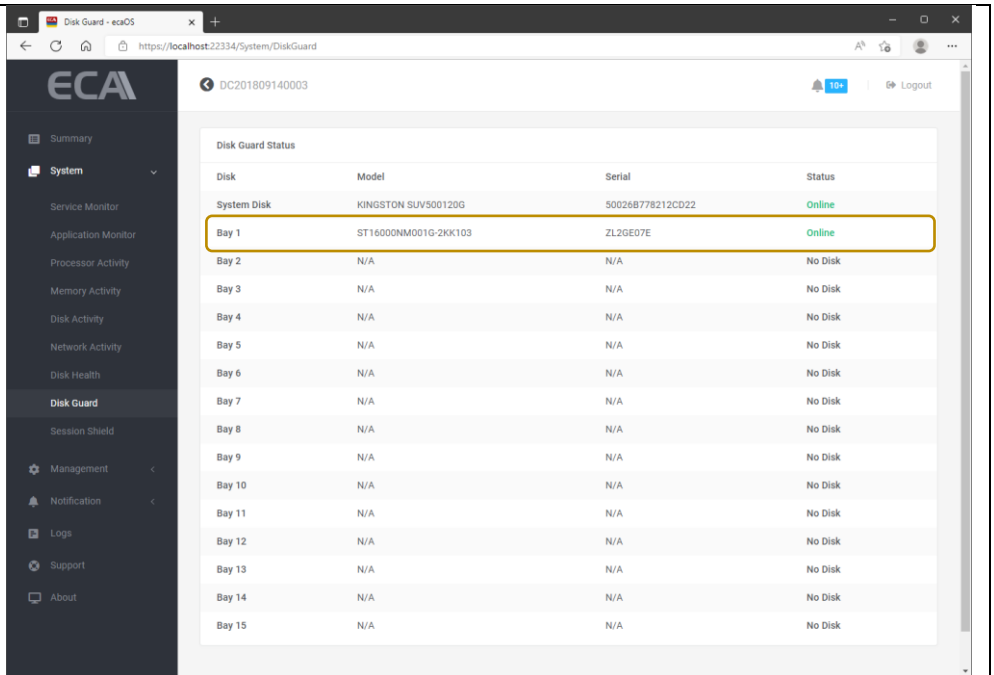
### Email



## 13.7 Disk Guard

### 13.7.1 New disk / Disk Inserted

#### Dashboard



| Disk        | Model                | Serial           | Status  |
|-------------|----------------------|------------------|---------|
| System Disk | KINGSTON SUV500120G  | 500268778212CD22 | Online  |
| Bay 1       | ST16000NM001G-2KK103 | ZL2GE07E         | Online  |
| Bay 2       | N/A                  | N/A              | No Disk |
| Bay 3       | N/A                  | N/A              | No Disk |
| Bay 4       | N/A                  | N/A              | No Disk |
| Bay 5       | N/A                  | N/A              | No Disk |
| Bay 6       | N/A                  | N/A              | No Disk |
| Bay 7       | N/A                  | N/A              | No Disk |
| Bay 8       | N/A                  | N/A              | No Disk |
| Bay 9       | N/A                  | N/A              | No Disk |
| Bay 10      | N/A                  | N/A              | No Disk |
| Bay 11      | N/A                  | N/A              | No Disk |
| Bay 12      | N/A                  | N/A              | No Disk |
| Bay 13      | N/A                  | N/A              | No Disk |
| Bay 14      | N/A                  | N/A              | No Disk |
| Bay 15      | N/A                  | N/A              | No Disk |

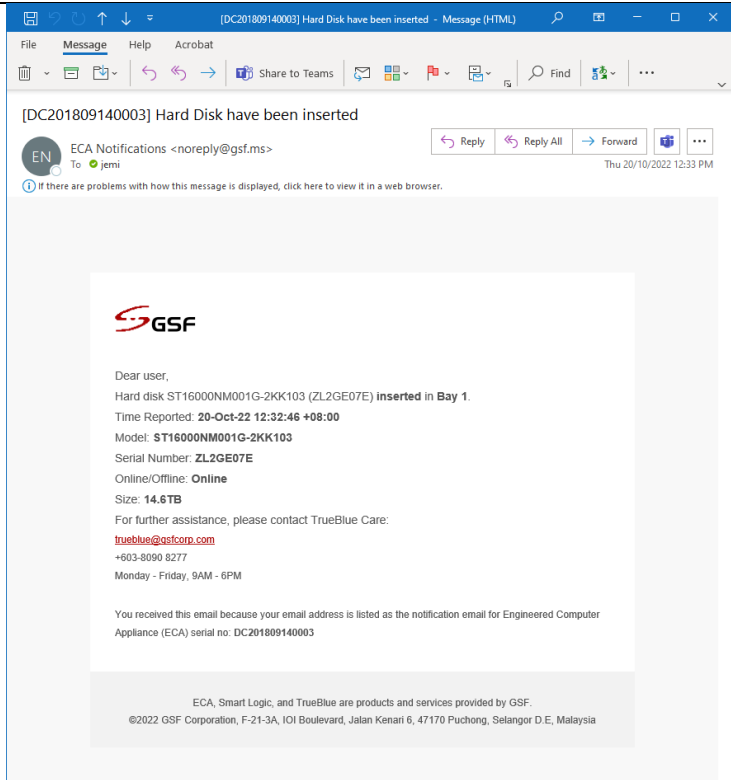
#### Notification

**Disk Inserted**  
 Disk ST16000NM001G-2KK103 (ZL2GE07E)  
 placed in Bay 1  
 12:32 • Disk Guard

#### Log

| Time                  | Level       | Source | Type       | Name          | Details                                              |
|-----------------------|-------------|--------|------------|---------------|------------------------------------------------------|
| 20 Oct 2022, 12:32:46 | Information | ecaOS  | Disk Guard | Disk Inserted | Disk ST16000NM001G-2KK103 (ZL2GE07E) placed in Bay 1 |

#### Email



[DC201809140003] Hard Disk have been inserted

ECA Notifications <noreply@gsf.ms>  
To: jemi  
Thu 20/10/2022 12:33 PM

If there are problems with how this message is displayed, click here to view it in a web browser.

**GSF**

Dear user,  
Hard disk ST16000NM001G-2KK103 (ZL2GE07E) inserted in Bay 1.  
Time Reported: 20-Oct-22 12:32:46 +08:00  
Model: ST16000NM001G-2KK103  
Serial Number: ZL2GE07E  
Online/Offline: Online  
Size: 14.6TB  
For further assistance, please contact TrueBlue Care:  
[trueblue@gsfcorp.com](mailto:trueblue@gsfcorp.com)  
+603-8090 8277  
Monday - Friday, 9AM - 6PM

You received this email because your email address is listed as the notification email for Engineered Computer Appliance (ECA) serial no: DC201809140003

ECA, Smart Logic, and TrueBlue are products and services provided by GSF.  
©2022 GSF Corporation, F-21-3A, IOI Boulevard, Jalan Kenari 6, 47170 Puchong, Selangor D.E, Malaysia

## 13.7.2

## Disk Removed

Dashboard

System

Service Monitor

Application Monitor

Processor Activity

Memory Activity

Disk Activity

Network Activity

Disk Health

Disk Guard

Session Shield

Management

Notification

Logs

Support

About

DC201809140003

Disk Guard Status

| Disk        | Model                | Serial           | Status  |
|-------------|----------------------|------------------|---------|
| System Disk | KINGSTON SUV500120G  | 50026B778212CD22 | Online  |
| Bay 1       | ST16000NM001G-2KK103 | ZL2GE07E         | Removed |
| Bay 2       | N/A                  | N/A              | No Disk |
| Bay 3       | N/A                  | N/A              | No Disk |
| Bay 4       | N/A                  | N/A              | No Disk |
| Bay 5       | N/A                  | N/A              | No Disk |
| Bay 6       | N/A                  | N/A              | No Disk |
| Bay 7       | N/A                  | N/A              | No Disk |
| Bay 8       | N/A                  | N/A              | No Disk |
| Bay 9       | N/A                  | N/A              | No Disk |
| Bay 10      | N/A                  | N/A              | No Disk |
| Bay 11      | N/A                  | N/A              | No Disk |
| Bay 12      | N/A                  | N/A              | No Disk |
| Bay 13      | N/A                  | N/A              | No Disk |
| Bay 14      | N/A                  | N/A              | No Disk |
| Bay 15      | N/A                  | N/A              | No Disk |

Notification

Disk Removed

Disk ST16000NM001G-2KK103 (ZL2GE07E) removed from Bay 1

12:36 • Disk Guard

Log

| Time                  | Level   | Source | Type       | Name         | Details                                                 |
|-----------------------|---------|--------|------------|--------------|---------------------------------------------------------|
| 20 Oct 2022, 12:36:27 | Warning | ecaOS  | Disk Guard | Disk Removed | Disk ST16000NM001G-2KK103 (ZL2GE07E) removed from Bay 1 |

Email

[DC201809140003] Hard Disk have been Removed - Message (HTML)

File

Message

Help

Acrobat

Share to Teams

Print

Find

[DC201809140003] Hard Disk have been Removed

ECA Notifications <noreply@gsf.ms>

To jemi

Thu 20/10/2022 12:36 PM

Reply

Reply All

Forward

If there are problems with how this message is displayed, click here to view it in a web browser.

GSF

Dear user,

A hard disk have been removed from Bay 1.

Time Reported: 20-Oct-22 12:36:27 +08:00

Model: ST16000NM001G-2KK103

Serial Number: ZL2GE07E

Size: 14.6TB

For further assistance, please contact TrueBlue Care:

[trueblue@gsfcorp.com](mailto:trueblue@gsfcorp.com)  
 +603-8090 8277  
 Monday - Friday, 9AM - 6PM

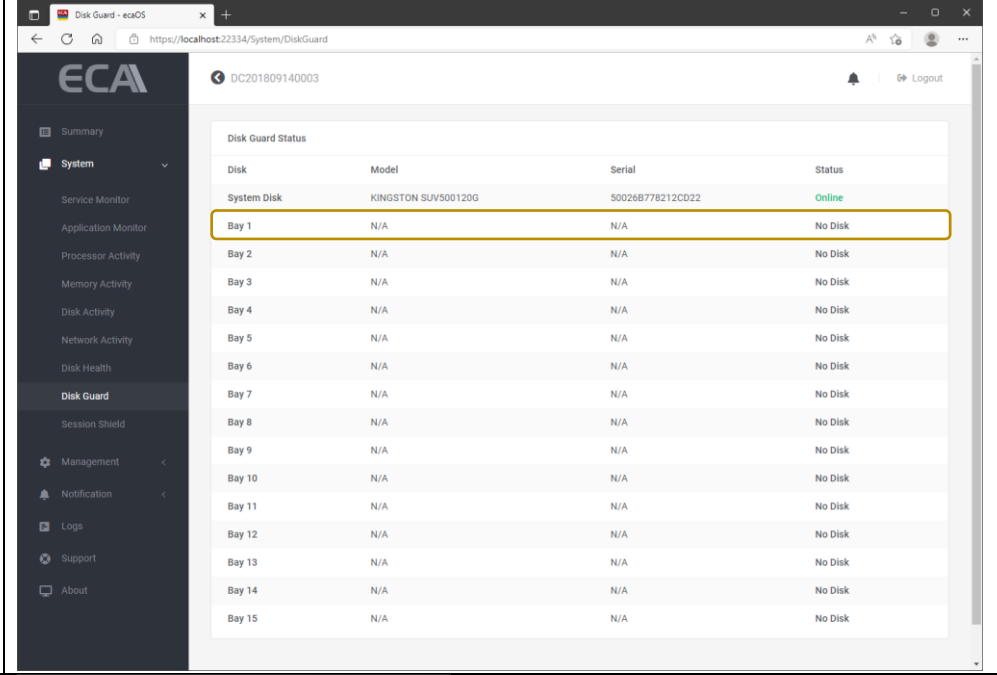
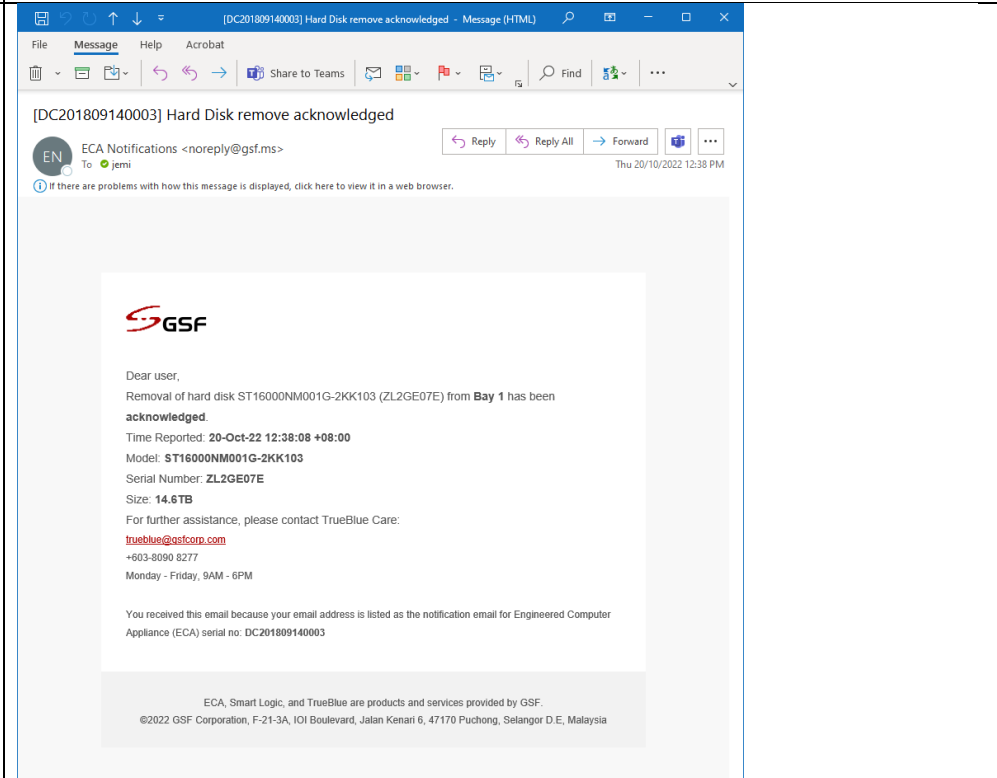
You received this email because your email address is listed as the notification email for Engineered Computer Appliance (ECA) serial no. DC201809140003

© GSF Corporation

Unit 21, Level 3A, Jalan Kenari 5, Bandar Puchong Jaya, 47170 Selangor D.E., Malaysia | +603-80908080 | info@gsfcorp.com

## 13.7.3

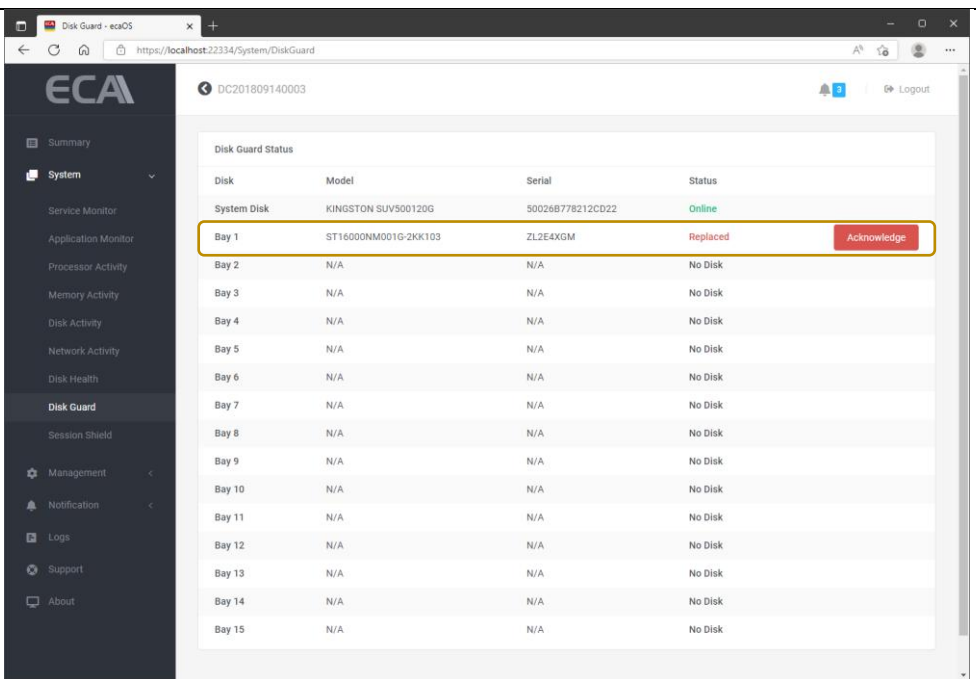
## Disk Removed Acknowledge

| <b>Dashboard</b>      |                                                                                                                                                                                                                                                                                                    |        |            |                          |                                                                      |      |         |                       |             |       |            |                          |                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------|--------------------------|----------------------------------------------------------------------|------|---------|-----------------------|-------------|-------|------------|--------------------------|----------------------------------------------------------------------|
| <b>Notification</b>   | <div style="background-color: #333; color: white; padding: 10px;"> <b>Disk Remove Acknowledged</b><br/>             Disk ST16000NM001G-2KK103 (ZL2GE07E) removal from Bay 1 acknowledged<br/>             12:38 • Disk Guard           </div>                                                                                                                                        |        |            |                          |                                                                      |      |         |                       |             |       |            |                          |                                                                      |
| <b>Log</b>            | <table border="1"> <thead> <tr> <th>Time</th> <th>Level</th> <th>Source</th> <th>Type</th> <th>Name</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td>20 Oct 2022, 12:38:08</td> <td>Information</td> <td>ecaOS</td> <td>Disk Guard</td> <td>Disk Remove Acknowledged</td> <td>Disk ST16000NM001G-2KK103 (ZL2GE07E) removal from Bay 1 acknowledged</td> </tr> </tbody> </table> | Time   | Level      | Source                   | Type                                                                 | Name | Details | 20 Oct 2022, 12:38:08 | Information | ecaOS | Disk Guard | Disk Remove Acknowledged | Disk ST16000NM001G-2KK103 (ZL2GE07E) removal from Bay 1 acknowledged |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                                | Source | Type       | Name                     | Details                                                              |      |         |                       |             |       |            |                          |                                                                      |
| 20 Oct 2022, 12:38:08 | Information                                                                                                                                                                                                                                                                                                                                                                          | ecaOS  | Disk Guard | Disk Remove Acknowledged | Disk ST16000NM001G-2KK103 (ZL2GE07E) removal from Bay 1 acknowledged |      |         |                       |             |       |            |                          |                                                                      |
| <b>Email</b>          |                                                                                                                                                                                                                                                                                                  |        |            |                          |                                                                      |      |         |                       |             |       |            |                          |                                                                      |

## 13.7.4

## Disk Replaced

Dashboard



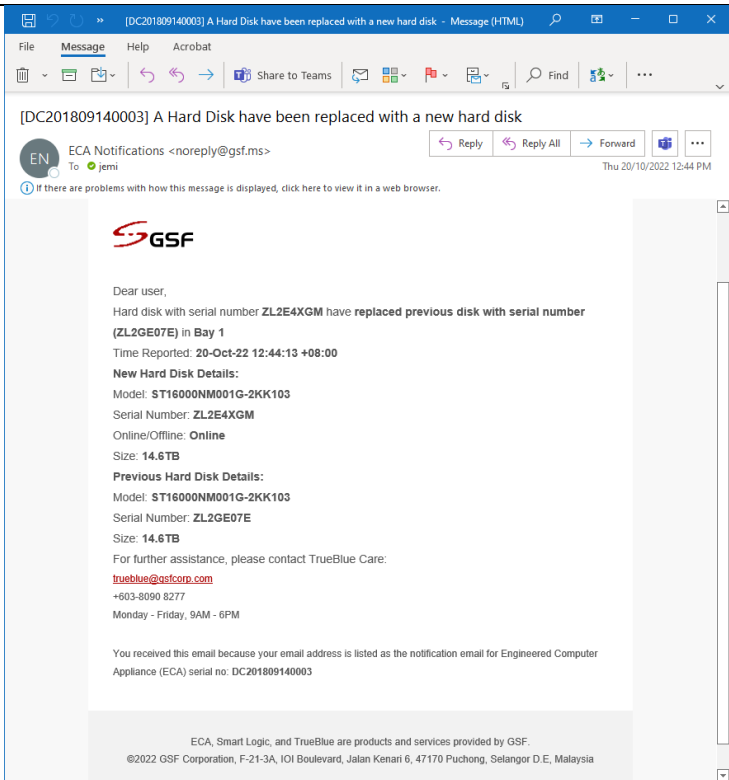
Notification

**Disk Replaced**  
Disk (ZL2E4XGM) have replaced previous disk (ZL2GE07E) in Bay 1  
12:44 • Disk Guard

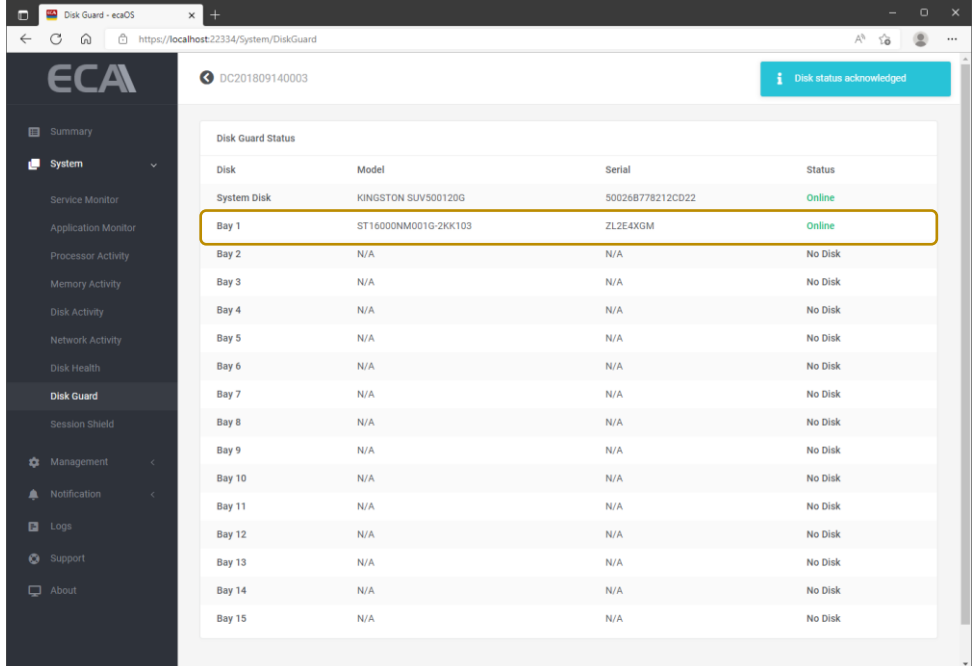
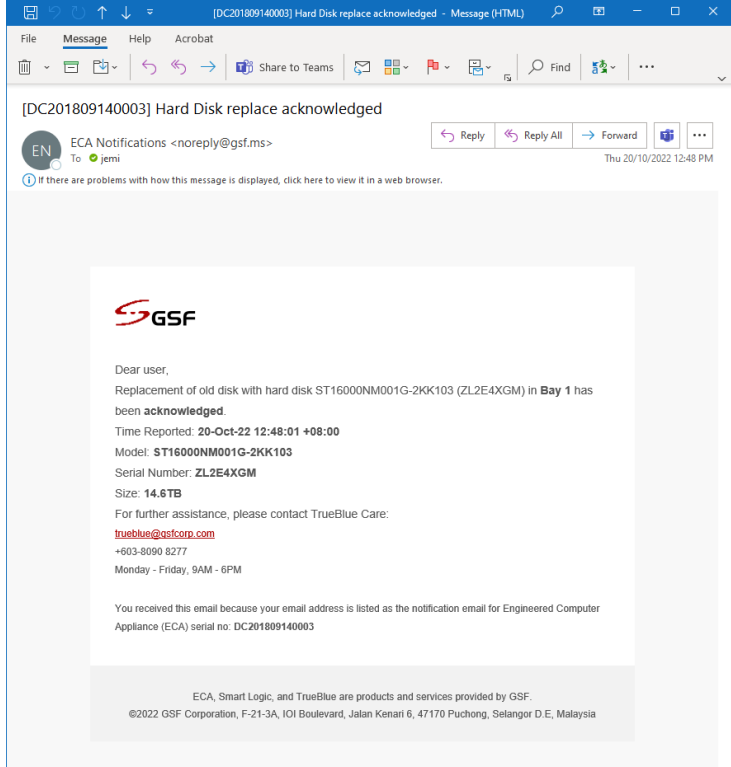
Log

| Time                  | Level   | Source | Type       | Name          | Details                                                         |
|-----------------------|---------|--------|------------|---------------|-----------------------------------------------------------------|
| 20 Oct 2022, 12:44:13 | Warning | ecaOS  | Disk Guard | Disk Replaced | Disk (ZL2E4XGM) have replaced previous disk (ZL2GE07E) in Bay 1 |

Email



### 13.7.5 Disk Replaced Acknowledge

| <b>Dashboard</b>      |  <p>The screenshot shows the ECA Dashboard interface. On the left is a sidebar menu with options like Summary, System, Service Monitor, Application Monitor, Processor Activity, Memory Activity, Disk Activity, Network Activity, Disk Health, Disk Guard, Session Shield, Management, Notification, Logs, Support, and About. The main area displays the 'Disk Guard Status' table for device DC201809140003. The table has columns for Disk, Model, Serial, and Status. Bay 1 is highlighted with a yellow border, showing a 'System Disk' (KINGSTON SUV500120G) with status 'Online'. Other bays (2-15) show 'No Disk'.</p> <table border="1"> <thead> <tr> <th>Disk</th> <th>Model</th> <th>Serial</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>System Disk</td> <td>KINGSTON SUV500120G</td> <td>500268778212CD22</td> <td>Online</td> </tr> <tr> <td>Bay 1</td> <td>ST16000NM001G-2KK103</td> <td>ZL2E4XGM</td> <td>Online</td> </tr> <tr><td>Bay 2</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 3</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 4</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 5</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 6</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 7</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 8</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 9</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 10</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 11</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 12</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 13</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 14</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> <tr><td>Bay 15</td><td>N/A</td><td>N/A</td><td>No Disk</td></tr> </tbody> </table> | Disk             | Model      | Serial                    | Status                                                         | System Disk | KINGSTON SUV500120G | 500268778212CD22      | Online      | Bay 1 | ST16000NM001G-2KK103 | ZL2E4XGM                  | Online                                                         | Bay 2 | N/A | N/A | No Disk | Bay 3 | N/A | N/A | No Disk | Bay 4 | N/A | N/A | No Disk | Bay 5 | N/A | N/A | No Disk | Bay 6 | N/A | N/A | No Disk | Bay 7 | N/A | N/A | No Disk | Bay 8 | N/A | N/A | No Disk | Bay 9 | N/A | N/A | No Disk | Bay 10 | N/A | N/A | No Disk | Bay 11 | N/A | N/A | No Disk | Bay 12 | N/A | N/A | No Disk | Bay 13 | N/A | N/A | No Disk | Bay 14 | N/A | N/A | No Disk | Bay 15 | N/A | N/A | No Disk |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------|---------------------------|----------------------------------------------------------------|-------------|---------------------|-----------------------|-------------|-------|----------------------|---------------------------|----------------------------------------------------------------|-------|-----|-----|---------|-------|-----|-----|---------|-------|-----|-----|---------|-------|-----|-----|---------|-------|-----|-----|---------|-------|-----|-----|---------|-------|-----|-----|---------|-------|-----|-----|---------|--------|-----|-----|---------|--------|-----|-----|---------|--------|-----|-----|---------|--------|-----|-----|---------|--------|-----|-----|---------|--------|-----|-----|---------|
| Disk                  | Model                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Serial           | Status     |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| System Disk           | KINGSTON SUV500120G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 500268778212CD22 | Online     |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 1                 | ST16000NM001G-2KK103                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ZL2E4XGM         | Online     |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 2                 | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 3                 | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 4                 | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 5                 | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 6                 | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 7                 | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 8                 | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 9                 | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 10                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 11                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 12                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 13                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 14                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Bay 15                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | N/A              | No Disk    |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| <b>Notification</b>   | <p><b>Disk Replace Acknowledged</b><br/>         Disk ST16000NM001G-2KK103 (ZL2E4XGM)<br/>         now default disk in Bay 1<br/>         12:48 • Disk Guard</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |            |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| <b>Log</b>            | <table border="1"> <thead> <tr> <th>Time</th> <th>Level</th> <th>Source</th> <th>Type</th> <th>Name</th> <th>Details</th> </tr> </thead> <tbody> <tr> <td>20 Oct 2022, 12:48:01</td> <td>Information</td> <td>ecaOS</td> <td>Disk Guard</td> <td>Disk Replace Acknowledged</td> <td>Disk ST16000NM001G-2KK103 (ZL2E4XGM) now default disk in Bay 1</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Time             | Level      | Source                    | Type                                                           | Name        | Details             | 20 Oct 2022, 12:48:01 | Information | ecaOS | Disk Guard           | Disk Replace Acknowledged | Disk ST16000NM001G-2KK103 (ZL2E4XGM) now default disk in Bay 1 |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| Time                  | Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Source           | Type       | Name                      | Details                                                        |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| 20 Oct 2022, 12:48:01 | Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ecaOS            | Disk Guard | Disk Replace Acknowledged | Disk ST16000NM001G-2KK103 (ZL2E4XGM) now default disk in Bay 1 |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |
| <b>Email</b>          |  <p>The screenshot shows an email notification from 'ECA Notifications &lt;noreply@gsf.ms&gt;' to 'jemi'. The subject is '[DC201809140003] Hard Disk replace acknowledged'. The email body contains the GSF logo and a message stating that the replacement of the old disk with the new disk ST16000NM001G-2KK103 (ZL2E4XGM) in Bay 1 has been acknowledged. It includes the time reported (20-Oct-22 12:48:01 +08:00), model, serial number, and size (14.6TB). It also provides contact information for TrueBlue Care and a footer with GSF corporate details.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |            |                           |                                                                |             |                     |                       |             |       |                      |                           |                                                                |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |       |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |        |     |     |         |

## 13.8 Log

### 13.8.1 ECA reboot more than 3 times

Figure 223 Show chronological events in log when ECA reboot more than 3 times within 1 hour

| Time                  | Level       | Source    | Type           | Name                               | Details |
|-----------------------|-------------|-----------|----------------|------------------------------------|---------|
| 21 Oct 2022, 17:15:16 | Information | Heartbeat | I/O            | DO0 output set to high             |         |
| 21 Oct 2022, 17:15:15 | Warning     | Heartbeat | ECA Controller | Unauthorized system reboot         |         |
| 21 Oct 2022, 17:15:14 | Warning     | Heartbeat | ECA Controller | Alert on: System repetitive reboot |         |

Figure 223

### 13.8.2 AC Power loss

Figure 224 Show chronological events in log when AC power loss.

| Time                  | Level       | Source    | Type            | Name                                    | Details |
|-----------------------|-------------|-----------|-----------------|-----------------------------------------|---------|
| 21 Oct 2022, 17:10:44 | Information | Heartbeat | ECA Motherboard | System in ecaOS                         |         |
| 21 Oct 2022, 17:10:43 | Information | Heartbeat | ECA Gateway     | Gateway connected                       |         |
| 21 Oct 2022, 17:10:24 | Information | Heartbeat | I/O             | DO0 output set to low                   |         |
| 21 Oct 2022, 17:10:23 | Information | Heartbeat | ECA Controller  | Alert off: Unexpected system power loss |         |
| 21 Oct 2022, 17:10:23 | Information | Heartbeat | ECA Motherboard | System powered up                       |         |
| 21 Oct 2022, 17:10:21 | Information | Heartbeat | Battery         | Battery charging                        |         |
| 21 Oct 2022, 17:10:18 | Information | Heartbeat | Battery         | Charger power resumed                   |         |
| 21 Oct 2022, 17:10:18 | Information | Heartbeat | ECA Motherboard | AC power resumed                        |         |
| 21 Oct 2022, 17:10:17 | Warning     | Heartbeat | ECA Gateway     | Gateway disconnected                    |         |
| 21 Oct 2022, 17:10:16 | Warning     | Heartbeat | Battery         | Charger power loss                      |         |
| 21 Oct 2022, 17:10:15 | Information | Heartbeat | Battery         | Battery discharging                     |         |
| 21 Oct 2022, 17:10:10 | Information | Heartbeat | I/O             | DO0 output set to high                  |         |
| 21 Oct 2022, 17:10:09 | Warning     | Heartbeat | ECA Controller  | Alert on: Unexpected system power loss  |         |
| 21 Oct 2022, 17:10:09 | Warning     | Heartbeat | ECA Motherboard | AC power loss                           |         |
| 21 Oct 2022, 17:05:32 | Warning     | Heartbeat | ECA Controller  | Unauthorized system reboot              |         |

Figure 224

### 13.8.3 Unauthorize ECA Reboot

Figure 225 Show chronological events in log when ECA reboot does not through Dashboard.

| Time                  | Level       | Source    | Type            | Name                       | Details |
|-----------------------|-------------|-----------|-----------------|----------------------------|---------|
| 21 Oct 2022, 17:05:32 | Warning     | Heartbeat | ECA Controller  | Unauthorized system reboot |         |
| 21 Oct 2022, 17:05:27 | Information | Heartbeat | ECA Motherboard | System in ecaOS            |         |
| 21 Oct 2022, 17:05:25 | Information | Heartbeat | ECA Gateway     | Gateway connected          |         |
| 21 Oct 2022, 17:05:11 | Warning     | Heartbeat | ECA Gateway     | Gateway disconnected       |         |
| 21 Oct 2022, 17:04:59 | Information | Heartbeat | ECA Motherboard | System leaving ecaOS       |         |

Figure 225

### 13.8.4 Unauthorized ECA Shutdown

Figure 226 Show chronological events in log when ECA shutdown does not through Dashboard.

| Time                  | Level       | Source    | Type            | Name                           | Details |
|-----------------------|-------------|-----------|-----------------|--------------------------------|---------|
| 21 Oct 2022, 17:00:06 | Information | Heartbeat | ECA Motherboard | System in ecaOS                |         |
| 21 Oct 2022, 17:00:03 | Information | Heartbeat | ECA Gateway     | Gateway connected              |         |
| 21 Oct 2022, 16:59:49 | Information | Heartbeat | ECA Motherboard | System powered up by Heartbeat |         |
| 21 Oct 2022, 16:59:43 | Warning     | Heartbeat | ECA Controller  | Unauthorized system shutdown   |         |
| 21 Oct 2022, 16:59:43 | Information | Heartbeat | ECA Motherboard | System shutdown                |         |
| 21 Oct 2022, 16:59:42 | Warning     | Heartbeat | ECA Gateway     | Gateway disconnected           |         |
| 21 Oct 2022, 16:59:32 | Information | Heartbeat | ECA Motherboard | System leaving ecaOS           |         |

Figure 226

### 13.8.5 Authorize ECA Shutdown

Figure 227 Show chronological events in log when ECA shutdown through Dashboard.

| Time                  | Level       | Source    | Type            | Name                 | Details |
|-----------------------|-------------|-----------|-----------------|----------------------|---------|
| 21 Oct 2022, 16:53:08 | Information | Heartbeat | ECA Motherboard | System shutdown      |         |
| 21 Oct 2022, 16:53:07 | Warning     | Heartbeat | ECA Gateway     | Gateway disconnected |         |
| 21 Oct 2022, 16:52:56 | Information | Heartbeat | ECA Motherboard | System leaving ecaOS |         |
| 21 Oct 2022, 16:52:50 | Information | ecaOS     | System          | Shutdown system      |         |

Figure 227

### 13.8.6 Authorize ECA Reboot

Figure 228 Show chronological events in log when ECA reboot through Dashboard.

| Time                  | Level       | Source    | Type            | Name                 | Details |
|-----------------------|-------------|-----------|-----------------|----------------------|---------|
| 21 Oct 2022, 16:58:11 | Information | Heartbeat | ECA Motherboard | System in ecaOS      |         |
| 21 Oct 2022, 16:58:09 | Information | Heartbeat | ECA Gateway     | Gateway connected    |         |
| 21 Oct 2022, 16:57:54 | Warning     | Heartbeat | ECA Gateway     | Gateway disconnected |         |
| 21 Oct 2022, 16:57:42 | Information | Heartbeat | ECA Motherboard | System leaving ecaOS |         |
| 21 Oct 2022, 16:57:39 | Information | ecaOS     | System          | Reboot system        |         |

Figure 228

### 13.8.7 Power up ECA by pressing power button

Figure 229 Show chronological events in log when ECA power up by pressing power button

| Time                  | Level       | Source    | Type            | Name                         | Details |
|-----------------------|-------------|-----------|-----------------|------------------------------|---------|
| 21 Oct 2022, 16:53:41 | Information | Heartbeat | ECA Motherboard | System in ecaOS              |         |
| 21 Oct 2022, 16:53:39 | Information | Heartbeat | ECA Gateway     | Gateway connected            |         |
| 21 Oct 2022, 16:53:25 | Information | Heartbeat | ECA Motherboard | System power button released |         |
| 21 Oct 2022, 16:53:24 | Information | Heartbeat | ECA Motherboard | System powered up            |         |
| 21 Oct 2022, 16:53:19 | Information | Heartbeat | ECA Motherboard | System power button pressed  |         |

Figure 229

### 13.8.8 Force shutdown by pressing power (heartbeat) button

Figure 230 Show chronological events in log when force shutdown by long pressed power button

| Time                  | Level       | Source    | Type            | Name                           | Details |
|-----------------------|-------------|-----------|-----------------|--------------------------------|---------|
| 21 Oct 2022, 16:51:40 | Information | Heartbeat | ECA Motherboard | System in ecaOS                |         |
| 21 Oct 2022, 16:51:37 | Information | Heartbeat | ECA Gateway     | Gateway connected              |         |
| 21 Oct 2022, 16:51:22 | Information | Heartbeat | ECA Motherboard | System powered up by Heartbeat |         |
| 21 Oct 2022, 16:51:19 | Warning     | Heartbeat | ECA Gateway     | Gateway disconnected           |         |
| 21 Oct 2022, 16:51:12 | Warning     | Heartbeat | ECA Controller  | Unauthorized system shutdown   |         |
| 21 Oct 2022, 16:51:12 | Information | Heartbeat | ECA Motherboard | System power button released   |         |
| 21 Oct 2022, 16:51:12 | Information | Heartbeat | ECA Motherboard | System forced shutdown         |         |

Figure 230

### 13.8.9 Accessing Dashboard using Security Key

Figure 231 Show chronological events in log when accessing dashboard using security key

| Time                  | Level       | Source | Type         | Name                         | Details                                                    |
|-----------------------|-------------|--------|--------------|------------------------------|------------------------------------------------------------|
| 21 Oct 2022, 16:46:02 | Information | ecaOS  | Security Key | Paired security key inserted | Paired security key 'Security Key' (56a30456) was inserted |
| 21 Oct 2022, 16:46:02 | Information | ecaOS  | Security Key | Security key inserted        | Security key 'Security Key' (56a30456) was inserted        |

Figure 231

### 13.8.10 Accessing Dashboard using Virtual Security Key

Figure 232 Show chronological events in log when accessing dashboard using Virtual security key

| Time                  | Level       | Source | Type                 | Name                   | Details                                  |
|-----------------------|-------------|--------|----------------------|------------------------|------------------------------------------|
| 21 Oct 2022, 16:29:32 | Information | ecaOS  | Virtual Security Key | Valid passcode entered | Login using virtual security key 'admin' |

Figure 232

### 13.8.11 Add new Security Key

Figure 233 Show chronological events in log when add new security key.

| Time                  | Level       | Source | Type         | Name               | Details                                              |
|-----------------------|-------------|--------|--------------|--------------------|------------------------------------------------------|
| 21 Oct 2022, 15:47:38 | Information | ecaOS  | Security Key | Security key added | New security key 'Security Key' (56a30456) was added |

Figure 233

### 13.8.12 Delete paired Security Key

Figure 234 Show chronological events in log when paired Security Key deleted.

| Time                  | Level       | Source | Type         | Name                 | Details                                            |
|-----------------------|-------------|--------|--------------|----------------------|----------------------------------------------------|
| 21 Oct 2022, 15:47:29 | Information | ecaOS  | Security Key | Security key deleted | Security key 'Security Key' (56a30456) was deleted |

Figure 234

### 13.8.13 Delete Virtual Security Key

Figure 234 Show chronological events in log when existing Virtual Security Key deleted.

| Time                  | Level       | Source | Type                 | Name                         | Details                                  |
|-----------------------|-------------|--------|----------------------|------------------------------|------------------------------------------|
| 21 Oct 2022, 15:53:02 | Information | ecaOS  | Virtual Security Key | Virtual security key deleted | Virtual security key 'admin' was deleted |

Figure 235

### 13.8.14 Add Virtual Security Key

Figure 234 Show chronological events in log when new Virtual Security Key added.

| Time                  | Level       | Source | Type                 | Name                       | Details                                      |
|-----------------------|-------------|--------|----------------------|----------------------------|----------------------------------------------|
| 25 Aug 2022, 12:56:45 | Information | ecaOS  | Virtual Security Key | Virtual security key added | New virtual security key 'adminv2' was added |

Figure 236

### 13.8.15 Open ECA cover chassis

Figure 233 Show chronological events in log when ECA top cover open.

| Time                  | Level       | Source    | Type            | Name | Details                               |
|-----------------------|-------------|-----------|-----------------|------|---------------------------------------|
| 21 Oct 2022, 15:57:58 | Information | Heartbeat | I/O             |      | DO0 output set to high                |
| 21 Oct 2022, 15:57:58 | Warning     | Heartbeat | ECA Controller  |      | Alert on: Unauthorized chassis opened |
| 21 Oct 2022, 15:57:58 | Warning     | Heartbeat | ECA Motherboard |      | System chassis opened                 |

Figure 237

### 13.8.16 Close ECA cover chassis

Figure 233 Show chronological events in log when ECA top cover close.

| Time                  | Level       | Source    | Type            | Name | Details                                |
|-----------------------|-------------|-----------|-----------------|------|----------------------------------------|
| 21 Oct 2022, 16:38:20 | Information | Heartbeat | I/O             |      | DO0 output set to low                  |
| 21 Oct 2022, 16:38:15 | Information | Heartbeat | ECA Controller  |      | Alert off: Unauthorized chassis opened |
| 21 Oct 2022, 16:38:15 | Information | Heartbeat | ECA Motherboard |      | System chassis closed                  |

Figure 238

13.8.17 PSU Status

Figure 233 Show chronological events in the log when a power supply fault is detected and the power supply is restored to normal.

| Time                  | Level       | Source    | Type             | Name                        | Details              |
|-----------------------|-------------|-----------|------------------|-----------------------------|----------------------|
| 22 Jan 2024, 12:11:02 | Warning     | Heartbeat | ECA Power Supply | Power supply fault          | PSU 2 fault detected |
| 22 Jan 2024, 12:10:02 | Information | Heartbeat | ECA Power Supply | Power supply back to normal |                      |
| 22 Jan 2024, 12:09:02 | Warning     | Heartbeat | ECA Power Supply | Power supply fault          | PSU 1 fault detected |
| 22 Jan 2024, 12:08:02 | Information | Heartbeat | ECA Power Supply | Power supply back to normal |                      |

Figure 239

## 13.9 ecaOS SNMP Notification

### 13.9.1 CPU Activity

- CPU activity above limit

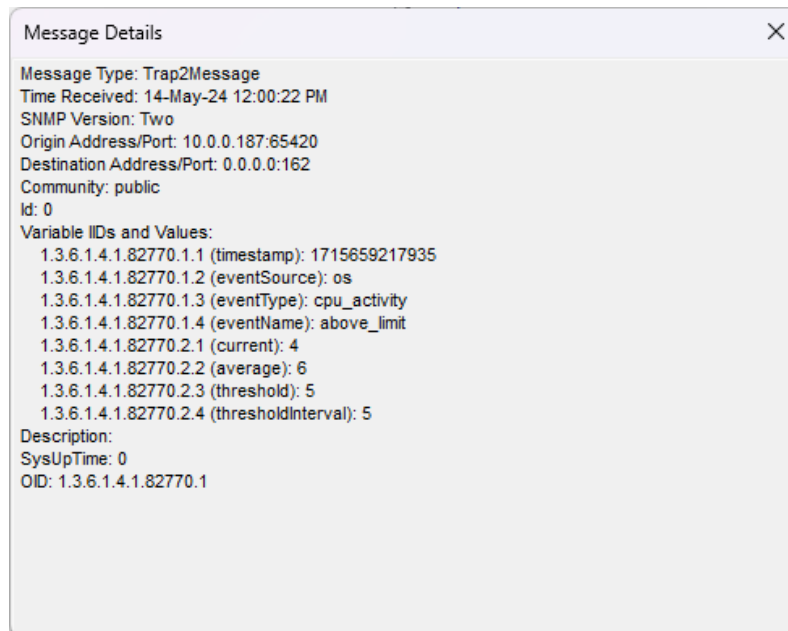


Figure 240

- CPU activity back to normal



Figure 241

## 13.9.2

## Memory Activity

- Memory activity above limit

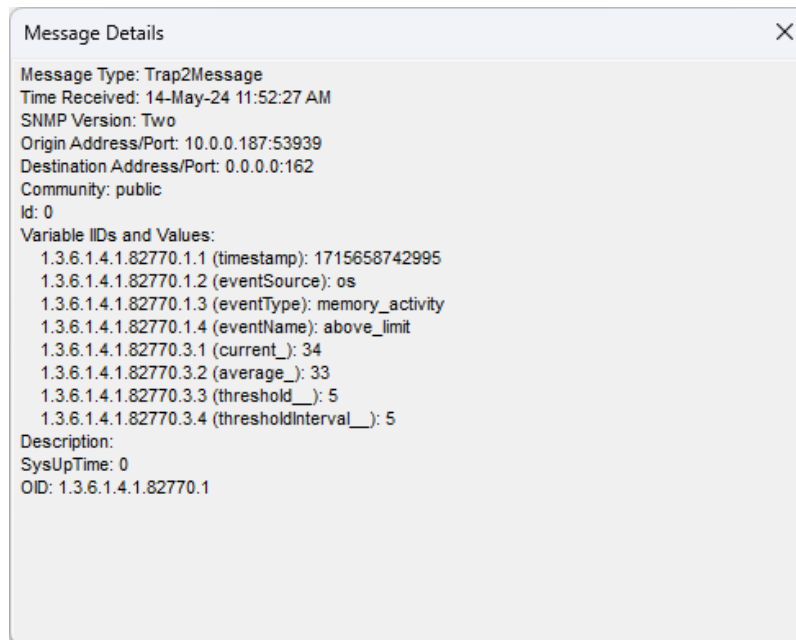


Figure 242

- Memory activity back to normal

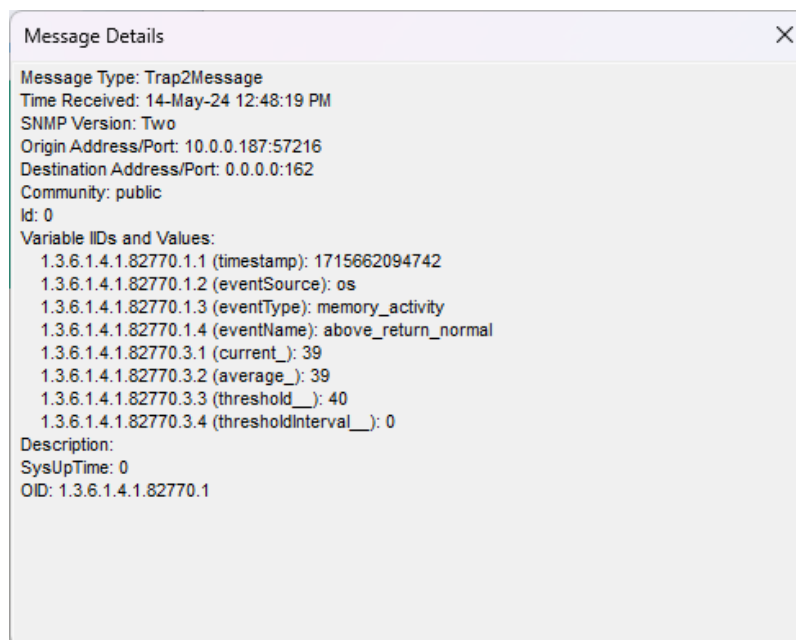


Figure 243

## 13.9.3

## Disk Activity

- Disk read activity above limit

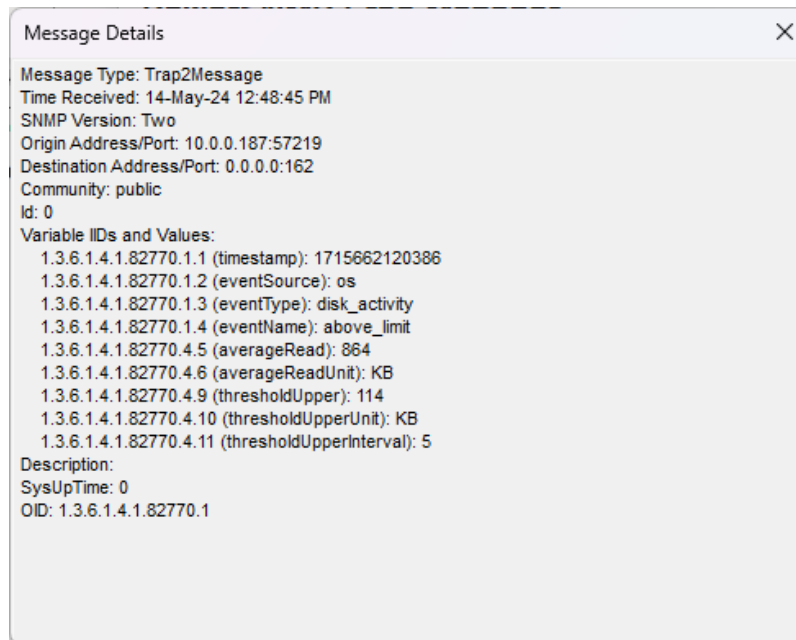


Figure 244

- Disk read activity back to normal

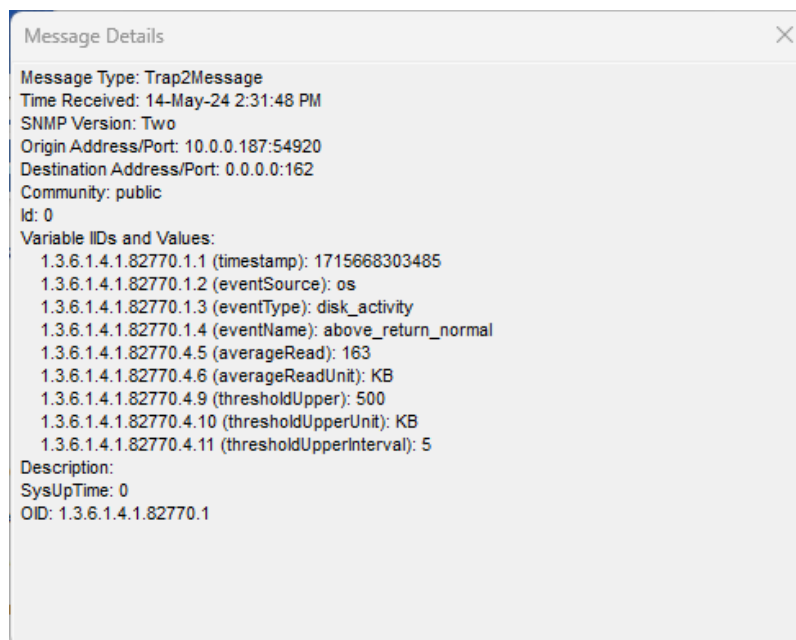


Figure 245

- Disk write activity above limit

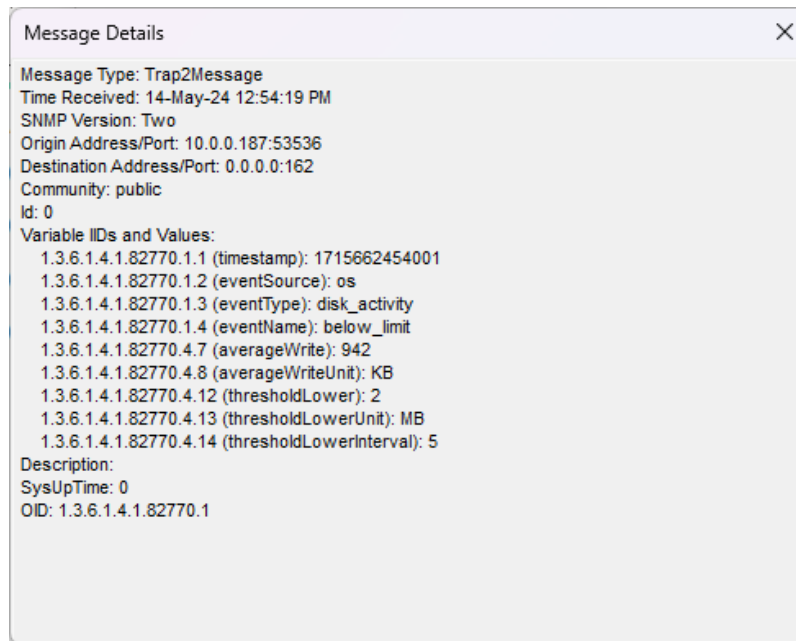


Figure 246

- Disk write activity back to normal



Figure 247

## 13.9.4

## Network Activity

- Network send activity above limit

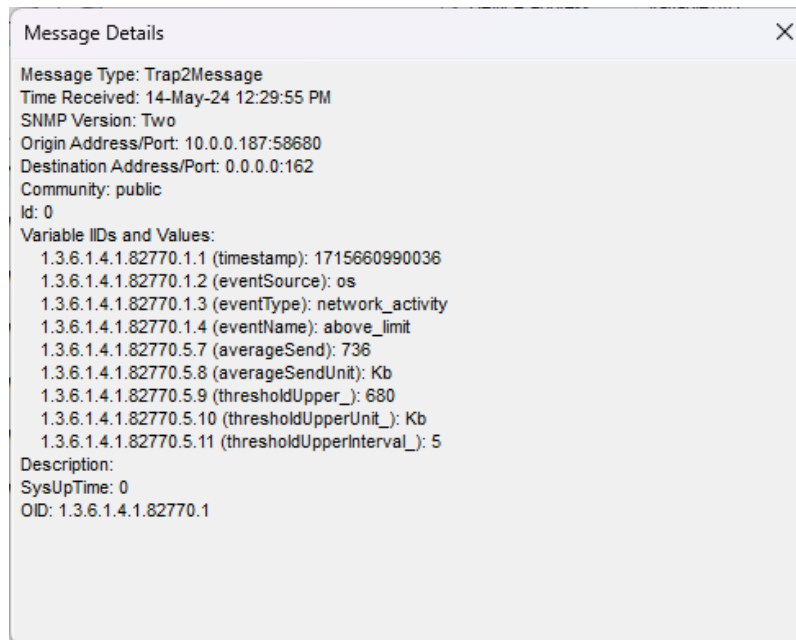


Figure 248

- Network send activity back to normal

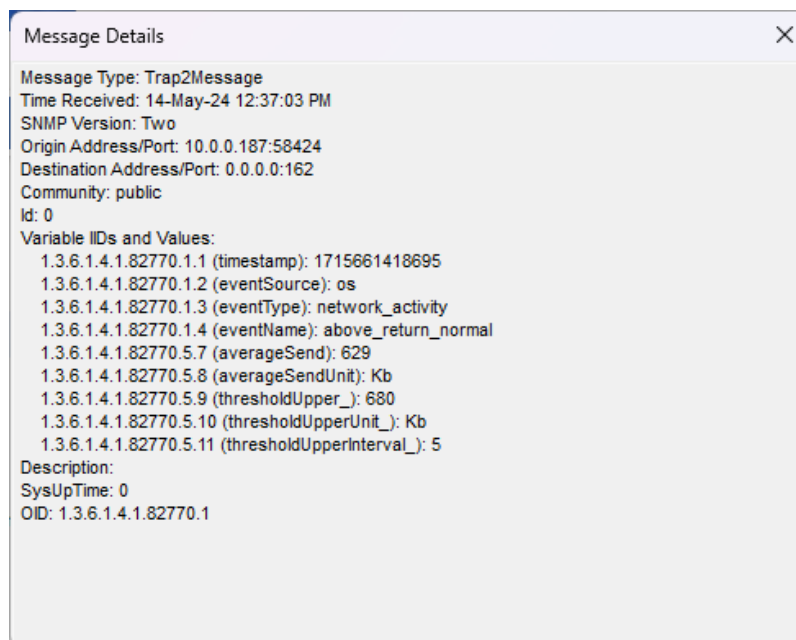


Figure 249

- Network receive activity above limit

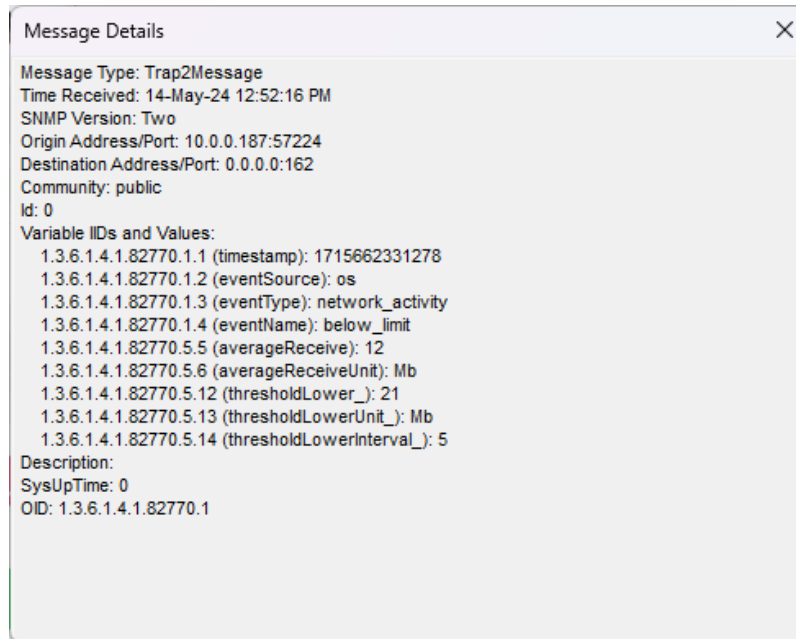


Figure 250

- Network receive activity back to normal

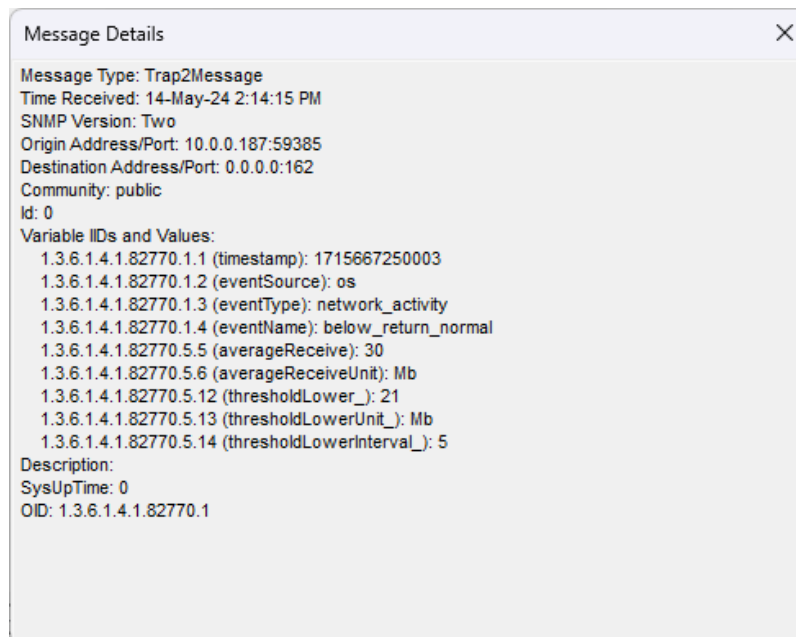


Figure 251

- Network cable unplugged

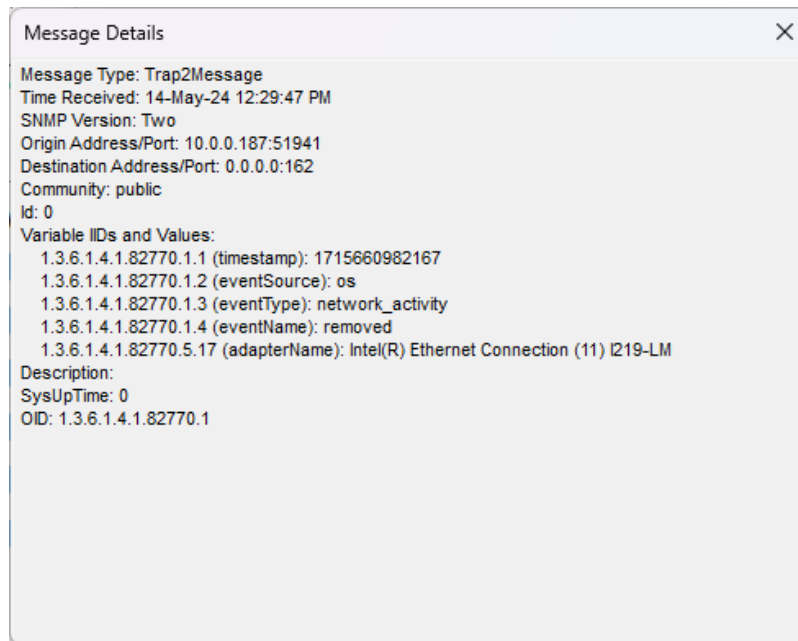


Figure 252

- Network cable plugged

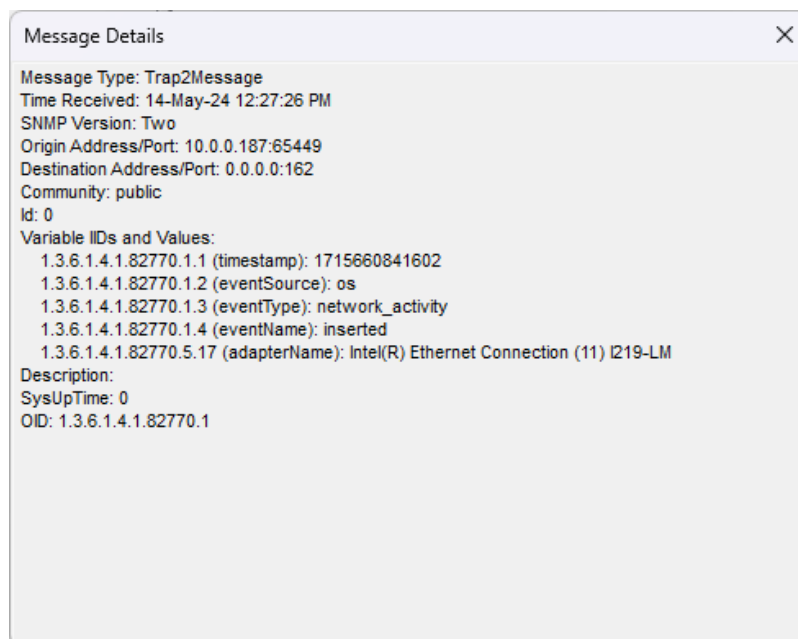


Figure 253

## 13.9.5

## Disk Guard

- Disk removed

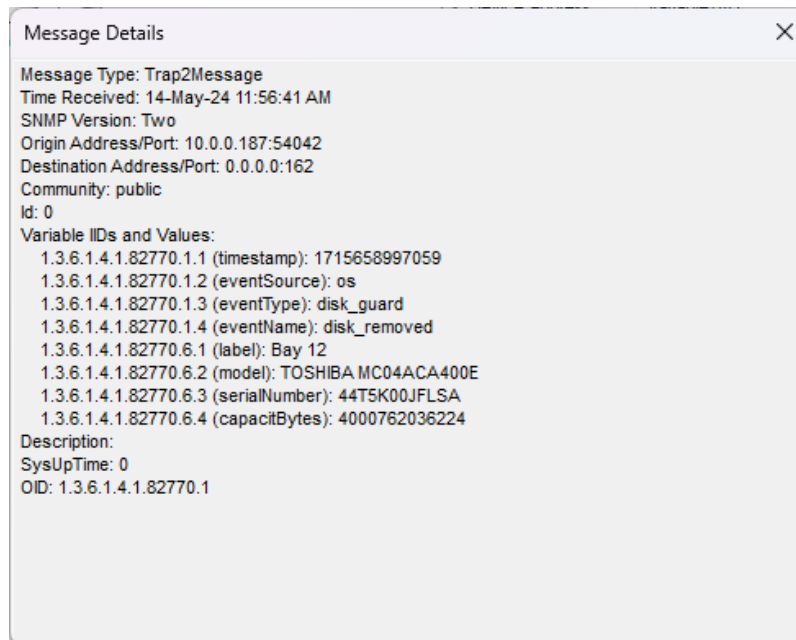


Figure 254

- Disk remove acknowledged

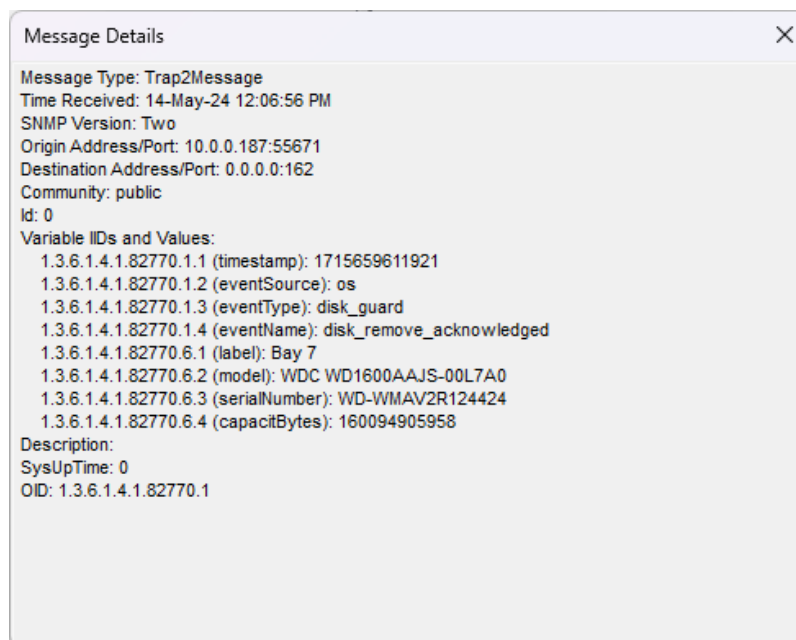


Figure 255

- Disk replaced

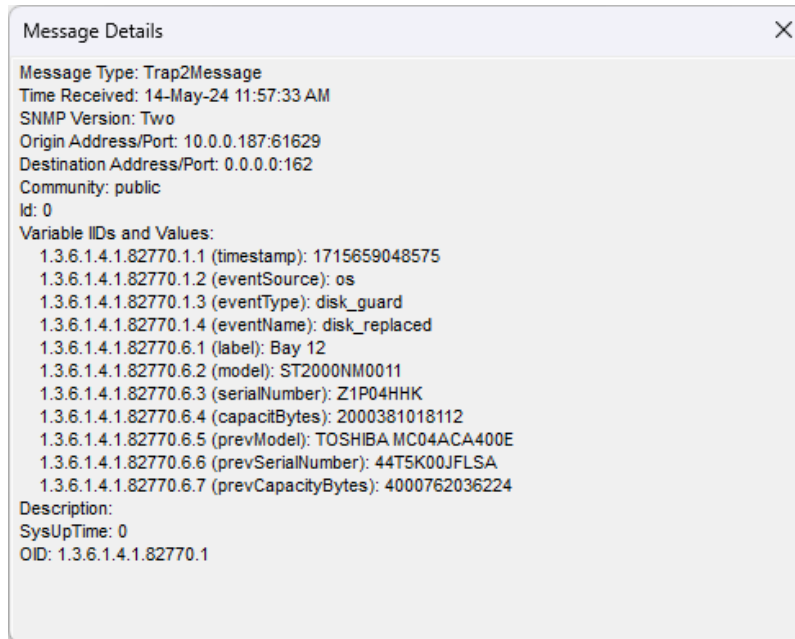


Figure 256

- Disk replace acknowledged



Figure 257

- Disk inserted



Figure 258

## 13.9.6

## Disk Health

- Disk health status is warning

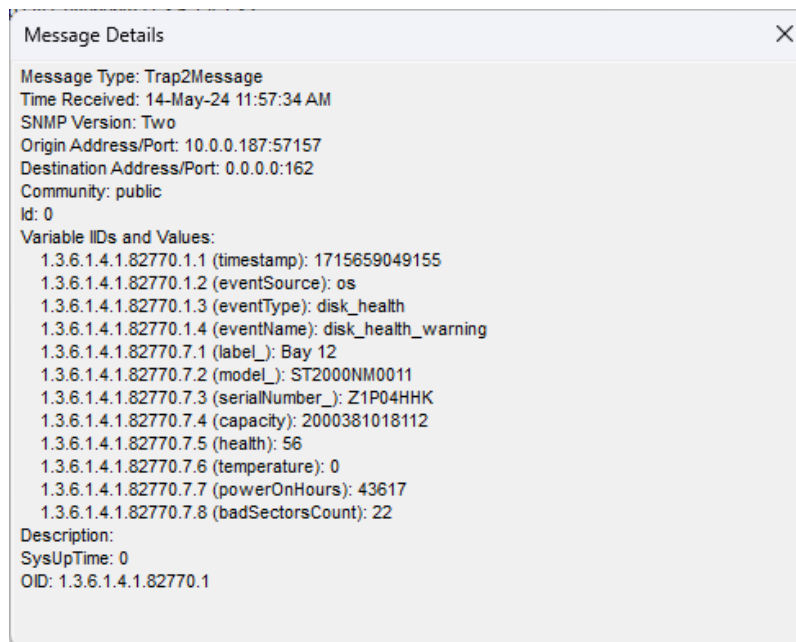


Figure 259

- Disk health status is critical

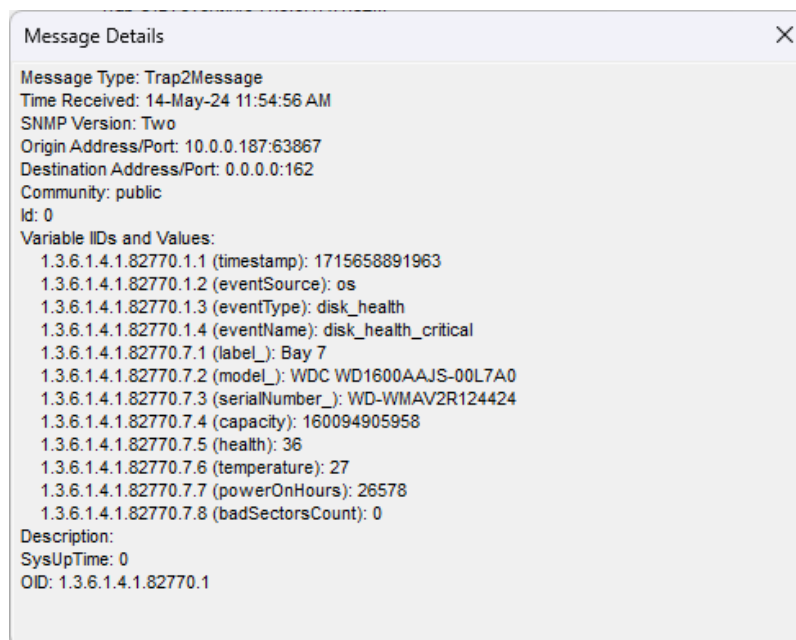


Figure 260

## 13.9.7

## Hardware Monitor

- Fan status below limit

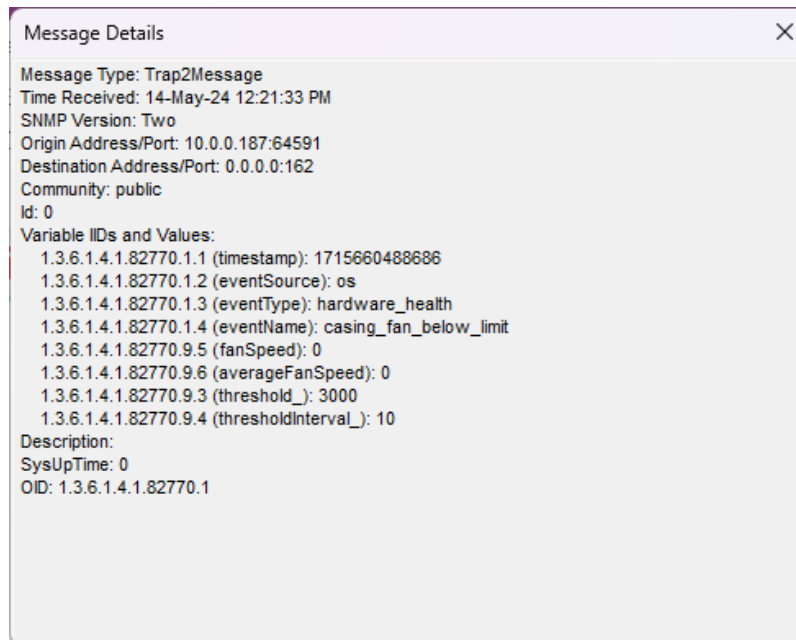


Figure 261

- Mainboard battery status below limit

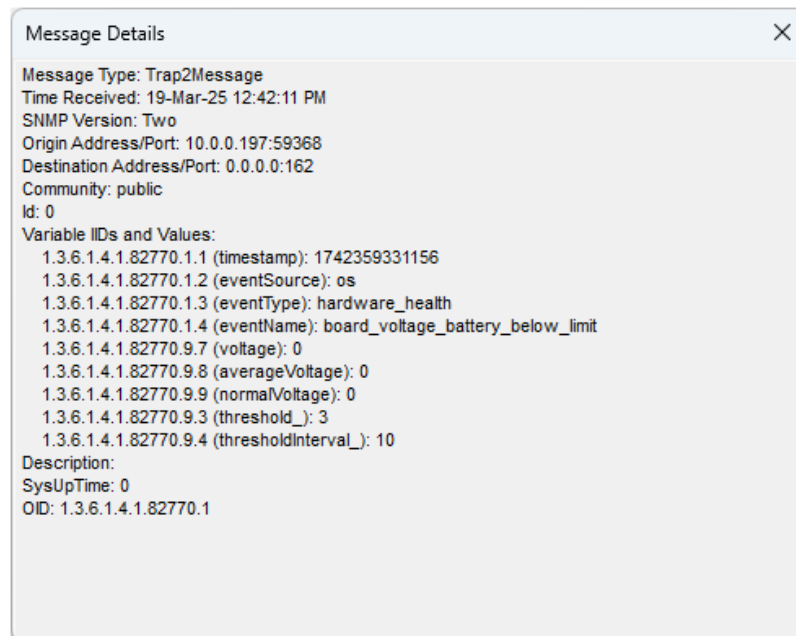


Figure 262

## 13.9.8

## Session Shield [Only available in Windows Client]

- Session Shield status is warning

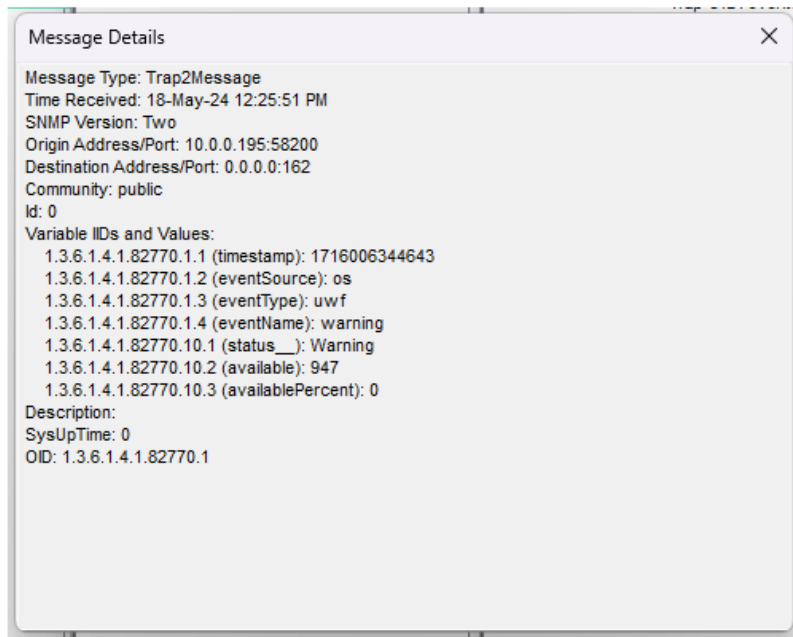


Figure 263

- Session Shield status is critical

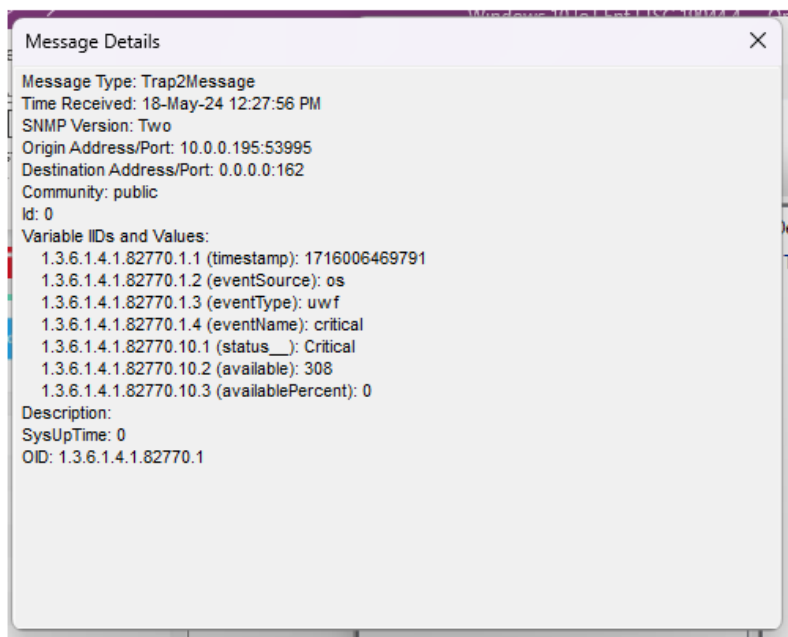


Figure 264

## 13.9.9

## Application Monitor

- Application started

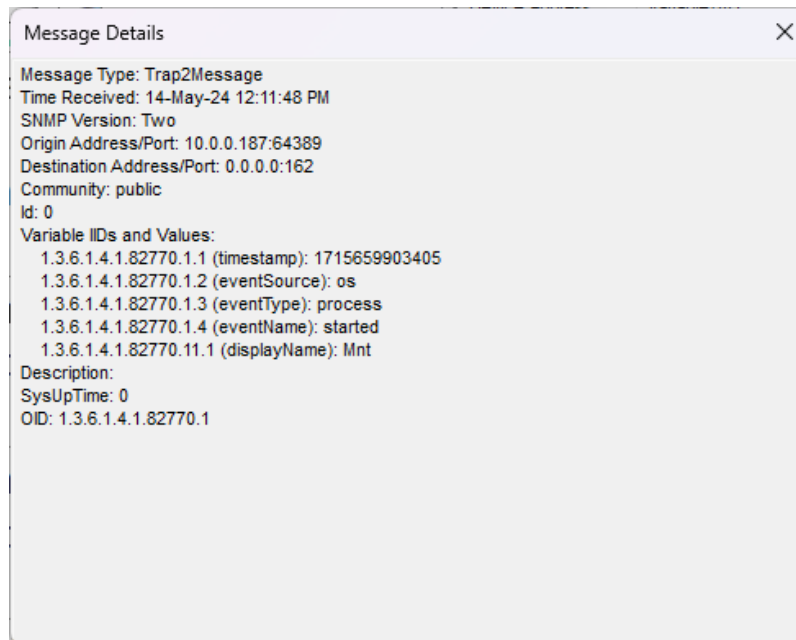


Figure 265

- Application stopped

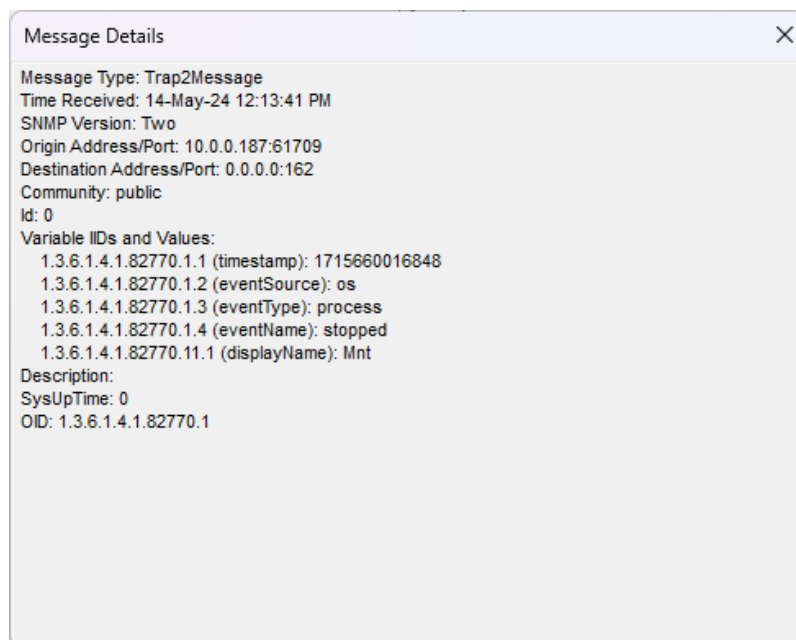


Figure 266

### 13.9.10 Redundant Storage System

- Storage pool status is healthy

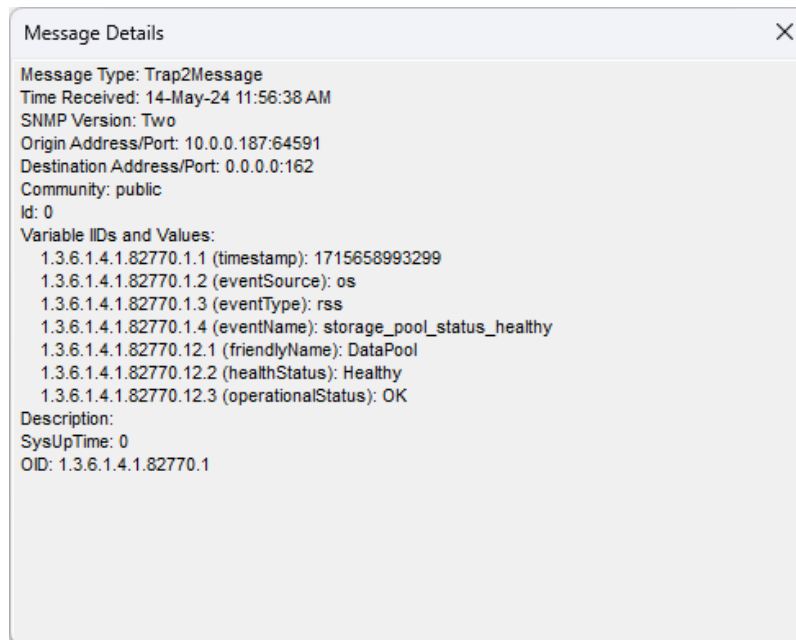


Figure 267

- Storage pool status is warning

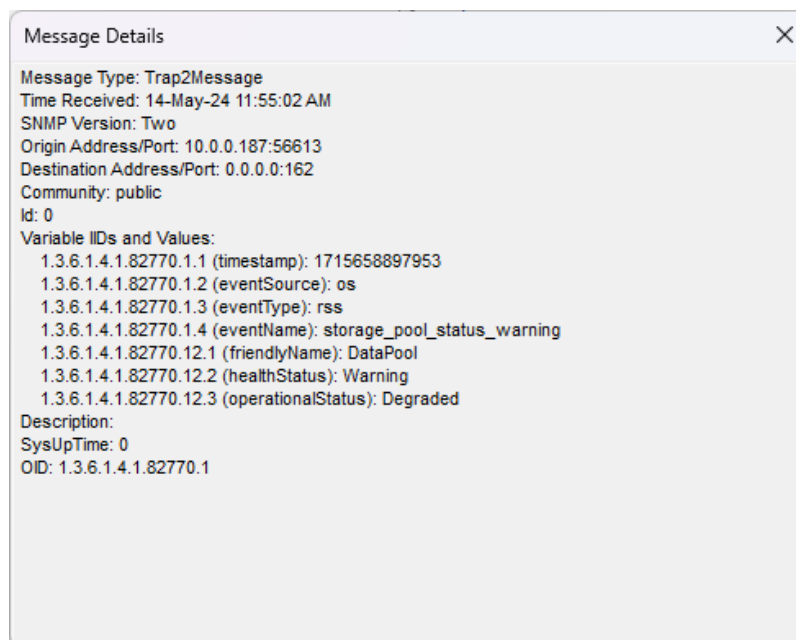


Figure 268

- Storage pool status is unhealthy

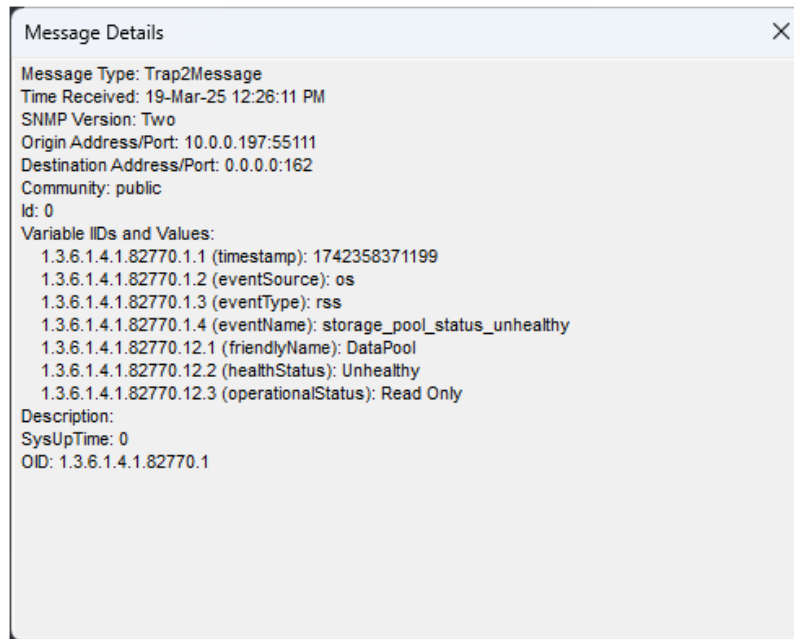


Figure 269

- Virtual disk status is healthy

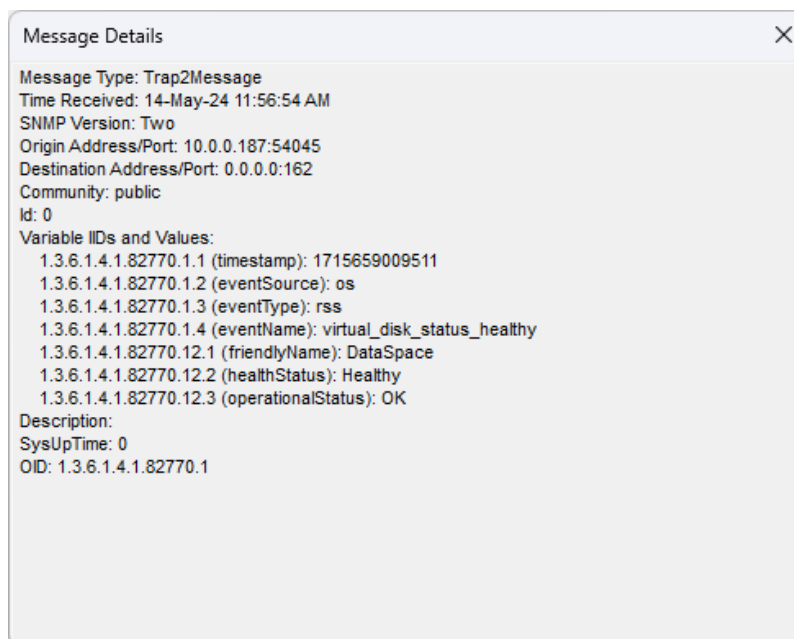


Figure 270

- Virtual disk status is warning

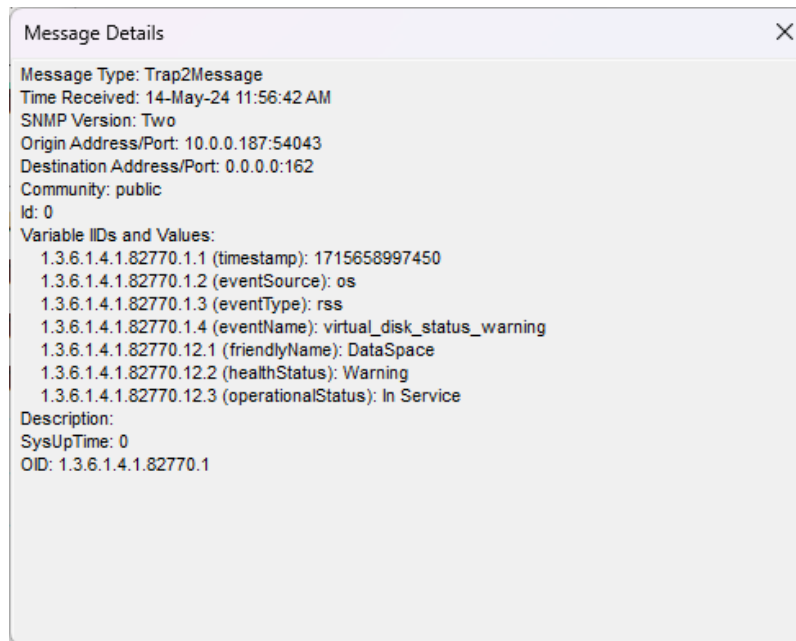


Figure 271

- Virtual disk status is unhealthy

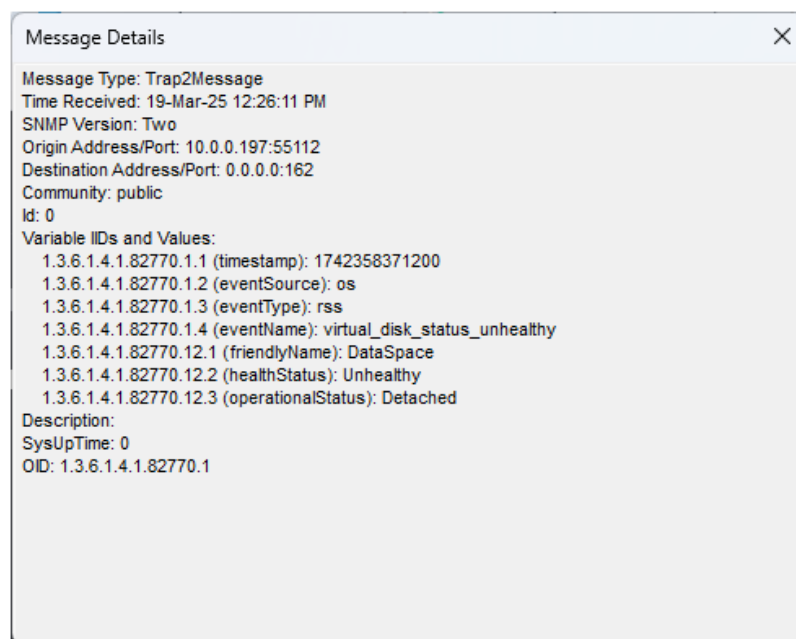


Figure 272



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